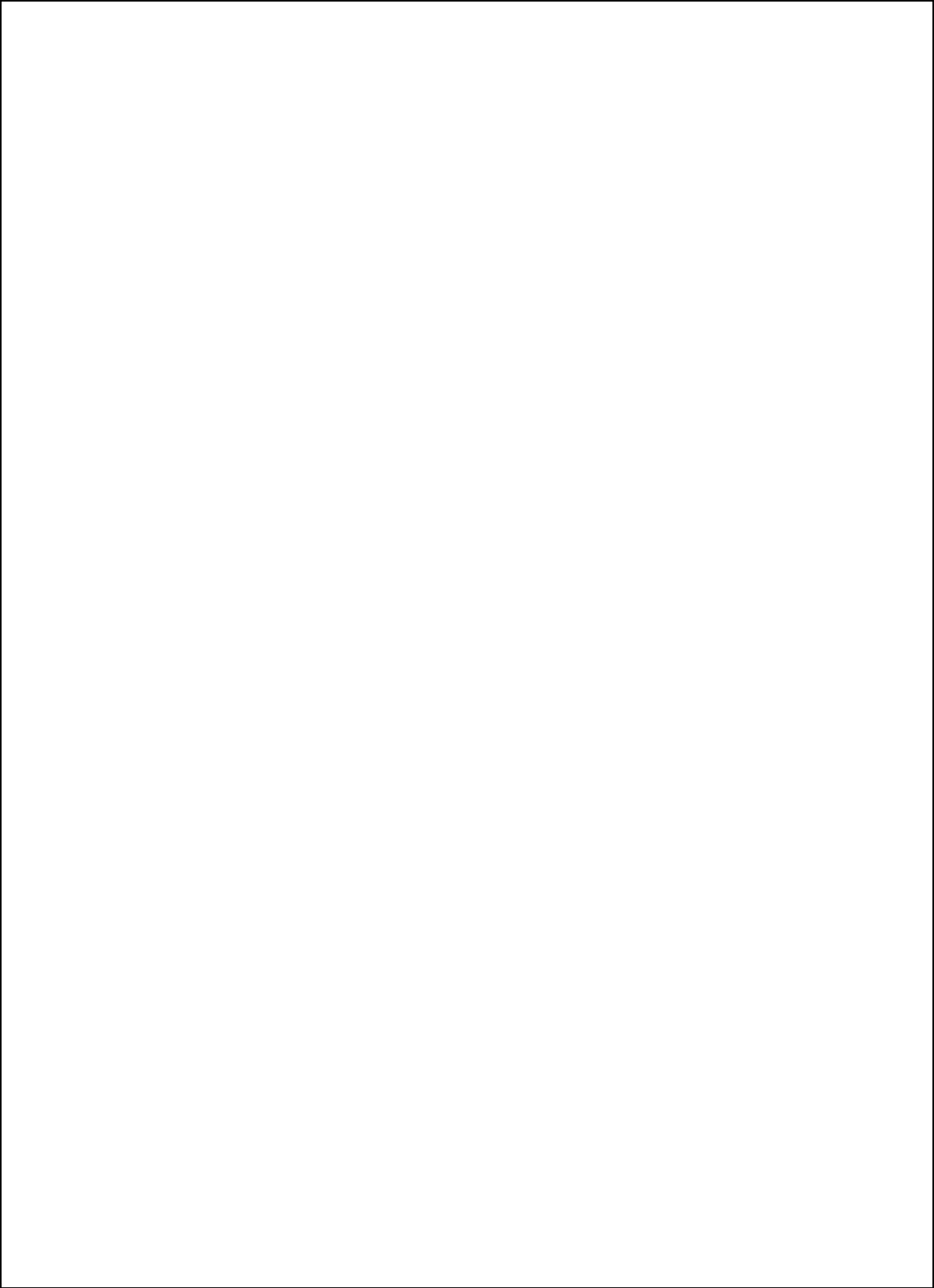




Iran's Petrochemical Industry Report

Annual Report

2014



In The Name of Allah

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National Petrochemical Company (NPC)

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Iran's Petrochemical Industry at a glance



The cornerstone of petrochemical industry in Iran was laid in late 1950s. Owing to the size of the domestic market and the availability of huge hydrocarbon reserves, the industry saw rapid development and expansion in the ensuing years.

Since its inception, the industry has travelled a long and challenging road from its humble origins to become a major force in global petrochemical markets. The journey is however far from complete as NPC's next goal is to plan for further growth of Iran's current capacities and help build new generation of facilities based on the country's immense gas feedstock.

The genesis of petrochemical industry in Iran dates back to 1958 when the Fertilizer Authority was established as part of Ministry of Economic Affairs and Finance. In 1964, the National Petrochemical Company (NPC) was set up to plan for the development of the industry.

In the same year, the first Iranian Petrochemical plant, Shiraz Petrochemical Company which was a fertilizer facility, came onstream. In 1965, the Petrochemical Industries Development Act was ratified by Iran's parliament allowing NPC to directly enter into partnerships with local and foreign companies for producing petrochemical products.

Since its inception in early 1960s until the advent of the Islamic Revolution in 1979, NPC constructed several petrochemical facilities including Shiraz, Razi, Abadan, Kharg, Farabi, Carbon Iran and Polika producing 1.6 million t/y of products. During this period, expansion projects of Shiraz and Razi were kicked off. Construction work also began on ex-Iran-Japan, currently Bandar Imam Petrochemical Company.

After the victory of the Islamic Revolution in 1979, fresh efforts were made to further develop the industry but they were rendered ineffective when Iraq invaded Iran in 1980 and waged a war that continued for the next 8 years.

The war badly affected the country's entire economy and the petrochemical sector was not an exception. It brought investment to a halt and crippled many of the petrochemical facilities. Output plummeted to an all time low of 880,000 tons in 1988. The industry, however, quickly rose from the ashes and grew even stronger after the war ended in 1988.

Soon after the war ended, NPC unveiled its first 5-year development plan (1989-1994) whose prime focus was to rebuild and to repair the plants that were damaged. NPC's secondary goal was to construct several grassroots facilities which included Razi's DAP, Shiraz methanol, Isfahan aromatics, 1st phase of Arak complex, expansion of Ahvaz carbon black and Bandar Imam. At the end of the final year of the plan, NPC's output capacity reached 10.3 million t/y.



NPC planned for further growth under its second five-year program (1995-2000) which swelled output to 14.2 million t/y.

Output continued to expand under the third development plan of 2000-2005 when several other grassroots projects were completed and Iran's petrochemical industry began to establish itself as a new force in the world of petrochemicals.

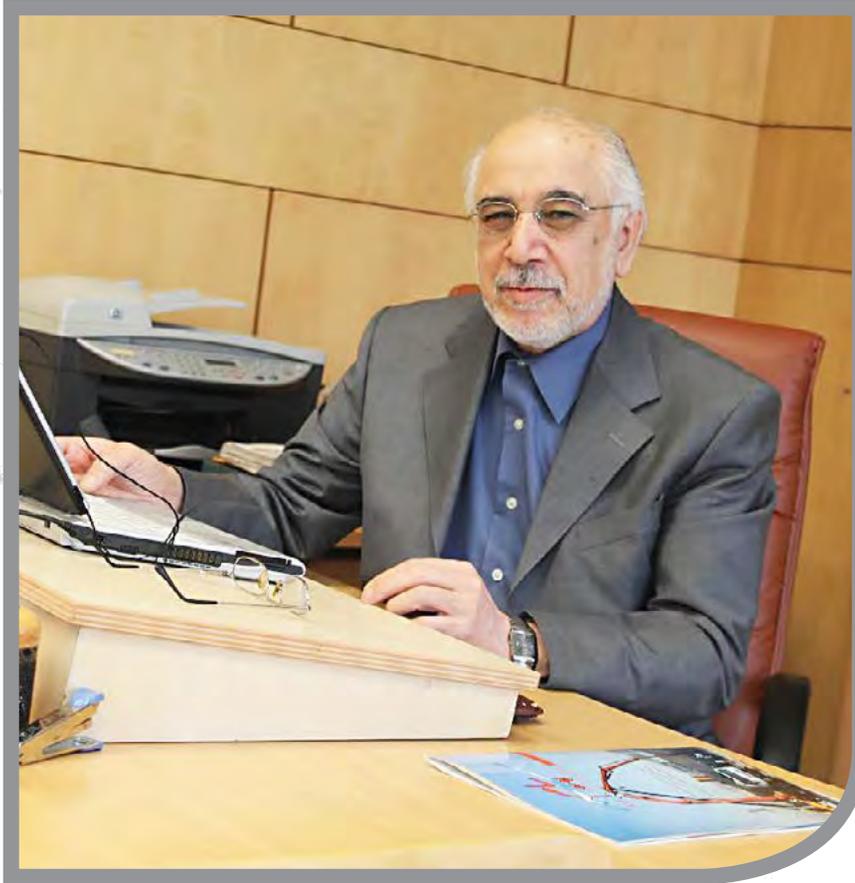
Under the third five-year plan, two special economic zones, Mahshahr and Assaluyeh, both located on the northern coast of the Persian Gulf, were introduced as the major hubs of the industry. These plans pushed Iran's production capacity one notch higher to 18.2 million t/y at the end of 2004.

During the third plan, NPC began to build a 2600km long ethylene pipeline, known as West Ethylene Pipeline, which will transfer 3.5 million t/y of ethylene from Assaluyeh on the northern coast of the Persian Gulf in south Iran to Miandoab in the north-west to give a boost to the economy of the less-developed parts of the country. The pipeline will supply feed for 11 plants whose output capacity is 3.2 million t/y petrochemical products including ethylene derivatives, PE,...

NPC implemented its fourth development plan during 2005-2010 which augmented the production capacity of the country's petrochemical industry to 51.1 million t/y. The capacity will reach 62.6 million tons per year in 2015 when projects formulated under the fifth development plan come onstream. Iran's petrochemical industry is poised for another massive growth and development in the next decade. Currently, 67 projects are under construction with an investment cost of \$39bn. Once they are complete, they will add 61 million t/y of capacity across a wide range of petrochemicals to Iran's existing output capacity which stands at 60 million t/y. At the same time, a next wave of investment is expected to see a further 60 million t/y of capacity added, costing some \$42 billion in hard currency. This includes 36 projects whose saleable products will rake in \$30 billion per year. Therefore by 2025, Iran's petrochemical capacity will reach 180 million t/y.

Since the past decade, NPC has gone through a transformational change. Under the country's Article 44 of the constitution, which seeks to reduce the role of the government and calls for the privatization of major state-owned industries and sectors, NPC began a divestment drive which saw the company shedding all its process plants, UT and service facilities. Under its new mandate, NPC is no longer a developer but a regulator and policy-making, macro planner entity that will remain as part of the ministry of petroleum to plan for the future trend of country's petrochemical sector.

Message from the President



A. Sha'ri
Deputy Petroleum Minister
and NPC President

In 2014, the designed capacity of Iran's petrochemical industry stood at 57.1 million tons and its actual output rose to 42.5 million tons of various products including basic chemicals, fertilizers, polymers, feedstock and fuels.

The volume and value of exports climbed to 14.3 million tons and \$10.2bn respectively. The industry also sold 14.9 million tons of products at domestic market raking in Rials 330.2bn.

67 petrochemical projects are currently under construction across Iran, out of which 15 registered a physical progress of over 60 percent, 6 of them were between 20 percent to 60 percent complete and the rest showed a physical progress of less than 20 percent in 2014.

Once these projects are onstream, an additional 61 million ton/year of new capacity will be added to raise the industry's total capacity to 120 million ton/year by 2018.

In the past few years, NPC has transitioned from a production company to a regulatory, supervisory and policy-making body whose major missions include planning for and supporting the development and the expansion of the industry, as well as developing the required framework guides and regulations which in turn create conducive conditions for attracting and facilitating financing and direct local and foreign investment in Iran's lucrative petrochemical sector.

In order to perform its missions, NPC seeks to establish development funds with the contribution of non-government actors to help funnel financial facilities and bank credits for investment in Iran's petrochemical industry via the national budget, banks, monetary as well as credit institutions and foreign sources.

NPC will interact effectively with the nation's relevant decision-making institutions to formulate policies so as to increase the export of petrochemicals and to regulate local markets and imports.

Encouraging competitiveness and preventing monopolies for the benefit of both consumers and producers at large and facilitating balanced growth of international trade are among other NPC's missions.

NPC's other important responsibility is to manage and to conduct coordination and to make necessary arrangements among petrochemical plants and projects in areas such as sales of inter-plant feedstock, utilities supply, insurance, storage tanks, production and overhaul scheduling.

Setting policies and plans in motion for the development of standards, requirements and promotion of management and operational systems as well as knowledge management solutions and strategy as a management tool in petrochemical industry are high on our agenda. And I am delighted to see that my colleagues are devising packages and policies for human resource development in the industry.

In conclusion, I should underscore that our priorities and roadmap are put in motion to gain access to technologies that are critical in basic, intermediate and downstream petrochemical sectors. In the meantime, requisite tools to meet the targets of our plans for technology development have already been primed.

A. Sha'ri

Deputy Petroleum Minister and NPC President

Company Organization



NPC holds two top management bodies, a General Assembly and a Board of Directors. The members and their responsibilities are as follows:

The General Assembly

The General Assembly, represents shareholders, consisting of the following members:

- **His Excellency Bijan Namdar Zanganeh**
Minister of Petroleum and Chairman
- **His Excellency Ali Tayebnia**
Minister of Economic Affairs and Finance
- **His Excellency Mohammad Bagher Nobakht**
Vice President, Head of Management and Planning Organization of Iran
- **His Excellency Mohammad Reza Nematzadeh**
Minister of Industry, Mine and Trade
- **His Excellency Ali Rabiei**
Minister of Labor, Cooperative and Welfare
- **His Excellency Hamid Chitchian**
Minister of Energy
- **Roknoldin Javadi**
Deputy Petroleum Minister and NIOC President
- **Ghadir Movahhed Zadeh**
NIOC Finance Director
- **Seyed Ali Adyani**
Secretary of General Assembly

The Board of Directors

The Board of Directors, responsible for the overall operation of the company, is a five– member body as follows:



His Excellency Bijan Namdar Zangeneh
Petroleum Minister and Chairman



Abbas Sha'ri
NPC President, Vice Chairman



Mohammad Hassan Peyvandi
NPC Vice President



Abdol Hossein Bayat
Advisor to NPC President



Davood Shaddel
Finance Director

Production Control Directorate



Production control department consists of 3 sections:

- **Coordination & Control of Production**
- **Production Engineering**
- **Coordination & Supervision of the Projects Commissioning**

The followings are the responsibilities of each section.

- **Coordination & Control of Production Section** is responsible for collecting, updating and analysing production data of petrochemical companies in "Management Information System (MIS) of National Iranian Petrochemical Company" in order to investigate unused capacity and identify the production bottlenecks and find suitable solutions for production problems.

This section coordinates conferences among petrochemical general managers, production managers and production experts, in order to enhance interaction and cooperation between the companies. Also, this section collaborates with planning department of NPC for annual plan of production & overhaul plan of petrochemical companies.

Generally, this section coordinates all sections of petrochemical companies involved in production, feeds, utilities and etc.

- **The Engineering Section** covers managing all revamp and debottlenecking projects defined to improve the existing plants products qualities, quantities and safety aspects. The production plants are responsible for their own projects in all aspects of design and construction, but this section checks their conformities with other related plants' capacities and availabilities and also checks the progress of the defined projects.

This section, as the owner's representative, is also responsible for defining projects in the ports located in Mahshahr and Assaluyeh regions, as well as the terminals for import and export of products and raw materials of the plants.

- **Coordination and Supervision of the Projects Commissioning Section** is responsible for developing instructions for pre-commissioning and commissioning of the projects, coordinating and supervising the handover system, supervising pre-commissioning and start - up activities until normal operation and performance test.

This section also provides reports and shares experiences in the above mentioned fields .



Planning and Development Directorate

Corporate Planning Department

- Strategic planning, long term planning (5 year and 20 year) for growth of Iran Petrochemical Industry (including strategies, policies, quantitative goals, etc.)
- Annual production and sales planning for Iran Petrochemical Industry
- Providing Iran petrochemical industry performance report in various time intervals
- Proposing legal acts for stipulating in budget and other related acts in order to facilitate the growth of Iran Petrochemical Industry
- Calculating added value and other related economical indexes
- Planning for allocating feedstock to complexes and plants from upstream resources or other petrochemical companies and follow up the feedstock contract issues
- Follow up the regulatory role of NPC

Market Research Department

During the course of planning for development of petrochemical industry, in order to create a concept for taking advantage of existing opportunities, market analysis is performed. The goal of market analysis is to determine the attractiveness of a petrochemical product's market (local and international), at present and in the future. Evaluation of future attractiveness of products market will be carried out by defining evolving opportunities and threats as they relate to Industry's own strengths and weaknesses, guide the investment decisions to advance the success of the industry as a whole.

Dimensions of market analysis include:

Market size, market growth rate, market profitability, competitiveness, industry cost structure, distribution channels, technology, market trends, price trends, etc.

Projects Evaluation Department

The new projects as investment opportunities are defined for the future development of the petrochemical industries based on the market analysis results, feedstock current sources in Iran, and existing technologies in the world. Then they are evaluated from the technical and economical points of view, and based on their feasibility study results, are proposed for implementation.

New areas infrastructures are identified and evaluated in order to implement the selected projects by the private sector.

Dimensions of pre-feasibility studies are:

feedstock sources and supplies (covering current and projected availability of feedstock to the project, and the current and projected price trends of feedstock), location and site (particularly for potential projects where transport costs would function as a major determinant), environmental impact assessment (which covers current environmental conditions in the area surrounding the envisaged site), engineering and technologies, utilities, investments, financial analysis and investment estimation.

Information Technology Department

The Information Technology (IT) department is responsible for the administration of architecture, hardware, software and networking of computers in the organization. IT team works with business executives to develop an IT strategy that supports the organization's business objectives.

There are two main divisions in IT department of NPC. Common duties of these divisions are as follows:

■ Application Development Division

Providing & supporting the business applications required by NPC departments & senior management to support strategic and operational needs and decisions, developing complex statistical reports based on ad hoc user needs, analysing data needs and requirements of existing systems and planning improvement projects, indentifying and utilizing new technology to create better business applications, development and support of NPC portal & web applications

■ Technical Support & Network Division

Providing network infrastructure to support effective communication and collaboration, Server Administration and data center operations and support, handling backups, monitoring error logs, administration of email accounts, and execution of security event monitoring standard processes and procedures, support and maintenance of computers and technical devices as well as responding to requests for technical assistance in person, via phone (helpdesk)

Information Center

- Utilizing novel information technologies to provide a platform for information supply and management to enhance the scientific and technical level of professionals in order to achieve NPC goals in all disciplines: industry, education, technology and development.
- Promoting cooperation between all governmental and private sector of petrochemical industry in obtaining quality information resources.

Investment Center

Investment Center has been established in order to achieve the following goals and introduce the investment opportunities of this favorable, profitable economical industry:

- Introducing the investment opportunities in petrochemical industry
- Providing favorable conditions and incentives for the investment in the petrochemical industry
- Simplifying and supporting the process of investment
- Supporting the private sector economic activities in petrochemical industry and contribute to establish the international trade relations.
- Receiving the investors' innovative ideas and considering them in petrochemical development plans.
- Interacting with the relevant institutions and organizations, especially Organization for Investment Economic and Technical Assistance of Iran (affiliated to Ministry of Economic Affairs and Finance) in order to attract the investors.
- Supporting the development of primary infrastructures such as access roads, water, gas, electricity, wastewater and other networks in coordination with relevant institutions, organizations and administrations.

Projects Directorate



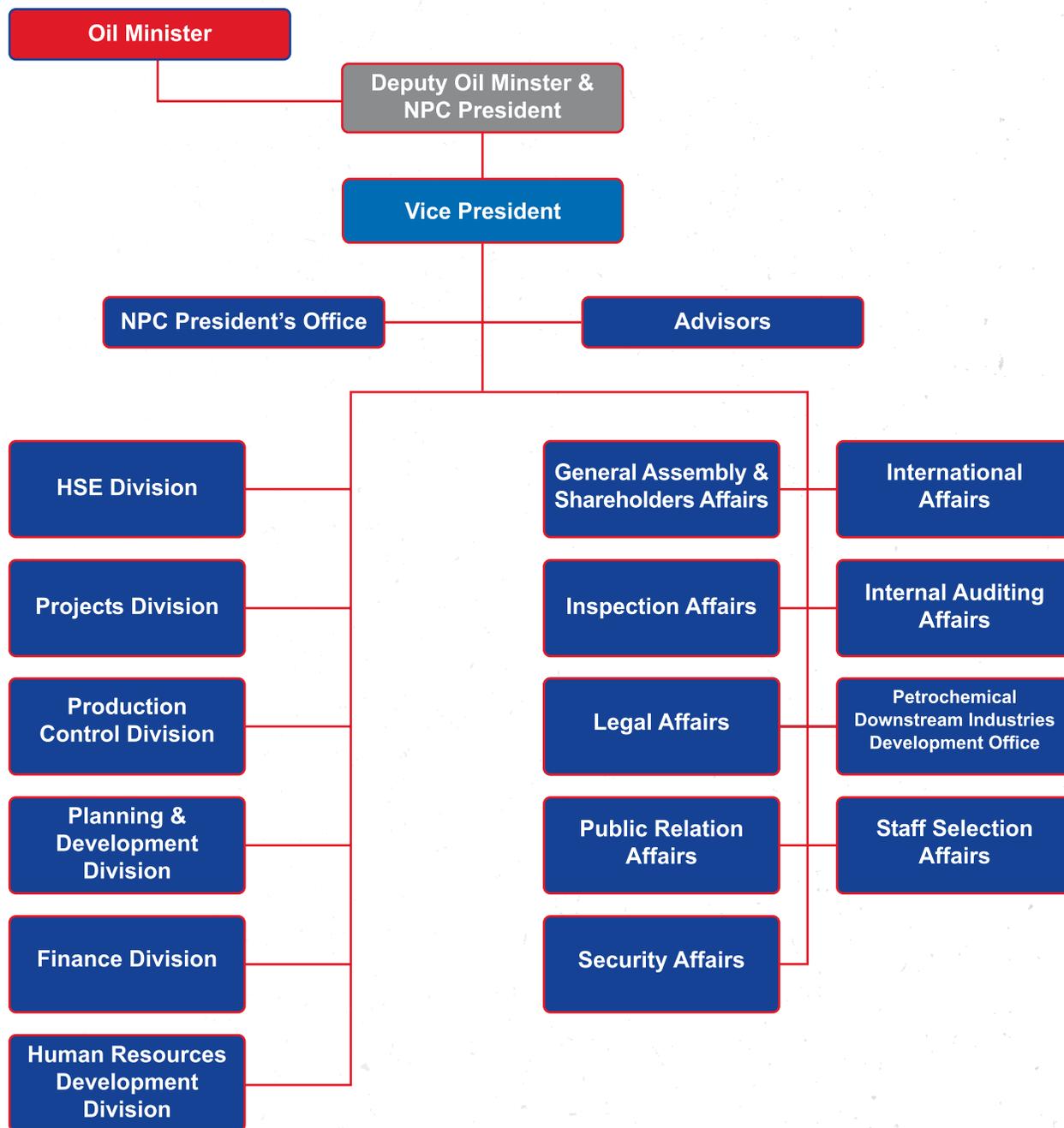
Following the transformation that occurred in NPC's mission and mandate from a producing company to a regulatory, supervisory and policy-making one, there has been a subsequent refocus in the priorities of the Company's Projects Department to provide expert assistance and support as well as macro supervision and guidance in petrochemical projects that are being or will be developed by the private sector.

The new goals of the Projects Department are as follows:

- Guiding petrochemical projects in compliance with international standards in technical, implementation, management and environmental protection areas
- Developing and implementing infrastructure facilities and development projects that are financed by Iran's government
- Complying with the government's macro policies in empowering non-state owned sectors in the fields of engineering, manufacturing equipment and implementation
- Overseeing and monitoring the investment permits issued for constructing the petrochemical projects
- Identifying the problems and shortcomings and offering solution in the course of the projects development
- Evaluating the petrochemical projects' planning and performance and overseeing their goals and objectives
- Creating effective and efficient interaction amongst projects during construction phase and documenting their implementation trends and experiences to implement knowledge-sharing, knowledge-management and organizational learning practices
- Promoting and encouraging CSR practices
- Collaboration with the private sector in implementing projects based on the country's rules and laws

National Petrochemical Company (NPC) Organization





NPC's missions and goals

N PC's missions and goals as a regulatory and decision-making company include:

- To develop the strategy and the respective plans for expanding Iran's petrochemical industry
- To increase the possibility of attracting finance to expand the development of Iran's petrochemical industries
- To contribute to the development of required infrastructural facilities to implement expansion plans
- To support the industry by establishing and activating service-providing organizations
- To define logical mechanisms to manage interactions with privatized companies and projects

Iran's Petrochemical Industry Growth Plan

Projects under implementation	
Number of projects	67
Designed capacity	61.1 million T/Y
Saleable products	49.8 million T/Y
Net Sales Income (based on 8 year FOB prices)	\$25.7 billion
Feed cost	\$7.9 billion
Value Added	3.2
Total Investment Cost	\$40.1 billion

Nominal output capacity and actual production in 2014

Region	Nominal capacity	Actual production
Mahshahr Special Economic Zone	25.3 million T/Y	17.8 million T/Y
Pars Special Economic Energy Zone (Assaluyeh)	23.2 million T/Y	17.4 million T/Y
Other areas	8.6 million T/Y	7.3 million T/Y
Total	57.1 million T/Y	42.5 million T/Y

Volume & value of domestic sales and exports in 2014

Region	Export		Domestic sale	
	million tons	billion dollars	million tons	1000 billion Rials
Mahshahr Petrochemical Special Economic Zone	4.5	3.4	6.3	154.4
Pars Special Economic Energy Zone (Assaluyeh)	6.8	5	6.5	135.4
Other areas	3	1.8	2.1	40.4
Total	14.3	10.2	14.9	330.2

New investment opportunities in petrochemical industry by 2026	
Number of projects	36
Designed capacity	62.2 million T/Y
Saleable products	29.6 million T/Y
Sales revenues	\$32.1 billion
Investment costs	\$31.4 billion + 263.5 thousand billion Rials

According to Iran's petrochemical development plan of action, NPC's mandate and missions will include the followings:

- To increase the output efficiency of the existing process plants to the level of nominal capacity
- To complete the unfinished projects envisioned under the 4th and the 5th five-year development plans whose progress is over 60%
- To complete the unfinished projects envisioned under the 5th five-year development plan whose progress ranges between 20% to 60%
- To complete the unfinished projects formulated under the 5th five-year development plan whose progress is lower than 20%
- To launch new petrochemical projects to compensate for delays in the performance targets of previously defined plans
- To pave the way for balanced growth of downstream sector to facilitate petrochemical value chain development
- To create legal conditions that would allow for offering consultancy and technical as well as engineering services to privately owned projects
- To create legal conditions that would consider allocating finances from the National Development Fund to privately owned projects under NPC's management and supervision
- To broaden the activities of Petrochemical Research and Technology Company (NPC-RT) to develop new technologies locally and to help find the solutions to technical problems at petrochemical plants

Advantages of new sites assigned for development of Iran's petrochemical industry

- Proximity to target markets including India, China and Central Asia countries
- Availability of well-developed infrastructures including railway network, ports and utilities
- Decentralization of decision-making in petrochemical industries located in Assaluyeh and Mahshahr
- To increase, in a balanced manner, the industry's operational strength in areas that are well positioned for developing petrochemical sector
- To generate greater added-value and to stop exporting cheap and unprocessed raw materials
- To help encourage the development of under-developed areas in the country

Investment Center

Goals of Investment Center

- Simplifying the process of investment
- Facilitating the process of investor attraction, by introduction and development of equal competitive opportunities for investing in petrochemical industry by reviewing the investors' offers.
- Supporting the private sector economic activities in petrochemical industry and assisting to establish the international trade relations.
- Receiving the investors' innovative ideas and considering them in petrochemical development plans.

Duties of Investment Center

- Integrating the whole process of investment attraction.
- Introducing the investment opportunities in petrochemical industry and offering the necessary incentives in coordination with Petroleum Ministry.
- Providing equal opportunities for investment applicants through general announcement in order to select the most appropriate applicants based on the approved evaluation criteria and assigning the new petrochemical projects to qualified applicants.
- Interacting with the relevant institutions and organizations, especially organization for Investment Economic and Technical Assistance of Iran (affiliated to Ministry of Economic Affairs and Finance) in order to attract the investors.
- Supporting the development of primary infrastructures such as access roads, water, gas, electricity, wastewater and ... networks in coordination with relevant institutions, organizations and administrations.
- Introducing the special zones opportunities to the investors regarding the advantages of investing in these zones.
- Issuing the Primary Agreement for the investors and introducing them to the relevant organizations.

Iran's petrochemical advantages

- Access to feedstock
 - South Pars Gas Field and Khuzestan resources
 - Rich ethane content in the gas reserves
 - Competitive feedstock prices
- Skilled and professional manpower
- Access to international waterways
 - Availability of import/export facilities
 - lower transportation costs
- High added value and access to the supply chain
- Well-developed infrastructure in petrochemical special zones
- Growing domestic market
- Availability of qualified domestic engineering companies, suppliers and manufacturers
- New investment legislation

The main investment incentives in Iran's free zones

- Tax and tariff exemption for a period of 20 years from the date of operation for all economic activities
- The possibility of investment with no red tape
- Securing and guarantee foreign investments and profits gained
- Protect and Guarantee foreign investments
- No entry visa requirement and easy residency permits
- Easy regulations about working, employing and social insurance affairs
- Re-export of semi-finished goods transported from free zone into the mainland with no red tape
- Export / import with no red tape
- Skilled and professional manpower in all fields and levels
- Rich oil and hydrocarbon resources as the raw material and fuel for all industrial activities

Implementing regulations of budget act 1393 (2014) for less developed zones

- Investment on less developed zones according to the desired location of Petroleum Ministry and employment according to the subject of this regulation will result in 30 percent discount in gas price as per cubic meter
- Investment on less developed zones according to the desired location of Petroleum Ministry will result in 20 percent discount in gas price as per cubic meter
- Investment on less developed zones will result in 10 percent discount in gas price as per cubic meter

The main investment incentives in Iran's Special Economic Zones (SEZ)

- Importing goods from SEZ for domestic consumption, is subject to import and export regulations and exporting goods from SEZ is done with no formalities.
- Importing goods from abroad or Free Economic – Industrial Zones to SEZ is done with the least formalities and local transiting of imported goods is carried out according to the related regulations.
- Importing goods to the zones of Iran entrance points is done with no customs formalities.
- Imported goods from abroad are exported with no red tape.
- SEZ Management can transfer the right of using the zone to the individuals or legal entities after grading the zone.
- The owner of imported goods to SEZ can clear all or some parts of their goods from customs according to the regulations.
- If the amount of imported goods to the SEZ results in changes in customs tariffs of those goods, then the rate of trading profit for importing the goods to the other parts of the country will be calculated and collected as the rate of trading profit of the raw materials and imported parts which have been used in such goods.
- Importers can transfer all or some parts of their imported goods to the third party with warehouse receipt. Then the owner of this receipt is considered as the owner of the goods.
- SEZ management is allowed to issue the source certification for exported goods based on the applicants request and after Customs' office confirmation.
- All the goods which are imported for production or services in SEZ are excluded from General Export- Import Regulations. Importing the aforesaid goods to the other parts of the country is carried out according to Export -Import Regulations.
- Importing a percentage of produced goods in zones into the country, subject to "Article D, Note 25 of I.R.I Second Economical, Social and Cultural Development Program", is allowed with no red tape and no need to submit order or opening LC if valued as the portion of VAT of used material and interior parts to the final price of those goods.
- The produced goods in SEZ and also raw materials and separated parts imported into the country are excluded from pricing regulations because of not using of financial resources.

Petrochemical projects under-implementation in Iran

No.	Project	Executive Name	Location	Product	Capacity 1000 T/Y	% Actual progress
1	11th Olefin (Phase 2 of Kavian)	Kavian Petrochemical Co.	Assaluyeh	Ethylene, C ₃ ⁺	1090	99.5
2	Lorestan HDPE/LLDPE	Lorestan Petrochemical Co.	Khoramabad	HDPE/LLDPE, Butene-1	330	98.2
3	PBR/SBR	Takht-e-Jamshid Petrochemical Industries Co.	Mahshahr	PBR, SBR	48	97.6
4	Isocyanates - Phase 2	Karoon Petrochemical Co.	Mahshahr	MDI, HCL	116	96.7
5	Assaluyeh Centralized Utility Expansion	Damavand Petrochemical Co.	Assaluyeh	Electricity Steam Oxygen Nitrogen Instrument air Service air Fresh water Demineralized water Cooling water Drinking water Service water	1,900 MW 1,900 T/H 900 T/H 70,000 NM ³ /H 31,000 NM ³ /H 20,000 NM ³ /H 5,000 M ³ /H 37,000 M ³ /H 80,000 M ³ /H 1500 M ³ /H 250 M ³ /H	95/2 (phase 1 of power plant)
6	Hamedan PVC	Hegmataneh Petrochemical Industry Co.	Hamedan	PVC (Medical grade)	48	94.1
7	7th Ammonia/Urea (Shohadaye Marvdasht)	Petrochemical Industries Development Management Co.	Shiraz	Ammonia, Urea	1,755	92.1
8	Assaluyeh Ethylene Glycol	Morvarid Petrochemical Co.	Assaluyeh	MEG, DEG, TEG	554	91.5
9	Mahabad HDPE/LLDPE	Mahabad Petrochemical Co.	Mahabad	HDPE/LLDPE, Butene-1	330	91.3
10	Kordestan LDPE	Kordestan Petrochemical Co.	Sanandaj	LDPE	300	85.3
11	West Ethylene Pipeline	Petrochemical Industries Development Management Co.	Assaluyeh-Tabriz	Pipeline	-	77.6
12	Pardis Ammonia/Urea -Phase 3	Pardis Petrochemical	Assaluyeh	Ammonia, Urea	1,755	72.5
13	EPS (Styrene Park)	Dalahoo Kimiya Sanayeh Co.	Assaluyeh	EPS	120	72/2 (Phase 1)
14	10th Methanol	Kaveh Methanol Co.	Dayyer	Methanol	2,310	69.3
15	Polystyrene (Styrene Park)	Entekhab Industrial Group	Assaluyeh	Polystyrene	250	62.4
16	13th Olefin (Olefin unit)	Ilam Petrochemical Co.	Ilam	Ethylene, Propylene C ₄ Cut, P.G, Liquid fuel	822	58.9
17	Assaluyeh Infrastructure Projects	Petrochemical Industries Development Management Co.	Assaluyeh	-	-	-
18	11th Ammonia/Urea	Lordegan Urea Fertilizer Co.	Lordegan	Ammonia, Urea	1,755	32.4
19	8th Olefin	Gachsaran Petrochemical Co.	Gachsaran	Ethylene, C ₃ ⁺	1,090	32.3
20	7th Methanol	Marjan Petrochemical Co.	Assaluyeh	Methanol	1,650	24.4
21	Central Ethane/Ethylene Pipeline	Gharargah Khatamolanbiya	Fars	Ethane/Ethylene transfer in Fars province	-	23
22	10th Ammonia/Urea	Zanjan Petrochemical Industry Co.	Zanjan	Ammonia, Urea	1,755	21.8
23	15th Methanol	Siraf Energy Petrochemical Co.	Dayyer	Methanol	1,650	18.6
24	8th Methanol	Sabalan Petrochemical Co.	Assaluyeh	Methanol	1,650	17.7

Petrochemical projects under-implementation in Iran (Cont.)

No.	Project	Executive Name	Location	Product	Capacity 1000 T/Y	% Actual progress
25	9th Methanol	Dena Petrochemical Co.	Assaluyeh	Methanol	1,650	17.6
26	14th Ammonia/Urea	Hengam Petrochemical Co.	Assaluyeh	Ammonia, Urea	1,800	16.2
27	14th Methanol	Arman Methanol Co.	Assaluyeh	Methanol	1,650	15.7
28	12th Ammonia/Urea	Golestan Petrochemical Industry Co.	Golestan	Ammonia, Urea	1,755	15.3
29	Maleic Anhydride (MAH)	Modabberan Shimi Co.	Mahshahr	Maleic anhydride, Fumaric acid, Unsaturated polyester Resins	39	14.5
30	16th Olefin/Methanol	Bushehr Petrochemical Co.	Assaluyeh	Ethane, Sulfur, Ethylene Methanol, Ethylene glycols, HDPE/LLDPE, C ₃ ⁺ , C ₃ /C ₄ , Acetic acid	5,098	14.4
31	Darab HDPE	Darab Petrochemical Co.	Darab	HDPE	300	13.9
32	Jahrom HDPE/LLDPE	Jahrom Petrochemical Co.	Jahrom	HD/LLD	300	13.9
33	PDH/PP	Mehr Petrokimiya Co.	Assaluyeh	Propylene, Polypropylene	900	13.8
34	Fasa LDPE	Fasa Petrochemical Co.	Fasa	LDPE	300	13.7
35	ESBR (Styrene Park)	Assaluyeh Sadaf Chemical Co.	Assaluyeh	ESBR	100	13.5
36	14th Olefin	Firouzabad Petrochemical Co.	Firouzabad	Ethylene, C ₃ ⁺	1,090	13.4
37	ABS SBS/SB/LCBR	Jam Petrochemical Co.	Assaluyeh	ABS SBS, SB,LCBR	200 60	13.1
38	Ethylene Glycol	Pars Phenol Co.	Assaluyeh	Ethylene glycols	554	13
39	11th Methanol	Veniran Apadana Petrochemical Co.	Assaluyeh	Methanol	1,650	12.3
40	PDH	Salman-e-Farsi Petrochemical Co.	Mahshahr	Propylene	450	12.2
41	Assaluyeh Centralized Storage Tanks	Assaluyeh Green Tank Farm Petrochemical Co.	Assaluyeh	-	-	11.7
42	12th Methanol	Middle East Kimiya Pars Co.	Assaluyeh	Methanol	1,650	11.3
43	1st Ammonia/Methanol	Arg Shimi Parsa Co.	Assaluyeh	Methanol, Ammonia	1,290	11
44	2nd Ammonia/Methanol	Lavan Industry Expansion Co.	Assaluyeh	Methanol, Ammonia	1,290	10.1
45	Khomein PP	Di Arya Polymer Co.	Khomein	Polypropylene	300	10
46	17th Olefin	Sepehr Dehloran Petrochemical Industries Co.	Dehloran	Ethylene, Propylene P.G, Liquid fuel, HDPE	960	7
47	9th Ammonia/Urea	Masjid Soleiman Petrochemical Co.	Masjid Soleiman	Ammonia, Urea	1,755	6.4
48	Andimeshk LDPE	Andimeshk Petrochemical Co.	Andimeshk	LDPE	300	6.1
49	Mamasani HDPE	Mamasani Petrochemical Co.	Mamasani	HDPE	300	6.1
50	Dehdasht HDPE	Dehdasht Petrochemical Co.	Dehdasht	HDPE	300	5.3
51	Broujen HDPE	Broujen Petrochemical Co.	Broujen	HDPE	300	5

Petrochemical projects under-implementation in Iran (Cont.)

No.	Project	Executive Name	Location	Product	Capacity 1000 T/Y	% Actual progress
52	15th Ammonia/Urea	Ardabil Petochemical Co.	Ardabil	Ammonia, Urea	1,755	5
53	13th Ammonia/Urea	Hormoz Urea Fertilizer Co.	Assaluyeh	Ammonia, Urea	1,755	2
54	Kazerun HDPE/LLDPE	Kazerun Petrochemical Co.	Kazerun	HDPE/LLDPE	300	1.9
	Nodan Polyacetal		Nodan	Polyacetal	20	-
55	15th Olefin/ Ethylene Glycol	Genaveh-Dashtestan Petrochemical Co.	Genaveh/ Dashtestan	Ethylene, Ethylene glycols, C ₃ + Cut	1,099	1.2
56	13th Methanol	Di Polymer Aryan Petrochemical Co.	Assaluyeh	Methanol	1,650	-
57	12th Olefin	Kian Petrochemical Co.	Assaluyeh	Ethylene, Propylene, C ₄ Cut, Liquid fuel, Heavy ends, Benzene, P-xylene, O-xylene, Aromatics, Ethyl benzene, Styrene, Linear alpha-Olefin, Propylene oxide, Butadiene, Rafinate	5,567	-
58	Miandoab HDPE	Miandoab Petrochemical Co.	Miandoab	HDPE	140	-
59	Hamedan Ethoxylates	Ibn-e Sina Hamedan Petrochemical Co.	Hamedan	EO, EG, Ethoxylates Glycol ether, MEA/AMDEA	266	-
60	8th Ammonia/Urea	Lavan Petrochemical Co.	Assaluyeh	Ammonia, Urea	1,755	-
61	Acrylonitrile	Arg Petrochemical Co.	Mahshahr	Acrylonitrile, Acetonitrile, Ammonium sulfate, Hydrogen cyanide	126	-
62	Acrylates	Ofogh Polymer Co.	Mahshahr	Acrylic acid, Propylene, Oxo alcohol, Esters acrylate, Super absorbent polymers	395	-
63	MAH/BDO/PBT	Ibn-e-Sina PetroKimiya Co.	Mahshahr	Maleic anhydride, Butanediol, PBT, Tetrahydrofuran	319	-
64	Pentaerythritol	Shahid Rasouli Petrochemical Co.	Mahshahr	Acetaldehyde, Pentaerythritol, Di pentaerythritol, Sodium formate	29	-
65	EPS	Petro Ramsheh Co.	Esfahan	EPS	50	-
66	PP	Kron Co.	Ilam	PP	100	-
67	EVA	Under Study	Estahban	EVA	100	-
Total					61,145	

New investment opportunities in petrochemical industry in Iran

No.	Project	Product	Capacity 1000 T/Y	Main feed		Estimated investment	
				Type	1000 T/Y	Million USD	Billion RIs.
1	Ammonia/Urea (Kermanshah Petrochemical Industries)	Ammonia	396	Methane	1.6 MM3/D	346	2,100
		Urea	660				
		Total	1,056				
2	Ammonia/Urea (Naft & Gaz Razavi)	Ammonia	680	Methane	2.6 MM3/D	597	2,553
		Urea	1,075				
		Total	1,755				
3	Ammonia/Urea	Ammonia	680	Methane	2.6 MM3/D	597	2,553
		Urea	1,075				
		Total	1,755				
4	Olefin	Ethylene	500	Eethane	650	404	3,916
		C ₃ ⁺ Cut	47				
		Total	547				
5	Cyclar	Benzene	635	Methane	3.3 MM3/D	552	4,600
		Toluene	106				
		Mix - xylenes	57	LPG	380		
		Heavy aromatics	202				
Total	1,000						
6	OCM	Ethylene	1,300	Methane	15 MM3/D	1,089	10,530
		Ethane	273				
		LPG	288				
		C ₅ ⁺	1,082	Oxygen	2,681		
Total	2,943						
7	Olefin-Aromatic	P-xylene	796	Naphtha	2,000	1,843	24,914
		O-xylene	97				
		Phthalic anhydride	100				
		Benzene	382				
		Styrene	750				
		LPG	82				
		Heavy aromatics	32				
		Raffinate	344	Ethane	1,100		
		Ethylene	1,000				
		Propylene	75				
		C ₄ Cut	32				
		P.G	65				
		Liquid fuel	5				
		Total	3,760				
8	Olefin- Aromatic	P-xylene	796	Naphtha	2,000	1,843	24,914
		O-xylene	97				
		Phthalic anhydride	100				
		Benzene	382				
		Styrene	750				
		LPG	82				
		Heavy aromatics	32				
		Raffinate	344	Ethane	1,100		
		Ethylene	1,000				
		Propylene	75				
		C ₄ Cut	32				
		P.G	65				
		Liquid fuel	5				
		Total	3,760				
9	PDH/PP	Propylene	500	Propane	610	663	5,292
		Polypropylene	500				
		Total	1,000				
10	PDH/PP	Propylene	450	Propane	540	498	7,390
		Polypropylene	450				
		Total	900				

New investment opportunities in petrochemical industry in Iran (Cont.)

No.	Project	Product	Capacity 1000 T/Y	Main feed		Estimated investment	
				Type	1000 T/Y	Million USD	Billion Rls.
11	1st GTPP (Fateh Sanat Kimiya)	Methanol	1,650	Methane	5.8 MM3/D	1,149	9,861
		Propylene	514				
		Polypropylene	500				
		P.G	125				
		LPG	69				
		Total	2,858				
12	2nd GTPP	Methanol	1,650	Methane	5.8 MM3/D	1,149	9,861
		Propylene	514				
		Polypropylene	500				
		P.G	125				
		LPG	69				
		Total	2,858				
13	3rd GTPP	Methanol	1,650	Methane	5.8 MM3/D	1,149	9,861
		Propylene	514				
		Polypropylene	500				
		P.G	125				
		LPG	69				
		Total	2,858				
14	4th GTPP	Methanol	1,650	Methane	5.8 MM3/D	1,149	9,861
		Propylene	514				
		Polypropylene	500				
		P.G	125				
		LPG	69				
		Total	2,858				
15	5th GTPP	Methanol	1,650	Methane	5.8 MM3/D	1,149	9,861
		Propylene	514				
		Polypropylene	500				
		P.G	125				
		LPG	69				
		Total	2,858				
16	1st GTPX (Kimiyaaran Sabzevar)	Methanol	660	Methane	2.6 MM3/D	420	6,315
		Propylene	120				
		2 EH	56				
		P.G	48				
		LPG	18				
		Total	902				
17	2nd GTPX	Methanol	1,650	Methane	7.3 MM3/D	1,465	9,265
		Propylene	515				
		Polypropylene	300				
		2 EH	20				
		N-butanol	60				
		Acrylate	40				
		Acrylic acid	200				
		Isopropanol	60				
		P.G	125				
		LPG	69				
		Total	3,039				
		18	3rd GTPX				
Propylene	515			Ethylene- oxide	18		
Polyol	180						
Propylene oxide	200						
Propylene glycol	60			Ammonia	144		
Acrylonitril	325						
Hydrogen peroxide	440						
P.G	125			Sulfuric- acid	33		
LPG	69						
Total	3,564						

New investment opportunities in petrochemical industry in Iran (Cont.)

No.	Project	Product	Capacity 1000 T/Y	Main feed		Estimated investment	
				Type	1000 T/Y	Million USD	Billion RIs.
19	1st GTO	Methanol	1,800	Methane	5.8 MM3/D	1,758	6,133
		Propylene	300				
		Ethylene	300				
		Polypropylene	290				
		Polyethylene	300				
		C ₄ Cut	105				
Total	3,095						
20	2nd GTO	Methanol	1,800	Methane	5.8 MM3/D	1,758	6,133
		Propylene	300				
		Ethylene	300				
		Polypropylene	290				
		Polyethylene	300				
		C ₄ Cut	105				
Total	3,095						
21	EPDM	EPDM	45	Ethylene	29	139	1,333
		Total	45	Propylene	15		
22	2nd Engineering Polymers	Phenol	250	Benzene	227	912	8,234
		Acetone	154				
		Bis phenol A	200				
		Epoxy resin	60	Propylene	128		
		Polycarbonate	150				
Total	814						
23	3rd PTA/PET	PTA	1,000	P-Xylene	660	1,226	6,900
		PET(Bottle grade)	1,000	MEG	350		
		Total	2,000				
24	MMA/PMMA	Formaldehyde	240	Methanol	200	614	11,935
		MMA	250				
		PMMA	30				
		Total	520				
25	MTP/PP	Propylene	514	Methanol	1,650	478	7,300
		Polypropylene	500				
		P.G	125				
		LPG	69				
		Total	1,208				
26	Butadiene/ Styrene Derivatives	PBR	60	Styrene	366	649	6,714
		ABS	200				
		PS	250				
		Total	510				
27	Benzene Chain	Cyclohexane	150	Benzene	140	366	5,151
		Caprolactam	70	Ammonia	56		
		Adipic acid	70	Sulfuric acid	52		
		Ammonium sulfate	166				
		Total	456				
28	Methanol Chain (Petro Olefin Fanavaran Co.)	Methanol	1650	methane	5.3 MM3/D	1,382	9,876
		Propylene	120				
		2 EH	150				
		DME	800				
		P.G	29	ethylene	58		
		LPG	16				
		Acetic acid	300				
		VAM	160				
Total	3225						

New investment opportunities in petrochemical industry in Iran (Cont.)

No.	Project	Product	Capacity 1000 T/Y	Main feed		Estimated investment	
				Type	1000 T/Y	Million USD	Billion RIs.
29	Butane Chain (Romak Energy)	Iso Butane	90	Butane	225	483	2,030
		N-Butane	120				
		Isobutane/Isobutylene	16				
		Iso Butylene	60				
		PolyIsoButylene	30				
		Butadiene	70				
Total	386						
30	Acrylonitril	Acrylonitril	200	Propane	340	310	2,558
		Total	200	Ammonia	117		
31	Polyol/ Propylene glycol	Polyether/polyol	200	Propylene oxide	183	125	1,440
		Propylene glycol	57				
		Total	257				
32	Methanol/Ammonia	Methanol	1,000	Methane	3.1 MM3/D	336	1,101
		Ammonia	300				
		Total	1,300				
33	DME/Methanol	Methanol	1,650	Methane	5.8 MM3/D	665	2,080
		DME	1,150				
		Total	2,800				
34	MEG	MEG	500	Ethylene	339	411	890
		DEG	50				
		TEG	5				
		Total	555				
35	MTP/ACN/Acrylic acid/ Acrylic ester	Propylene	514	Methanol	1,650	1,404	14,072
		Acrylonitril	300				
		Acrylic acid	100				
		Acrylic ester	80				
		P.G	125				
		LPG	69				
		Total	1,188				
36	VAM/EVA/PVOH	VAM	160	Ethylene	150	632	5,625
		EVA	100				
		PVOH	20				
		Total	280				
Total			62,205			31,441	263,498



Corporate Social Responsibility



Since its foundation, NPC has made great strides in its strive for sustainability. These steps have focused on areas including, but not limited to, environment protection, humanitarian aid and assistance, economic development, training, education and research work, health, safety and environment (HSE) activities, physical health and psychological well-being as well as local and national support in the field of Corporate Social Responsibility (CSR). In 2014, NPC's CSR policy-setting council was appointed by NPC president to steer and administer the company's overall CSR goals including the followings:

- To promote the CSR culture in Iran's petrochemical industry
- To help disseminate CSR knowledge and practices
- To document and share the CSR experiences of petrochemical companies
- To institutionalize the Global Reporting Initiative (GRI) in compliance with international guidelines and standards in petrochemical industry
- To win the support of state institutions to encourage participation in the indigenization of international CSR standards
- To assist interaction and coordination among the respective and related companies and organizations to implement their CSR programs and initiatives
- To design and to execute the Iranian petrochemical companies' CSR evaluation system

NPC held its first international conference on Corporate Social Responsibility in petrochemical industry on 20-21 January 2015 in Tehran. Attendees included senior government officials, private sector executives, foreign guests as well as experts and academicians during which 27 papers were presented.

Companies from the petrochemical sector have been at the center of CSR development. With increasing emphasis placed on business, one needs to ask if CSR is able to fulfill these larger expectations. The 'CSR in Petrochemical Industry Conference' sought to explore and share new emerging trends in CSR and the feasibility of applying 'best practices' in the Iranian context.

The highlights of the conference included:

- Concept, literature and importance of CSR
- CSR and sustainable development in petrochemical industry
- CSR in Iran and the world
- Sharing global and national successful experiences in CSR
- Private, governmental sectors and NGOs' discourse in implementing CSR
- CSR dimensions (economics, ethics, legal, ecological, environmental and philanthropy)
- CSR challenges in Iran
- Defining applicable solutions to set and implement CSR strategies in Iran petrochemical industry

NPC has pledged to publish the industry's CSR practices and initiatives from 2016.

Health, Safety and Environment (HSE) Management



Occupational Health Performance 2014

Industrial hygiene

More than 100 industrial hygiene engineers are employed in petrochemical complexes nationwide. These engineers identify occupational health hazards including toxic materials, chemicals, noise, radiation pollution and heat stress which are taken into account through the health risk assessment process. Other industrial hygiene activities in 2014 were as follows:

- Celebration of health week in petrochemical industries for promoting the health culture between employees and their families.
- Updating the NPC's health requirements.
- Development of 3 industrial hygiene requirements in petrochemical industries.
- Auditing the industrial hygiene, environmental hygiene and nutrition programs in petrochemical complexes based on NPC occupational hygiene requirement.
- Performing several noise, lighting conditions and chemical exposure mapping activities .
- Implementing and supporting several research projects related to industrial hygiene.
- Offering training courses for the managers of industrial hygiene and nutrition sections.
- Development of health festival procedure.

Environmental hygiene

NPC environmental hygiene inspectors conduct periodic inspections to verify compliance with the company's comprehensive health standards for food and accommodation services. In 2014, inspectors took 1,550 chemical and 2,800 microbiological samples of drinking water for controlling the drinking water quality.

Periodic workplace health examination

New employees are screened medically before employment and in order to keep them healthy at workplace, regular medical examinations are compulsory for all staff.

In the years 2012 and 2014, periodic health examinations were performed for 89 percent of the workers.

Year	Approved *	Work related restrictions*	Disapproved
2012	97.4	2.5	0.1
2014	96.8	3.1	0.1

Data from annual workplace health examinations

*Percentage of workers who were approved, disapproved or who had work-related restrictions in accordance with the periodic health examinations.

Statistics of work related diseases

The table below shows a comparative overview of all identified cases of work related diseases in 2012 and 2014.

Work related diseases	Cases in 2012	Cases in 2014
Noise Induced Hearing Loss (NIHL)	142	112
Occupational Asthma	0	4
Contact Dermatitis	1	0
Carpal tunnel syndrome	0	1
Lumbar Disc Disease	5	12
Occupational cancer	0	0
Total	148	129

Health performance

The key performance indicators for occupational health are Total Reportable Occupational Illness Frequency (TROIF) which is defined as sum of all occupational illnesses per million working hours and Total Lost Time Occupational Illness Frequency (TLTOIF). The table below shows trend of these two indices during the year of 2012 and 2014.

Indices	2012	2014
TROIF	3.1	3.4
TLTOIF	0.1	0.12

Health promotion

Several awareness training programs were conducted concerning the heat stress, noise, stress management, respirator seal check, hearing protection, ergonomics, shift work, health, musculoskeletal disorders, chemical hygiene, etc. for all NPC staff and contractors.

Health facilities

Extensive health facilities and hospital services have been provided for all NPC staff and their families to help ensure a healthy and productive workforce.

Also there are a number of clinics in petrochemical complexes that provide basic medical services for the workforce including preliminary and periodic health examinations.

Performance of safety management department

- Editing and issuing the safety and fire fighting requirements for petrochemical industries (in 4 Volume).
- Preparing and issuing the PTW new guideline for petrochemical industries.
- Executing safety assessment for maintenance contractors in petrochemical industry, based on OGP report 423.
- Collecting and preparing the basic safety design requirements for petrochemical projects and plants (12 Docs. in 3 volumes).
- Establishing the fire fighting training centers in Mahshahr and Assaluyeh zones.
- Planning for the 3rd petrochemical industries fire fighters olympiad.
- Continuous monitoring for West Ethylene Pipeline safety situation.
- Conducting PSSR for Ilam, Lorestan, Mahabad and Hamedan petrochemical plants.
- Conducting PSM overseas training program for managers and senior experts.
- Offering consulting services for Khorasan, Ilam and Bakhtar petrochemical plants in the field of HSE organization planning.
- Conducting safety compliance audits for petrochemical projects (Marjan, Bushehr, Takhtejamshid, Assaluyeh Tank Farm 2 and ...)
- Designing, planning and conducting the first overall chemical real case emergency drill in Assaluyeh zone
- Reviewing and commenting on the petrochemical projects, hazop study (Butane transfer line, Jam, ASPC propane transfer line, Mashhad storage facilities, Kavian propylene line, Morvarid oxygen line, ...)
- Reviewing petrochemical projects' drawings, designing docs and technical issues, from the safety point of view (Morvarid, Styren Park, Entekhab, Sadaf, Dalahoo, Lavan Projects)
- Conducting safety audit for administration, building, based on life safety code and issuing safety requirements in petrochemical industry.
- Visiting and conducting audit on six petrochemical plants cyber system in order to identify infrastructure weak point.

- Conducting sitting study for Chabahar, Iranshahr and Qeshm petrochemical zone, from the passive defense point of view.
- Planning and holding seminars on “failure case in industrial and non-industrial networks against cyber threats”.
- Book demonstration for “immunizing industrial and non-industrial networks in cyber”.
- Planning and conducting special safety and fire training programs in Mahshahr and Assaluyeh zone.
- Active contribution to the national chemical defense document.
- Issuing ICT regulation in case of cyber threats defense.

Environmental consequences

We are working to reduce the environmental impacts of our operations.

■ Reduction of discharge

Petrochemical industries use a lot of water which results in vast amounts of wastewater. Treatment of polluted water is one of our priorities.

The status of wastewater production, reuse, and disposal in our complexes is shown in Table 1.

Table 1: Status of wastewater production and relevant management in the year 2014

Reuse or discharge of treated wastewater; m ³ /Y	Treated wastewater, m ³ /Y		Produced wastewater, m ³ /Y	
	Industrial	Sanitary	Industrial	Sanitary
Irrigation of green area or recycle to process; 6,243,530				
Discharge to surface water; 24,738,000	18,782,000	5,310,000	32,984,500	5,428,730
Discharge to the sea; 4,628,000				
Evaporation in ponds; 2,803,700				

■ Air pollutant emission

The amount of gas emissions from all complexes throughout all phases of lifecycle was in accordance with the expectation. These emissions were measured and monitored regularly.

Emissions of air pollutants into the atmosphere were within the standard ranges. The release volume of each type of gas emission is shown in Table 2.

Table 2: Emitted gases from petrochemical complexes in the year 2014

Gas emission	CO	SO ₂	NO _x	PM
Amount, tons/Y	12,458	80	25,311	1,018

■ GHG emission

The production and treatment of oil and natural gas are energy intensive operations. Therefore, managing CO₂ and the other Greenhouse Gases (GHGs) produced by our facilities is a top priority. It is our goal to substantially reduce the industry's GHG emissions. The release volume of GHGS emission is shown in Table 3.

Table 3: Emitted GHGS from petrochemical complexes in the year 2014

GHG _s	CO ₂	CH ₄	N ₂ O
Emission rate (tons/Y)	15,985,727	306.3	247

■ Waste management

About 119,617 tons of different solid wastes were produced during the year 2014, 19.52% of which was hazardous. These wastes were managed in accordance with their types and disposal technical issues, as shown in table 4.

Table4. Status of waste management

	Hazardous wastes	Industrial wastes	Other wastes	Total
Amount, ton	23352.90	81789.10	14474.92	119616.92
Percent, %	19.52	68.38	12.10	100

■ Energy saving

The National Petrochemical Company monitors the energy consumption in petrochemical production plants through review and survey of energy consumption trends and regular walkthrough energy audits. Specific Energy Consumption (SEC) criteria and standard for most important and energy intensive production processes as well as polymer process was set. The study for energy standard setting for utility centers will be performed in cooperation with Iranian Fuel Conservation Company (IFCO).

■ Green space area

We expanded our green areas from 1,843.50 hectare at the end of 2012 to 1,847 hectare at the end of 2014. The national environmental standard for green area development is 10% of the total industrial area, whereas by the end of 2014 our green area reached a total of 55.05 percent.

Training activities

In addition to specific training programs conducted in each production and under construction plants, HSE offered general and special training courses for petrochemical industries. The following table shows the level of training activities in four categories (Health, safety, environment and passive defense & crises management) for producing and under construction plants.

Table 5. Training activity indicators in 2012 and 2014.

Training index	2012		2014	
	Man-hrs	% of employees	Man-hrs	% of employees
Official staff	509,200	27.5	507,400	27.4
Contractor employees	545,000	12.5	541,000	12.7
Overseas training	2,164	-	1,040	-
Total	1,056,364	-	1,049,440	-



Manpower & Training



The major duties of NPC human resources training & skilling department has drastically changed into the following activities due to the fundamental changes of NPC roles and policies as a governance company after substantial privatization of its physical assets.

- Updating top management with the latest developments and practices in corporate management such as systematic thinking, business, etc.
- Defining and conducting more virtual training courses for NPC personnel.
- Planning and organizing HSE training courses.
- Active and effective participation in preparation of the procedure for defining NPC roles and responsibilities as a governance company.
- Dynamic contribution to preparation of HR development plan for oil, gas, refining and petrochemical sectors, under the general guidelines of the Ministry of Petroleum.
- Pursuing live practices of cyber training and relevant activities.
- Providing the plan for improving “Staff’s Assessment System”.
- Cooperating with the task force of “Managers Immediate Training Plan” in Iran’s oil industry.
- Investigating the status of frozen staff and providing solutions.
- Designing the “Assessment System” for appropriate evaluation of the staff’s performance.
- Identifying staff’s training requirements.
- Approving staff’s appointments promotions.



Petrochemical Downstream Industries Development Office

Possessing the world's second largest hydrocarbon reserves, together with formulating plans to produce 120 million ton/year of petrochemicals, Iran offers potential investors an excellent opportunity for contributing to the further growth and development of its petrochemical industry, especially its downstream sector. There are currently over 20,000 companies and businesses active in the sector in Iran.

The availability of highly-educated and inexpensive workforce as well as access to a market of about 500 million people in the region, make the opportunity even more attractive and promising.

In a nutshell, the Iranian petrochemical industry' advantages include:

- Availability of feedstock
- An ever-growing domestic market of about 80 million people
- Access to the neighboring markets in the Middle East and CIS countries
- Availability of well-educated and highly-trained workforce

Downstream petrochemical plants have low-investment costs compared to the upstream facilities and they need a shorter period of time for the return of investment. High-yield investments include plastics, rubbers, tires, resins, paints, cosmetics, fertilizers, pesticides and solvents industries.

Iran's downstream petrochemical industries have the following requirements:

- High-tech technologies
- Investment for developing new projects
- Entering into international markets by using the brands of well-known foreign companies
- Completion of value-chain in downstream petrochemical sector

Iran's petrochemical production capacity (upstream and intermediate) has increased by 20 times from 3 million t/y in 1978 to 60 million t/y in 2014. It is currently producing a widely diversified range of petrochemicals including polyethylenes, polypropylenes, PVC, polystyrenes, Acrylonitrile Butadiene Styrene (ABS), polycarbonate, xylenes, styrene and Styrene Butadiene Rubber (SBR), out of which over 4 million tons are presently used in domestic plastic industry.

Thanks to Iran's geographical location and its easy access to regional markets as well as its growing ties with these countries, have given rise to an ideal opportunity for entering into the target markets of these countries. In 2014, for instance, neighboring Iraq and Afghanistan alone imported over \$1.3bn and \$77mn worth of various plastic products from Iran.

Subsidiary Companies

- Petrochemical Research and Technology Company (NPC-RT)
- Petrochemical Special Economic Zone (PSEZ)
- Damavand Petrochemical Company (DMPC)

Petrochemical Research and Technology Company (NPC-RT)

Petrochemical Research and Technology Company is in charge of research and technology management in petrochemical industries.

Under “the 20-year Vision Plan” and in compliance with the objectives of petrochemical industry in Iran, the mission of Petrochemical Research and Technology Company is to become a pioneering international centre in developing and trading technologies including:

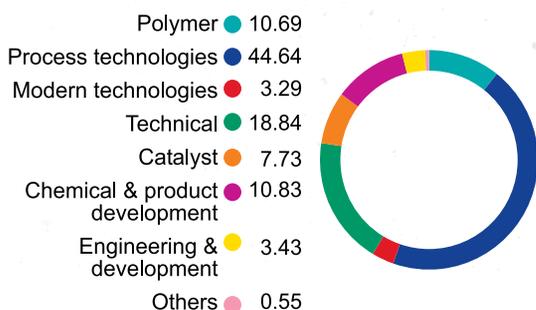
- Polymers
- Catalysts required by petrochemical industries
- Chemical processes and products
- Modern technologies

This company comprises central headquarters and three research and technology centers in Tehran, Arak and Mahshahr. The executive macrostructure of Petrochemical Research and Technology Company has been codified so that the headquarters are in charge of policymaking, planning, supporting and supervision of all research activities in petrochemical industries and Tehran research centre is active in the field of fundamental and applied research, whereas Arak and Mahshahr centers are responsible for converting the conducted research into technology.

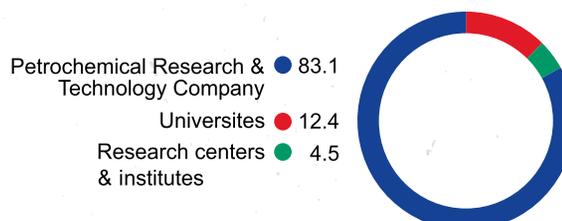
Each centre, based on its own mission, has been equipped with research and technological infrastructure such as state-of-the-art laboratory , pilot facilities and equipment. On the other hand, research centers of petrochemical complexes, in coordination with Petrochemical Research and Technology Company, has formed an extensive network of research and technology development in the whole petrochemical industries, which is active in resolving production problems and updating know-how and technology of the production units.

Break-down of completed research projects, as well as financial performances in 2014 are shown in the below figures:

Budget allocated to research projects in 2014



Research projects executed in 2014



Achievements

Staffed with young and experienced experts, NPC-RT in addition to developing technologies required by petrochemical industry in line with existing planned strategies, is compiling the future strategies, keeping pace with the global market changes. As a result, in recent years, having completed the idea-to-product cycle, outstanding research achievements have been acquired, followed by valuable technologies and know-how due to prominent attention paid to research and technology in the structure of the company. Regarding the importance of these achievements for domestic consumption market; not only is the commercialization necessary, but it sounds advisable to have an eye on promoting and exporting them, based on the regional requirements.

Some of the most important achievements are as follows:

- **PVM know-how:** One of the most important developed technologies is the production process of Propylene Via Methanol (PVM). In this regard commissioning of PVM production pilot plant has been carried out for the first time in the world, followed by acquisition and commercialization of PVM know-how, in cooperation with Lurgi Company.
- **HDPE know-how:** With respect to rapid growth of domestic capability and development of know-how in HDPE production catalyst, NPC-RT is intending as a pioneer to offer industrial scale production know-how of this valuable product by preparing the Process Design Package (PDP). In this regard, commissioning of HDPE pilot plant in Arak centre, in addition to design validation, has brought in invaluable experience to the company assets and granted the experts the capability of implementing the industrial scale projects.
- **Indigenizing Ziegler-Natta catalyst** for polyethylene and polypropylene production
- **Olefin know-how:** NPC-RT in cooperation with a team of industrial experts, scientific hubs and academic centers is active in key fields such as industrial problem solving, energy optimization, high purity products, alternative feed, lower equipment cost, process optimization, advanced controlling, lower capital cost, etc. in olefin plants. Cracking process and olefin production know-how have been formulated.
- **Ammonia process know-how:** In cooperation with HED Co., NPC-RT succeeded in achieving ammonia production process know-how for the first time in Iran, breaking up the monopoly held by foreign companies.
- **Amine recycling process know-how**
- **The know-how propylene production process in MTBE plant.**
- **The know-how of oxychlorination catalyst production process** by which this catalyst has been produced in a domestic company and utilized in EDC unit of BIPC. This catalyst, in the presence of chlorine, converts ethylene into ethylene di chloride which is the feed for PVC plants.
- **Ziegler-Natta catalyst:** Following the indigenizing the production know-how of this catalyst through a great



deal of efforts made by researchers and experts of NPC-RT, innovated Ziegler-Natta catalyst (undergone some changes) has been successfully produced in catalyst production pilot plant known as AZD. This catalyst can be an appropriate replacement for the imported Ziegler-Natta catalyst known as THS.

- **Methane Dry reforming catalyst** production in order to avoid shut-down in Khozestan Petrochemical Company., This catalyst, takes the advantage of better conversion and residual methane in comparison with foreign made one.
- **The know-how of dehydrogenation catalyst** production process for BIPC Company: NPC-RT , has developed platinum based catalysts for paraffin dehydrogenation. The advantage of platinum as an active component of dehydrogenation catalyst is its capability to dehydrogenate light and heavy paraffins. Subsequent to a few changes, this catalyst can be used in other processes such as : oxidation dehydrogenation of catalyst reforming.
- **Establishing the first pioneering membrane technology centre** in the Middle East, including flat membrane, reverse osmosis, pervaporation, chloralkaly electrolysis, gas separation and membrane bioreactor by the researchers in the centre which is a proper match for other research centers in the world.
- **Methanol catalyst production process know-how:** Based on the test results, the quality of this product in terms of lifespan and activity can compete with well-established imported products and in terms of selectivity, it is even superior.
- **Replacement of the catalyst under sanctions in polyethylene unit** of Jam Petrochemical Company to avoid prolonged shut-down in a 45-day period was successfully carried out in an industrial unit with the annual polyethylene capacity of 300000 tons.
- A 500-percent growth in domestic invention patents, in comparison with 2006 patenting 140 domestic inventions.
- A 100-percent growth in international invention patents, being granted patents for 4 international inventions.
- Patenting and commercializing 3 specialist software
- Completion and termination of more than 860 research projects
- Presentation of 580 papers, publication of 15 books and organization of more than 100 seminars.

New approaches of the company

The most important new approaches in three areas of policy making, planning and research and technology include:

- Updating transferred know-how to the petrochemical industries.
- Indigenizing transferred know-how in process and catalyst areas.
- Acquisition of the know-how for future development of petrochemical industry.
- Creating and boosting durable ties with academic and research centers in the country and orientating the activities towards developing future required technologies.
- Establishing and strengthening ties with consulting engineering companies in know-how based technologies.
- Creating proper research and technology infrastructure to take advantage of the elite in the country.
- Generating income for the company, NPC and the country.





Petrochemical Special Economic Zone Organization

The Petrochemical Special Economic Zone Organization, as a subsidiary of the National Petrochemical Company started its activities in 1997, based on the act of the Supreme Council of Free Trade-Industrial & Special Economic Zones. Located on the coast of the Persian Gulf, Petrochemical Special Economic Zone, consists of five sites.

Besides, over 150 companies in three levels of upstream, intermediate and downstream petrochemical industries have been registered in the Zone.

Presently, there are more than 20 producing plants being implemented and some of which are to be put into operation. Petrochemical Special Economic Zone is in an area with over 2600 hectares including sites, fiords and salt basins.

Site 1: This site with an area of about 380 hectares, located in the northern part of the zone, has been allocated to develop intermediate and downstream petrochemical industries. Some parts of this site have been allocated for various functions such as downstream petrochemical industries, chemical industries, electricity and electronics department, building, metal, machinery, laboratory and quality control unit, manufacturing, repairing and maintenance of equipment unit, administrative as well as service units, residential and commercial centers.

Site 2: Covering an area of about 470 hectares, this site was allocated to develop upstream and intermediate petrochemical industries, Fajr petrochemical company No.2, central and subsidiary service production unit and storage site for solids.

Site 3: Covering an area of about 321 hectares this site was allocated to developing upstream petrochemical industries as well as establishing training, research and development center, central unit of repairing and maintenance of petroleum, gas and petrochemical industries and fire department.

Site 4: Covering an area of about 221 hectares this site was allocated to develop upstream and intermediate petrochemical industries and establish Fajr petrochemical company No.1, central and subsidiary service production units. It is worth to mention that salt basins, covering an area of over 174 hectares, comprise a division of Petrochemical Special Economic Zone and extends from petrochemical bridge to the Site No.1 gateway. In addition, Zangi Fiord (with an area of 114 hectares) and Ja'afari Fiord (with an area of 145 hectares) are within the area of the Zone.

Site 5: This site, including the lands of BIPC (Bandar Imam Petrochemical Complex), Farabi Petrochemical Company, Razi Petrochemical Complex, welfare services site, the liquid jetties, also petrochemical bridge, boulevard, covering an area of over 790 hectares, were joined to the Petrochemical Special Economic Zone based on the act of the Supreme Council of Free Trade-Industrial & Special Economic Zones and its executive agreement in Feb. 2010.

Common activities

Due to its authoritative role, the Petrochemical Special Economic Zone Organization obligates itself to create the best conditions and facilities for companies and centers located in this zone. Because of this important responsibility, the organization provides all fundamental needs, including preparing, giving land, city planning, supplying and transferring water, electricity and gas, implementing feed - stock and production lines, developing telecommunication systems and centers, the environmental activities, customs affairs, import and export through available jetties, airport, roads. Additionally, it guards the Zone.

Production, import and export

There are varied industries in the Zone; nevertheless most of the products are produced by petrochemical companies. It is important to mention that during the last year (in 2014); about 16.5 million tons of intermediate and final products were produced by the existing petrochemical companies. Nearly 5 million tons of final products at the value of 4.7 billion dollars were sold in the domestic markets. Besides, 3.3 billion dollars was gained by exporting 4.1 million tons of products.

Systematic and environmental activities

In order to improve the quality of occupational and environmental conditions, Petrochemical Special Economic Zone Organization has been managing various plans as follows:

- To review strategic plans of Petrochemical Special Economic Zone Organization.
- To take necessary actions led to getting much benefit in E.F.Q.M.
- To continue previous activities and to intensify preceding effort with the purpose of keeping and improving quality of standards relating to IMS certificate and renewing it.
- To provide hardware, software and computer networks facilities with the aim of making electronic administration.
- To cooperate extensively with those organizations involved in environmental activities in and out of oil industry. Also to carry out diverse searching, training and executive plans in this field. Moreover, to monitor continuously complexes' functions in effluent purification and hysteresis removal.
- To take constant actions to keep and expand green spaces.

Projects

In order to provide better business conditions in Petrochemical Special Economic Zone, the organization implements various projects. The most significant projects, which have been put into operation in 2014 or will be put into operation soon, are as follows:

- Land subsidence modification in different sites of Petrochemical Special Economic Zone and collecting surface water.
- Implementation of gas distribution metering system (ultrasonic type).

Damavand Petrochemical Company (DMPC)



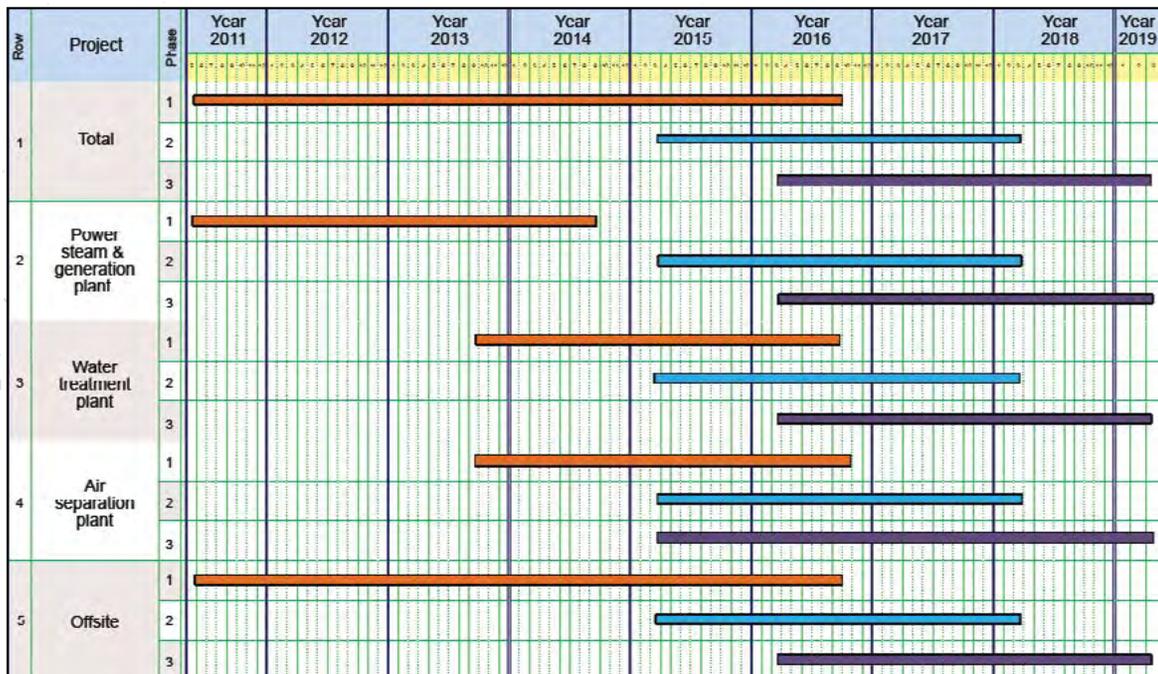
Damavand Petrochemical Company was founded in January 1999, as a subsidiary of National Petrochemical Company (NPC). In 2007, the company mission was set to establish and start up industrial units, in order to produce, market and sell the utilities, including power, industrial water, industrial air, steam and natural gas, based on the execution of the project in three phases.

Scope of the program

Damavand Petrochemical Complex is planned to supply utilities and offsite for Pars Special Economic Energy Zone phase II, located in the south of Iran. The supplied utilities include power, steam, industrial water (i.e. DM water, cooling water, service water, FF water, etc.), oxygen, nitrogen, industrial air and feed & fuel gas, which will be distributed among the plants and complexes, through interconnecting lines.

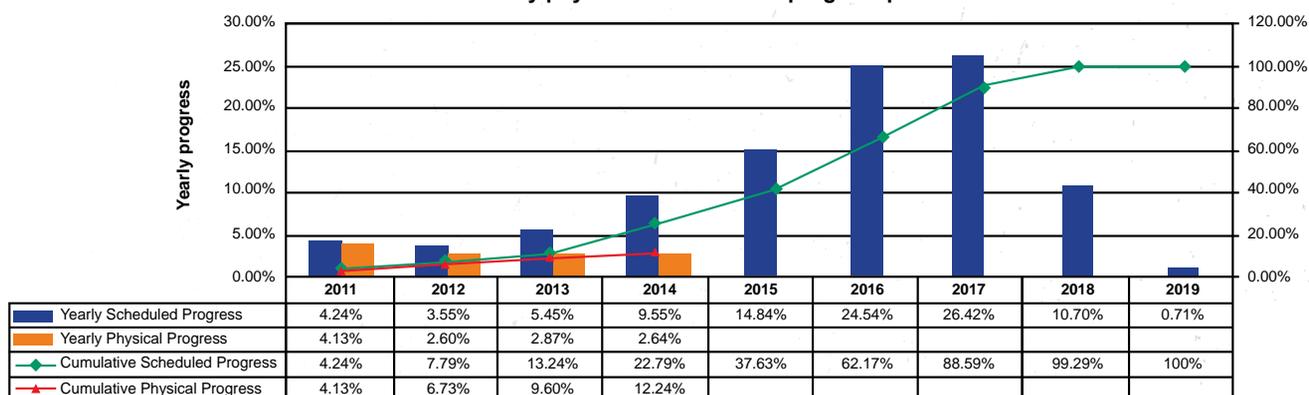
The Main units are follows

- Offsite:** Power and steam generation plant
- Air separation unit:** Water treatment and sea water intake unit
- Waste water treatment plants:** Incineration unit



Physical vs. scheduled progress

Yearly physical vs. scheduled progress profile



Phase	Project	Project weight factor %	Actual
Phase 1	Power & steam generation plant	16.94%	98.25%
	Offsite	37.63%	40.32%
	Water treatment package	9.75%	4.73%
	Sea water intake	2.00%	23.79%
	Air separation unit	27.29%	0.61%
	Waste water treatment plant	3.83%	0.00%
	Incineration plant	2.55%	0.00%
Total		35.57%	32.92%
Phase 2	Power & steam generation plant	41.50%	0.00%
	Offsite	21.89%	6.33%
	Water treatment package	9.63%	0.00%
	Waste water treatment plant	2.75%	0.00%
	Air separation unit	22.38%	0.00%
	Incineration plant	1.84%	0.00%
Total		37.96%	1.39%
Phase 3	Power & steam generation plant	52.14%	0.00%
	Offsite	11.78%	0.022%
	Water treatment package	9.87%	0.00%
	Waste water treatment plant	3.29%	0.00%
	Air separation unit	22.92%	0.00%
Total		26.47%	0.0026%

DMPC overall		
	Project weight factor %	Actual
Engineering	1.37%	20.89%
Procurement	56.84%	17.19%
Construction	35.37%	5.65%
Commissioning	6.06%	2.27%
Training	0.36%	12.95%
Total	100.00%	12.24%



Holding Companies

- Parsian Oil and Gas Development Group
- Pasargad Energy Development Company
- Persian Gulf Petrochemical Industries Company
- Petro Farhang Company
- SATA Investment Company
- Sepehr Energy Company
- Tamin Petroleum & Petrochemical Investment Company

Parsian Oil and Gas Development Group (POGDC)



Parsian Oil and Gas Development Group (public joint-stock) was initially registered under the name of Alvand Ghadir Development Company on 30.07.2007 at the “Companies Registration Office” of Iran. Subsequently, the company’s name was changed to Parsian Oil and Gas Development Co. (private joint-stock) in February 2011. With the aim of developing its activities, the company was renamed Parsian Oil and Gas Development Group (public joint-stock) on 07.12.2011.

The company’s request for admission to Tehran Stock Exchange was processed and approved, and later on its shares were registered on the stock market on 15.02.2012.

At present, Parsian Oil and Gas Development Group owns a registered capital of 30,000 billion Rials.

Scope of activities

For the time being, with the continuous expansion of the holding, its scope of activities is also diversifying in such a way that its subsidiary companies are being involved in a wide range of operations, including production of raw materials, intermediates as well as final products in petrochemical and oil refining fields.

POGDC currently manages the annual production of 2.480 million tons of ammonia, 3.845 million tons of urea, 3.380 million tons of methanol and more than 9.462 million tons of oil refinery products.

Now, POGDC Holding in addition to the production of the strategic petrochemical and oil products as mentioned above has diversified its activities into the fields of energy, oil industry engineering and construction, rail transportation and marketing of petrochemical and oil products in order to bring under its management the entire cycle of the industry from production to marketing and other related activities.

Outlook

To pursue growth and development, in order to become one of the superior investor companies in oil, gas and petrochemical industries in the Middle East with global recognition and credit.

Mission

To invest in oil, gas and petrochemical industries, in order to create the highest added-value for shareholders and achieve sustainable development with priorities set for promoting safety culture and protecting the environment.

Institutional values

- Respecting all laws, current general rules and regulations in the country and observing ethical and social principles of the society.
- Observing all professional and business values, in order to promote professional ethics in the organization.
- Preserving dignity of the personnel, shareholders and customers.
- Safeguarding and promoting shareholders' assets.
- Focusing attention on social responsibilities and participation in improving the infrastructures of the country.

Company	Main products & services	Status
Tabriz Oil Refining Co.	LPG, gasoline, kerosene & fuel oil	*Active
Shiraz Oil Refining Co.	LPG, gasoline, kerosene & fuel oil	*Active
Pardis Petrochemical Co.	Ammonia & urea	*Phases 1&2 active, Phase 3 under construction
Shiraz Petrochemical Co.	Ammonia, urea, nitric acid, Ammonium nitrate, etc.	*Phase 2 ammonia & urea active Phase 3 under construction
Kermanshah Petrochemical Industries Co.	Ammonia & urea	*Active Phase 2 under implementation
Zagros Petrochemical Co.	Methanol & steam	**Active
Pars Petrochemical Co.	Ethane, methane, butane, etc.	Active (outside stock exchange)
Tabriz Petrochemical Co.	Polyethylene, polystyrene, propylene & ABS	Active (outside stock exchange)
Kian Petrochemical Co.	Aromatics, ethylene & related down-streams	At design stage
Khorasan Petrochemical Co.	Ammonia, urea & crystal melamine	**Active
Maroon Petrochemical Co.	C ₂ ⁺ , ethylene, ethylene glycol, polyethylene, etc.	*Active
Amir Kabir Petrochemical Co.	Ethylene, polyethylene, propylene, etc.	*Active
Petrochemical Commercial Co. International	Purchasing, sales, & marketing petrochemical and oil products	Active (outside stock exchange)
Niroo Rail Transportation Co.	Fuel & products transportation	Active (outside stock exchange)
Terminals and Petrochemical Storage Tanks	Fuel & products transportation	Active (outside stock exchange)
Hamoon Sepahan Investment Co.	Investment & portfolio management	Active (outside stock exchange)
Oil Industries Engineering & Construction Co. (OIEC)	Oil industry related engineering & construction	Active (outside stock exchange)

* Registered on Tehran Stock Exchange

** Registered on Fara Bourse Stock Exchange

Projects progress status (%)			
Description	Ammonia unit	Urea unit	Off-site unit
Engineering	93.95	89.58	86.75
Procurement	85.17	72.35	62.22
Construction & Pre-commissioning	45.73	25.59	21.25
Commissioning	0.0	0.0	0.0
Overall progress	75.06	60.72	49.80

2nd Phase of ammonia and urea project at Kermanshah Petrochemical Company

The 2nd phase of ammonia and urea project of Kermanshah for the annual production capacity of 396,000 tons ammonia and 660,000 tons urea is on the executive agenda.

The project's detailed feasibility studies are completed, and ammonia and urea licensing has been finalized. Namvaran Company is selected as the engineering consultant for ammonia unit and the detailed engineering consultant for urea unit. Nam Avaran Delvar Company is selected as project management contractor and also for complete implementation of logistics.

The project is at the stage of procurement of long-term delivery items and has achieved an actual progress of 2.37%.



Recovery processing of carbon dioxide at Kermanshah Petrochemical Company to increase urea production capacity by 5%

This project was initiated in order to process CO₂ at Kermanshah Petrochemical Complex to increase urea production capacity by 5%, based on acceptable standards. The project, being implemented according to EPC contract terms at the value of 355 billion Rials for the duration of 18 months, has 87.3% progress and is scheduled for completion by the end of March 2015.

Establishing granular sulfur unit at Tabriz Oil Refining Company

At present, sulfur produced at Tabriz refinery is sold and marketed in bulk form, which in addition to environmental pollution, has limited outlet because of emitting sulfur dust. By installing a granular forming system, the sulfur produced at the refinery will be in granular form at higher added value. The project, implemented at the cost of 220 billion Rials with duration of one year, has reached 46.39% physical progress and is scheduled for completion by the end of March 2015.

Establishing lubricant oil mixing unit at Tabriz Oil Refining Company

The project is being implemented for production of engine lubricant and industrial oil lubricants of high quality and standards. The production capacity of this unit is 40,000 tons per year, which by using domestic and imported based oils, can produce high quality engine oil and multi-grade oil lubricants of high quality.

The project, being implemented at the cost of US\$17 million with duration of one year, has reached 11.17% physical progress and is scheduled for completion by September 2015.



Recycling gases to flare project at Tabriz Oil Refinery

Presence of flare and its inevitable existence is one of the main problems in designing industrial units, especially refineries. Using recycling technology for gases sent to flare at Tabriz refinery is necessary for reducing wastes and using exhaust gases as a part of recycled energy, which besides significant economic advantages, reduces pollution and achieves environmental objectives. The relevant project, implemented at the cost of 5 million Euros with duration of one year, had reached 7.40% physical progress by September 2014.

Projects at preliminary stages

■ Olefin 12 / aromatic 5 projects

Kian Petrochemical Complex, constructed in the 2nd phase of Pars Special Economic/Energy Zone at Assaluyeh, after full commissioning, will be one of the largest petrochemical complexes in the country, producing an impressive array of products like ethylene, polyethylene and also aromatics. Cost of this project is US\$ 3,300 million and its construction stage will last four years. With the required capital increased, and the required land purchased, the complex is now under the ownership of Kian Petrochemical Company.

Projects under implementation

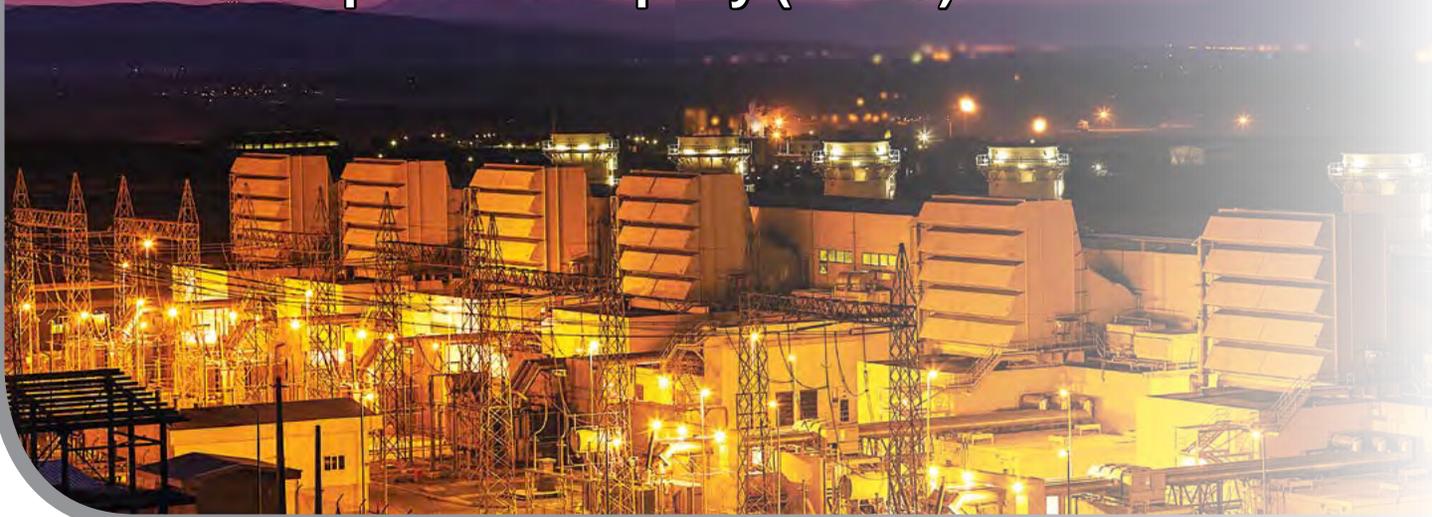
■ Shiraz 120,000 barrels gas condensates project

Shiraz existing refinery with limited refining capacity of 60,000 barrels per day, based on obsolete processes, can only provide 28% of the oil needs of Fars Province. Therefore, Parsian Oil and Gas Development Group, as the major shareholder of the existing refinery, after continuous follow ups, succeeded in obtaining required permits for 120,000 barrels per day gas condensates as feedstock and now is in the process of obtaining environmental licenses to start the construction phases of the new Shiraz refinery.

Building isomerization unit at Shiraz Refinery

Shiraz Oil Refining Company, by following its strategic goals, has focused on quality promotion of gasoline production based on Euro 4 standard and reducing environmental effects. Therefore, in order to achieve this goal, the construction project of refining light naphtha and isomerization units with a production capacity of 6,500 barrels per day was handed over for implementation by the company. Promoting octane number of the gasoline produced by the company from 85 to 91 and reducing sulfur content to the authorized levels of Euro 4 standard are the objectives considered for this project, with the initial investment of US\$50 million and construction duration of three years.

Pasargad Energy Development Company (PEDC)



PEDC was established and registered in April 2008 with the aim of participating in the national and international energy markets in general and developing Iran's energy sector in particular. Our core businesses include hydrocarbon sector, power generation and renewable energy.

The initial growth of our portfolio's size and diversity was achieved through investment of more than 900 million Euros over a period of less than two years. Due to high market demand and opportunities, recently its paid-up capital increased from 3400 Billion IRR to 10000 Billion IRR. Our sales volume is 12000 Billion IRR.

Mission

To create added value in energy sector, especially in petrochemical industry and other related fields.

Vision

To lead the private energy groups in the region.

Our Values

- Putting our valued customers' needs and interests at the center of our business and furnishing them with the best possible quality, technology and services.
- Treating our colleagues with respect and dignity, encouraging them to face challenges, while rewarding them for their contributions.
- Driving excellent financial performance.
- Commitment to promote sustainability.

PEDC Businesses

■ Oil and Gas

The oil and gas industry is divided into two major sectors: upstream and downstream. The downstream sector commonly refers to the exploration, exploitation and refining of petroleum crude oil and the processing and purifying of raw natural gas, as well as marketing and distribution of products derived from crude oil and natural gas. The downstream sector touches consumers through petroleum based products such as gasoline or petrol, kerosene, jet fuel, diesel oil, heating oil, fuel oils, lubricants, waxes, asphalt, natural gas, and Liquefied Petroleum Gas (LPG) as well as hundreds of petrochemicals. Other related industries include shipping and pipelines industries. In PEDC, these sectors are individually and separately approached.

Upstream

■ Drilling services

PEDC has established subsidiaries to render Drilling Technical Services mainly but not limited to Well Logging, Well Testing and Directional Drilling.

Petro Danial Kish Company (PDK) was established in 2010 as a Drilling Technical Service Company for oil industries. PDK has purchased all well logging machineries and equipment from reputable European and Canadian

manufacturers and is able to provide borehole petro physical and completion services such as Open Hole Logging, Perforation, Setting Packers and Plug with its Digital Advanced System. Petro Kariz Company is incorporated for Directional Drilling services and will be ready to offer its services from early 2015.

Drilling jack up

In late 2010 PEDC finalized a contract for purchasing two Jack-up drilling rigs specially designed for operating in the Persian Gulf. The first Jack-up rig was delivered and became operational in South Pars gas field (Phase 21). The second Jack-up rig will be delivered in early 2015 and will be operational in oil and gas development projects.

Software development

In order to carry out research and development work towards production of a very complex software concerning the energy in general and petroleum engineering in particular, an engineering company (TAFAHOM) was founded in late 2012. It is expected that its first major software will be introduced to the market in early 2015.

Downstream

Refineries

The current production of local refineries can meet almost 70 percent of the national demand and the rest of the consumption need to be imported. On the other hand, refineries in Iran enjoy the privilege of convenient feed availability at a compatible price. These opportunities coupled with the strategic location of Iran in the Middle East, furnish the proper environment for establishing new refineries.

Qeshm refinery

Petrochemicals

Based on the availability of feedstock at a premium rate, many operational petrochemical plants, technical expertise and a vast local market coupled with extensive experience, Iran petrochemical industry with its solid foundations promises a bright future for lucrative investment. Benefitting from this occasion, PEDC has studied upstream and downstream petrochemical projects with an appropriate rate of return and invested in:

- Sina Petrochemical Co.
- Romak Petrochemical Co.
- Fajr Kerman Petrochemical Co.
- Petro Hidaj Co.

Power generation

The nominal capacity of all power plants of the country is expected to grow almost 3 times by the end of 2025 which together with the growing regional market culminate to a great opportunity for investment in this industry. The first steps for PEDC to enter the power generation area are as follows:

- Purchasing a considerable share of Khoy Power Plant. (350MW)
- Purchasing a considerable share of Uromeyeh Power Plant. (950MW)
- Purchasing 100% share of Shariati Power Plant. (Mashhad 500MW)

Moreover

PEDC has invested in 3 other projects as follows:

- Qeshm 500 MW Power Plant
- Sirjan Power Plant (25MW/CHP)
- Expansion of Uromeyeh Power Plant.

Persian Gulf Petrochemical Industries Company (PGPIC)



Strategic plan of Persian Gulf Petrochemical Industries Co.

Vision

The most profitable holding company with international brand

General strategy

Development and sustainable profitability

Basic values

- Creativity & innovation
- Responsibility & honesty
- Perspicuity & satisfaction

Main objectives

- Promoting satisfaction & loyalty of beneficiaries
- Developing investment & expanding local and foreign partnerships
- Improving the quantity & quality of investment basket
- Increasing the company's market share
- Developing a learning & knowledge-based organization
- Developing value chain by protecting the environment

History

Persian Gulf Petrochemical Industries Company was established in January 2008 in line with the execution policies of Article 44 of the Constitution on the basis of Authorization No. 161681 of Transferring Commission to hand over the shares of 15 petrochemical companies including Bandar Imam, Shahid Tondguyan, Bu Ali Sina, Nouri, Pars, Arvand, Khuzestan, Fajr, Mobin, Rahavaran Foonon, Mahshahr Non-industrial Operations, Pazargad Non-industrial Operations, Petrochemical Industries Development Management (PIDMCO), NPC International and Petrochemical Commercial Co. (PCC).

Its formation sought to maintain the integrity of the Iranian petrochemical industry and realize the objectives of 2025 Iran vision plan.

The company was transferred to the private sector in 3 stages. 40% of its shares were allocated to provincial investment companies according to the government authorization for Justice Shares, dated July 2009. In the first stage, 5% of shares were transferred to Tehran Stock Exchange in January 2013 for price discovery.

In second stage, 17% of its shares were transferred to NIOC's Pension, Saving & Welfare Fund by auction in May 2013. Therefore, holding 62% shares of the private sector and non-governmental organizations, PGPIC was separated from governmental sector since May 2013. Acting as the country's largest petrochemical holding with more than 22 million tons production capacity, producing 42% of Iran's petrochemicals and encompassing over 350,000 billion Rials capital as the largest and the most important member of the stock exchange, entered the private sector, possessing about 10 percent of the stock market.

In the third stage, a 17 percent block of the company's shares was released in March 2014. The block was jointly purchased by Oil, Gas & Petrochemical Investment Supply Co. (TAPPICO) and the NIOC's Pension Fund in a 50-50 partnership.

At present, the latest shareholders are as follows:

- 40% Justice Shares
- 5% general public (through Tehran Stock Exchange)
- 25.5% NIOC Pension, Savings and Welfare Fund
- 8.5% TAPPICO
- 21% NPC

The present nominal capacity of the PGPIC producing complexes are as follows:

The capacity of the direct producing companies (including management share): 22 million tons/year, including: Bandar Imam, Buali Sina, Nouri, Pars, Khuzestan, Arvand & Shahid Tondguyan Petrochemical Co.

The capacity of the producing companies indirectly (including management share):

2.4 million tons/year, including Arya Sasol, Karoon, Orumyeh & Polyethylene of Ilam Petrochemical Companies:

Total nominal production capacity of PGPIC (1000T/Y)			
Product	Direct producing	Indirect producing	Total
Polymer	1649	1150	2549
Aromatic	3684	-	3684
Basic & chemical	4745	1245	5990
Fuel & feedstock	11835	90	11925
Fertilizer & toxics	-	88	88
Total	21913	2573	24487

Direct projects production capacity (including management share): 3.5 million tons/year including Hormoz & Hengam Petrochemical Companies.

Indirect projects production capacity (including management share): 4.6 million tons/year including: Sadaf Assaluyeh, Apadana, Mamasani, Olefin of Ilam Petrochemical Co. and Lordegan.

PGPIC interaction style with its subsidiaries

The holding company or the parent company should clarify its engagement and behavioral style with its subsidiaries. In fact, after determination of a general orientation, the interaction trend with subsidiaries is of great importance. Interaction is important in order to achieve a reasonable trust in well performance of subsidiary companies and to move in line with the general orientation of holding company with respect to its subsidiaries. Holding companies apply three different styles, with their own specific characteristics for each to interact, communicate and control the subsidiaries.

Persian Gulf Petrochemical Industries Company has conducted strategic control to interact with its subsidiaries.

Performance of the year 2014 of PGPIC sub manufacturing companies (holding the share of direct & indirect management) is as follows:

Total production in year 2014 is about 18.5 million tons and total domestic sales & export sales is about 14.8 million tons valuing at 11.6 million USD.

Projects management

PGPIC has been controlling the activities of 9 projects as listed below:

Methanol Apadana (physical progress as of 20 March 2015: %14.74), urea & ammonia of Hengam Petrochemical Co. (%18.82), urea fertilizer of Hormoz (%5.3), 13th Olefin of Ilam (%61.41), olefin of Gachsaran (%33.03), SBR of Sadaf Assaluyeh (%11.83), fertilizer of Lordegan (% 32.55), Karoon Petrochemical Co. (Phase2) (%97.18), NGL 3200 of Bandar Imam (%5.83)

Research projects under consideration

Iranshahr Operatin Area, GTX in Parsian Area, Methanol Fajr-e- Fars of Chabahar, NGL 3200, Olefin & MEG of Bandar Imam Petrochemical Co., PVC-2 of Arvand Petrochemical Co.

Shares & investment achievements in year 2014

Investment and purchase shares of stock and non-members in Iranian Bourse Market consist of Iranian Petrochemical Investors group (PETROL) at the rate of 51%, Pars Tamin Majd 40%, Terminal & Tanks of Petrochemical Co. 16% and Bidboland Gas Project. Transferring shares and ownership of Hormoz & Hengam Companies to PGPIC

Board of directors

- Abbas Shari Moghaddam, Chairman
- Fereydoon Saghafian, Vice Chairman & Board Member
- Adel Nejad Salim, Managing Director of PGPIC & Board Member
- Mostafa Omid Ghaemi, Board Member
- Abdolhamid Emami, Board Member



Petro Farhang Company

Iran holds the second largest reserves of natural gas and the fourth largest oil reserves in the world. Based on this vital advantages and also Iran's strategic position in the world's market, "Petro Farhang" is prone to invest its financial resources in gas, oil and petrochemical industries.

"Petro Farhang" is a subsidiary of "Teachers Investment Fund (TIF)", an economic institution founded initially in association with 750,000 teachers. Teacher's contributions are set at %5 of their monthly salary and an equivalent government budget is paid for TIF annually.

History

- **Date of foundation:** 22, May, 2008
- **Type of the company:** Private Joint-stock
- **Address:** No. 38, Pirzadeh Alley, Nesa St., Mirdamad Ave., Tehran

Mission

- Proficient and wise investment in economic activities specifically in oil, gas and petrochemical industries as well as business and commercial affairs to increase value added for all honorable teachers.
- "Petro Farhang" endeavors to increase its international market share by means of advanced technologies, proper investments, forming domestic and overseas strategic partnerships, and optimal managing of organization and financial resources.
- To achieve maximum revenue, "Petro Farhang" is determined to apply scientific principles in different scopes of management, teamwork, systems and strategic thinking, with the help of experienced and expert staff.

We believe that following criteria can guarantee our organization's sustainability and development

- Cost Management
- Sustainable and profitable growth
- Time and quality
- Entrepreneurship
- Commitment to the core values
- Upholding professional ethics of the society
- Human resources empowerment
- Respecting human dignity
- Taking social responsibilities

Shareholder

"Teachers Investment Fund (TIF)", the shareholder of "Petro Farhang", was founded in 1995 and 750,000 teachers are the members of the Fund.

Subsidiary companies

Production units	
Company	Percentage of share held
Morvarid Petrochemical Co.	46.50%
Khorasan Petrochemical Co.	19%
Marun Petrochemical Co.	1%

Morvarid Petrochemical Co.		
Location	Land area (m ²)	Start-up date
Assaluyeh	200,000	Feb-2010

Morvarid's main products (thousand metric T/Y)				
Product	Production capacity	Feedstock	Licensors	Onstream
Ethylene	500	Ethane:642	Technip	February, 2010
C ₃ ⁺ hydrocarbons	47	Ethane	Technip	February, 2010
MEG	500	Ethylene:340 Oxygen: 368	Shell	2015
DEG	50	Ethylene:340 Oxygen: 368	Shell	2015
TEG	3.4	Ethylene:340 Oxygen: 368	Shell	2015

Khorasan Petrochemical Co.		
Location	Land area (m ²)	Start-up date
Bojnord	300,000	Jun. 1996

Khorasan's main product (thousand metric T/Y)				
Product	Nominal capacity	Feedstock	Licensors	Onstream
Ammonia	330	Natural gas	M.W. Kellogg	1996
Prilled urea	495	Ammonia and CO ₂	Stamicarbon	1996
Crystal melamine	20	Urea and ammonia	Eurotechnica	2003

Marun Petrochemical Co.			
Location	Land area (m ²)	Start-up date	Licensors
Assaluyeh	1,020,000	Aug. 2006	Linde-Shell

Marun's main products (metric T/Y)	
Product	Production capacity
Propylene	200,000
Polypropylene	300,000
MEG	400,000
Ethylene	1,100,000
Heavy polyethylene	300,000
Pyrolysis gasoline	83,000
C ₃ ⁺	168,000

Projects	
Company	Percentage of share held
Middle East Kimia Pars Petrochemical Co.	67%
Kian Petrochemical Co.	40%
Lavan Petrochemical Co.	20%
Melamine Sepid Arya Petrochemical Co.	100%
Kimia Fanavaran Petrochemical Co.	20%

Middle East Kimia Pars Petrochemical Project

Location	Land area (m ²)	Onstream	IRR
Assaluyeh	74,800	2018	33.34%

Middle East Kimia Pars's main product (thousand metric T/Y)

Product	Nominal capacity	Feedstock	Licensors	Onstream
Methanol	1650	Natural gas: 1500 Mm ³ /year Oxygen: 744 Mm ³ /year	Haldor Topsoe	2018

Kian Petrochemical Project

Location	Land area (m ²)	Onstream
Assaluyeh	750,000	2018

Kian's main product (thousand metric T/Y)

Product	Production capacity	Feedstock	Onstream
Heavy cut	1,089	Condensate: 3000	2018
Ethylene	868	Ethane: 900	
Propylene	167	C ₃ ⁺ : 315	
Para- xylene	528	Light Cut: 340	
Ortho-xylene	90	-	
Benzene	32	-	
Heavy aromatics	25	-	
Liquid fuel	65	-	
Alpha olefin	200	-	
Propylene oxide	200	-	
Styrene	364	-	
Butadiene	130	-	
Raffinate	320	-	

Lavan Petrochemical Project			
Location	Land area (m ²)	Onstream	IRR
Assaluyeh	248,500	2018	27%

Lavan's main product (thousand metric T/Y)				
Product	Nominal capacity	Feedstock	Licensors	Onstream
Ammonia	Intermediate:680	Natural Gas: 753 Nm ³ for 25 Years	Petrochemical Research & Technology & Hedco	2018
	Final:75			
Urea	1075	Ammonia	Stamicarbon	2018

Melamine Sepid Aria Petrochemical Project			
Location	Land area (m ²)	Onstream	IRR
Chabahar	136,000	Unknown	35%

Melamine Sepid Aria's main product (thousand metric T/Y)		
Products	Nominal capacity	Feedstock
Methanol	1,000	Methane
Ammonia	300	Methane

Kimia Fanavaran Petrochemical Project		
Location	Land area (m ²)	Onstream
Mahshahr	-	2019

Kimia Fanavaran's main product (thousand metric T/Y)		
Product	Nominal capacity	Feedstock
Natural gas	1,650	Methanol



SATA Investment Co.



SATA Investment Co. (Private Joint-Stock) was established in July 2008 , aimed at creating the highest value and profits for meeting the beneficiaries' demands through investment, development of appropriate and useful business, benefitting from organizational and ultra-organizational capacities and current technologies; so, in addition to maintaining the value of the available capitals, it could manage the existing financial sources by using the economic opportunities available in local and foreign markets. By focusing on the macro policies and essential direction, this company, holds the responsibility of producing wealth and promoting the economic capacities of the complex and has put the aim of playing a role in national economy at the top of its agenda. Since its establishment, SATA Investment Company has adopted investment development strategy in the Islamic Republic of Iran, in order to fulfil its mission has considered it as one of its most important policies. The investment has been directed in various forms depending on the conditions, policies and priorities.

One should note that access to the huge oil and gas reserves, is a significant economic advantage for the petrochemical industry of Iran and has promoted this sector as one of the powerful driving forces in the economic growth and development of the Islamic Republic of Iran.

Having a considerable share in macro-economic variables, this industry plays a significant role in improving the economy of Islamic Republic of Iran in various dimensions such as non-oil exports development, sustained employment and increase in gross national product; and to this end, SATA Investment Company pursues its role in achieving national economic goals through investment in the valuable petrochemical industry and while, purchasing the stocks of important petrochemical plants, it also tries to establish coordination among the upstream, mid-stream and downstream industries values.

Based on this approach, SATA has been trying to absorb and employ a large group of engineers and managers in petrochemical industries. This policy has been so successful that presently, SATA Investment Company is considered as one of the important cores of Iranian large petrochemical industries by holding major stocks of petrochemical companies.

At present, SATA Investment Company, as a stockholder , has an active and effective presence in the petrochemical industry, both directly and indirectly. This company is either a major stockholder of/or manages Aria Sasol, Boushehr, Marjan, Maroon, Amirkabir and Tabriz petrochemical companies. In addition, due to holding the stocks of Ghadir Investment Company, Pardis, Zagros, Morvarid, Marjan, Maroon, Bakhtar, Amirkabir, Fanavaran, Arvand and Laleh petrochemical companies indirectly, SATA tries to achieve the following goals by improving the production processes in petrochemical industry through sharing and developing modern technologies:

- Increasing production capacity to meet the local demands and realizing the strategy of developing non-oil products of the country.
- Completing the production chain in mid-stream and downstream petrochemical industries.
- Benefiting from and optimizing the use of institutes and factors of local producers through interaction with the economic sectors of the company.
- Creating more value added in the production processes.
- Contributing to human capital development in various categories of design, engineering and specialized work force.
- Developing petrochemical industries with emphasis on sustainable development and environment protection
- Establishing an appropriate site location with infrastructure facilities for the investment of private sector
- Benefitting from the industrial and manufacturing capabilities of local specialists and winning the participation of international companies.

Shastan's petrochemical projects in progress						
Field	Title of the project	Project's timetable		Evaluation of the total investment (billion Rials)	Evaluation of the total investment (Shasta's share), (billion Rials)	Investment as to the end of 2014 (billion Rials)
		initiation	completion			
Shastan's projects in progress (under ownership)						
	Marjan Petrochemical plant	2011	2016	15296	10248	2191
Petrochemical plant	Phase II reservoirs of Asalouyeh	2012	2017	12400	12400	1090
	Makran Petrochemical Township (under development)	2012	2020	2930	2930	644
Shastan's projects in progress (under management)						
Petrochemical plant	Boushehr Petrochemical plant	2011	2017	73925	44355	5199
Total				104551	69933	9124

Boushehr Petrochemical Plant	
Location	Phase II of Asalouyeh
Area	70 hectares
Initiation	2011
Completion	2017
SATA's ownership	60%
Estimation of the investment required for the project	Estimation of the total investment required for the project after re-examination of feasibility in 2012 was adjusted at 2500 billion Rials and 2198 Euros
Products	gas refinement, ethane extraction, methanol, olefin, light / heavy linear polyethylene, ethyl glycol, acetic acid, vinyl acetate monomer
Physical progress as to the end of 2014	14.4%

Marjan Petrochemical Plant

Location	Phase II of Asalouyeh
Area	7 hectares
Initiation	2011
Completion	2016
SATA's ownership	60%
Estimation of the investment required for the project	4220 billion Rials and 341 million Euros
Goal	Operationalization, utilization, and annual production of 1650 thousand metric tons of methanol
Physical progress as to the end of 2014	24.4%

Tank farm of Phase II of Assalouyeh

Location	Southern Pars Special Economic Zone
Area	46 hectares
Initiation	2012
Completion	2017
SATA's ownership	100%
Estimation of the investment required for the project	3225 billion Rials and 112.3 million Euros
Goal	<ul style="list-style-type: none"> ■ Collection, storage, and distribution of the products of complexes located in Southern Pars Special Economic Zone ■ Obtaining some products from the harbour and sending them to production complexes. ■ Storage and export of the products of the complexes located in Asalouyeh
Physical progress as to the end of 2014	11.8%



Development of the Makran Petrochemical Township (Chabahar)

Location	Chabahar Free Zone
Area	1200 hectares
Initiation	2012
Completion	2020
SATA's ownership	100%
Estimation of the investment required for the project	3225 billion Rials and 112.3 million Euros
Goal	Production capacity of this complex has been estimated at 15 million metric tonnes per year of which 13 million tons are allocated to exports and the rest of the products are for petrochemical complexes and downstream industries to be exchanged as feed or entered into the nation's eastern market
Physical progress as to the end of 2014	8.4%





Sepehr Energy Company (SECO)

SECO was registered and established in Tehran on 26 Apr., 2010 and officially started to perform its activities under registration No. 373350

The main purpose of this establishment is to develop oil, gas and petrochemical industries based on the "Article 44" of Islamic Republic Constitution regarding the Privatization Policy, benefiting from investments of private sector.

The senior directors and main programmers of Sepehr Energy Co. are a group of founders and developers of petrochemical industries, applying their effective experiences for rendering the best performance. The main concentration of this company, in the next "5-year Development Plan", will be implementation of oil, gas, petrochemical, electricity and modern energy projects. At present, some of these projects, valued at \$11 billion, are under implementation.

Company policy

- Applying technics, tools and scientific method are necessities for insuring the efficiency of investments
- Applying efficient methods, proportionate to daily conditions of the country, aiming at maximum efficiency
- Applying suitable tools for securing the capital investments
- Staffed with professional, honest and motivated forces, trying to design a new and swift organization
- Harmonizing methods with internal and international laws and regulations for passing though impediments

Company mission

Our mission is to outspread energy and petrochemical industries, using the best methods and techniques for acquiring beneficiary's satisfaction. Our task is producing and trading energy slaves and construction, commissioning and management of factories, as well as management of investment in oil, gas and petrochemical industries.

Company and HSE

Encountering with expanding expenses of environment destruction, resulting from economic growth of nations, has led them to the conclusion that their policies and designed path for economic growth must be changed and renovated for the sake of environment. On the other hand, setting free policies in trade and eliminating trade laws obstacles could enhance the motivation of companies for selecting efficient techniques which are compatible with environment. Based on this idea, all affiliate companies of Sepehr Energy will have environmental recitation. Using the latest device of pollution control in accordance with the world's daily standards and identifying the environmental prospects of activities and services are function examples for Sepehr Energy which believes the best accomplishment in this complex is producing with constant development and security of environment.

Company projects

- **Sabalan Methanol (8th Methanol)**

Location: South Pars Special Economic Energy Zone (phase 2)

Expected production date: 2018

Physical progress (as of 5 Jan. 2015): 17.69%

Product	Nominal capacity (1000 T/Y)	Feed	Licensor
Methanol	1,650	Natural gas	Haldor Topsoe

- **Siraf Methanol (15th Methanol)**

Location: Daiyer

Expected production date: 2019

Physical progress (as of 5 Jan. 2015): 18.4%

Product	Nominal capacity (1000 T/Y)	Feed	Licensor
Methanol	1,650	Natural gas	Haldor Topsoe

- **Dena Methanol (9th Methanol)**

Location: South Pars Special Economic Energy Zone (phase 2)

Expected production date: 2019

Physical progress (as of 5 Jan 2015): 17.63%

Product	Nominal capacity (1000 T/Y)	Feed	Licensor
Methanol	1,650	Natural gas	Haldor Topsoe

- **Lavan Ammonia & Urea (8th Ammonia & Urea)**

Location: South Pars Special Economic Energy Zone (phase 2)

Expected production date: 2020

Product	Nominal capacity intermediate (1000 T/Y)	Nominal capacity final (1000 T/Y)	Feed
Ammonia	677	69	Natural gas
Urea	-	1073	Ammonia

- **Genaveh & Dashtestan 15th Olefin & Ethylene Glycols**

Location: Genaveh

Expected production date: 2021

Product	Nominal capacity intermediate (1000 T/Y)	Nominal capacity final (1000 T/Y)	Feed	Licensor
Ethylene	500	161	Ethane	Technip
MEG	-	500	Ethylene	Shell
DEG	-	51	Ethylene	Shell
TEG	-	3	Ethylene	Shell
C ₃ ⁺ cut	-	44	Ethane	Shell

■ **Olefin & Polyethylene Dehloran (17th Methanol)**

Location: South Pars Special Economic Energy Zone (phase 2)

Expected production date: 2021

Product	Nominal capacity intermediate (1000 T/Y)	Nominal capacity final (1000 T/Y)	Feed	Licensor
Ethylene	500	144	C ₂ ⁺	Stone & Webster
Propylene	-	73	C ₂ ⁺	Stone & Webster
Pyrolysis gasoline	-	57	C ₂ ⁺	Stone & Webster
Liquid fuel	-	14	C ₂ ⁺	Stone & Webster
HDPE	-	300	Ethylene	Basell

■ **Drag Reducing Agent Plant (DRA)**

Location: Second Phase of Aras Commercial and Industrial Zone

Expected production date: 2018

Physical progress (as of 5 Jan. 2015):16.86%

Product	Nominal capacity (million liter/Y)	Feed	Licensor
DRA	3	Alpha olefin	Local

SECO International Trade Co.

SECO International Trading Co. (SITCO) has been set up to employ learned & well experienced staff in the international trade field, as well as vibrant and youthful personnel.

SITCO has a very successful resume in trading oil, gas and petrochemical products.

SITCO is getting ready to sell more than 10 million metric tons of Sepehr Energy Corporation's products in near future

Contact details

📍 Tehran office : Tehran, Saadat Abad, Kaj Sq., 9th Ave., No.18

🌐 Website : www.sepehrenergy.com



Tamin Petroleum & Petrochemical Investment Co. (TAPPICO)



Tamin Petroleum and Petrochemical Investment Company (TAPPICO) (Limited), initially named Abadan Oil Refining Company (Limited), was established in 2002. After two name changes and finally emerging with Tamin Oil and Gas holding company, the company has been registered as Tamin Petroleum and Petrochemical Investment Corporation (TAPPICO). The company's shares were offered in the Tehran Stock Exchange (TSE) in 2012 and Social Security Investment Corporation (SSIC, known as Shasta), having ownership of 87%, is the main shareholder of TAPPICO.

Owning 42 subsidiaries and affiliated companies, in the four main areas of businesses, including oil and gas, petrochemical, tire and cellulosic industries, TAPPICO plays a significant role in the production and job creation in the country. TAPPICO is ranked as one of the diversified petrochemical companies in the world by producing a wide range of different products, specially 10 out of 12 petrochemical products in the global index of petrochemical products (IPEX). Furthermore, the profitability of TAPPICO increased by annual average of 80% from 2008 to 2012.

Mission and Vision

The mission of TAPPICO is to meet all policies of the Social Security Investment Company (SSIC) in order to enhance and sustain long-term profitability and value creation for shareholders through both domestic and foreign investments in oil, gas and petrochemical industries and govern professionally its subsidiaries.

TAPPICO indeed believes in this way to achieve the objectives of all stakeholders, pay attention to the principles of scientific management, environmental requirements and regulations, occupational health and safety, and other governing laws in Iran.

The main vision of TAPPICO is to become a global company with international competitiveness and ability to provide the most value for stakeholders.

Main activities

- Investment on profitable shares of petrochemical , oil & gas companies
- Exploring the new opportunities in the related industries
- Acquisitions of companies in order to complete the value chain
- Parenting the subsidiaries

Capabilities and advantages

- Positive outlook for share value of TAPPICO by implementation of projects, especially Persian Gulf Star oil refinery with annual sales of over 7 billion euros.
- Ranked in top 3 in the Middle East and Africa, by considering net profit and operating profit criteria and top 103 in the world and top 7 in the Middle East and Africa by considering sales criteria in 2013 in the ranking of the world's top petrochemical companies carried out by ICIS.
- Achievable prospect in the ongoing profitability by variety of projects over 10 billion euros.
- Aggregation of about 70% of holding's profit on methanol and polyolefin plants in accordance with the global industry trends.
- The strategic intent of the board of directors to significantly develop and accelerate profitable growth.
- The portfolio is concentrated on gas-based petrochemical plants.
- Taking advantage of diversified portfolio of products (10 out of 12 recognized by IPEX index)
- Availability of high potential capacity to change the liquid-based plants into gas-based plants, by utilization of South Pars Phases in the future.
- The majority of the subsidiaries (petrochemical & refinery plants) have closely been located in exporting ports and within the Petrochemical Special Economic Zones.
- Access to the low cost feed-stocks in Iran, as the world's second largest gas source, is a significant advantage of oil, gas and petrochemical industries.

Shareholders

	Number of shares	Percentage of ownership
Social Security Investment Company	36,675,000,000	84.69%
Others	6,825,000,000	15.31%
Total	43,500,000,000	100%



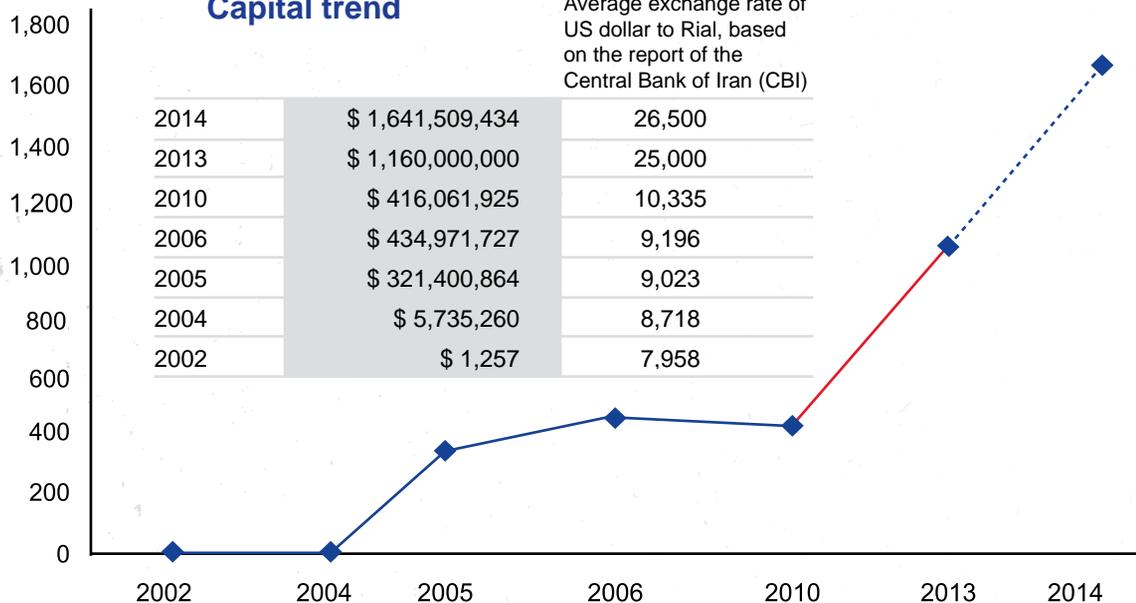
Brief growth trend



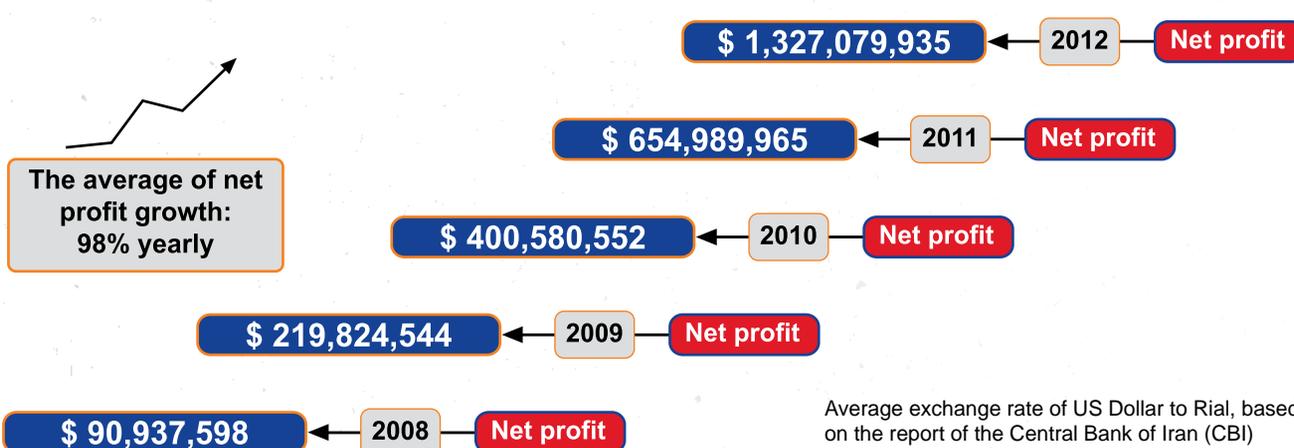
\$ Million

Capital trend

Average exchange rate of US dollar to Rial, based on the report of the Central Bank of Iran (CBI)



Earning growth path



Average exchange rate of US Dollar to Rial, based on the report of the Central Bank of Iran (CBI)

2012	12260
2011	10962
2010	10335
2009	9917
2008	9567

Subsidiaries

Company	Product	Percentage of ownership by TAPPICO	Production capacity (KT)	Location (s)
Fanavaran Petrochemical Co.	Methanol & Acetic acid	48.3	1150	Mahshar
Amir kabir Petrochemical Co.	Olefin & Polyethylene	31.97	1374	Mahshar
Abadan Petrochemical Co.	PVC & DDB	56.55	120	Abadan
Khorasan Petrochemical Co.	Urea ammonia & Crystal melamine	41.72	845	Bojnourd
Ghadeer Petrochemical Co.	PVC & DDB	90.00	270	Mahshar
Petrochemical Industries Investment Co. (PIIC)	Holding company	35.88	-	Tehran
Petro Sina Co.	Petrochemical contractor	99.83	-	Tehran
Iranol Oil Co.	Base oil	47.50	205,364 m ³	Tehran, Abadan
Pasargad Oil Co.	Types of bitumen	50.47	2,200	Tehran, Arak, Tabriz, Shiraz, Abadan, Bandar Abbas
Aria Oil and Gas Co.*	Extraction oil & gas	100	18,000 bbl/day	Tehran
Persil Iran Gas Co.	LPG distributor	50.00	1,009	Tehran
Barez Industrial Group	Types of tires	51.14	76	Kerman
Saba Tire Co.	Tire components	51.20	15	Zanjan
Kaveh Paper Industries	Types of paper	83.03	25	Tehran-Saveh Road
Iran Cartoon Co.	Types of paper	33.26	64	Tehran
Chuka Co.	Type of paper	53.50	150	Astara
Latif Paper Co.	Types of tissue	99.80	56.3	Hashtgerd
Fiber Babolsar Co.	Hard-board	100	7,500 m ³	Babolsar
Khazar wood Industrial Co.	MDF	100	46,000 m ³	Babolsar
Tose-Tejarat Co.	Commercial, Export & Import and Stock Trading	100	-	Tehran

* Aria Oil & Gas Co. by changing the activity is equipped to implement gas condensate refinery project in Asaluyeh.

Affiliates

Company	Main product	Percentage of owner ship by TAPPICO	Production capacity (KT)	Location (s)
Persian Gulf Petrochemical Industry Co.	Holding Company	8.5	-	Tehran
Marun Petrochemical Co.	Polyolefin	12.58	1,768	Mahshar
Arak Petrochemical Co.	Olefin & polyolefin	20.06	175	Arak-Bojnourd Road
Kharg Petrochemical Co.	Methanol	22.19	660	Kharg Island
Jam Petrochemical Co.	Olefin & polyolefin	22.69	2,226	Mahshar
Shiraz Petrochemical Co.	Urea & ammonia / methanol	4.56	1,060	Shiraz
Morvarid Petrochemical Co.	Olefin / C ₃ ⁺	17.00	544	Mahshar
Borzuyeh Petrochemical Co.	Aromatics	17.00	4,479	Mahshar
Ilam Petrochemical Co.	Polyolefin	17.00	300	Ilam
Marjan Petrochemical Co.	Methanol	17.00	1,650	Mahshar
Bakhtar Petrochemical Co.	Holding company polyolefin & ethylene	4.55	4,200	Kermanshah
Nirou Chlor Co.	Liquid chlorine, caustic soda & their relevant derivatives	32.04	27.4	Esfahan
Esfahan Oil Refinery Co.	Types of oil refinery products	1.81	365,000 bbl/day	Esfahan
Persian Gulf Star Oil Co.	Types of oil refinery products	49	360,000 bbl/day	Assaluyeh
Anahita Oil Refinery Co.	Types of oil refinery products	33.30	150,000 bbl/day	Kermanshah
Qeshm Naft-e-Nik Co.	Types of oil refinery products	10.7	120,000 bbl/day	Qeshm Island
Yazd Rubber Industries Complex (YRIC)	Types of tire	36.17	36.5	Yazd
Iran Yasa Tire and Rubber Co.	Types of tire	16.47	12,120	Tehran
Maragheh Paper Industrial Co.	Types of paper	11.52	50	Maragheh
Mazandaran Wood and Paper Industries Co.	Types of wood & paper	17.97	175	Mazandaran
Bahonar Wood Co.	Types of wood products	8.84	51,000 m ³	Gorgan

Products

Product	Iran production capacity (1000T)	TAPPICO production capacity (1000T)	TAPPICO's share of production capacity in Iran
Ethylene	6,294	1,129	17.93%
Propylene	907	278	30.63%
HDPE	1,935	272	14.04%
LDPE	1,000	306	30.59%
LLDPE	660	340	51.53%
Sum of PEs	3,595	918	25.53%
PVC	745	263	35.31%
Methanol	5,044	1,150	22.81%
Urea	4,442	520	11.71%
Melamine crystal	24	20	81.97%
Polypropylene	1,055	121	11.46%
Benzene	907	125	13.81%
P-xylene	1,374	211	15.33%
Total Petrochemical products produced by TAPPICO	24,386	4,734	19.41%

Main Projects

Project	Production			Amount of investment (million of Euro)	Progress Physical	Date of production
	Product	Capacity	Unit			
Persian Gulf Star Oil Refinery	Types of oil refinery products	360,000	bbl/day	3,800	81.3%	2015
Anahita Oil Refinery Co.	Types of oil refinery products	150,000	bbl/day	2,700	3.7%	2017
Methanol 2 Fanavaran	Methanol	1,650,000	ton/year	573	3%	2018
Methanol 2 Kharg	Methanol	1,460,000	ton/year	540	34.0%	2017
Marjan Petrochemical	Methanol	1,650,000	ton/year	400	27.4%	2015
Ilam Petrochemical	HDPE	300,000	ton/year	1,100	55.67%	2015
Siraf Oil Refinery	Types of oil refinery products	60,000	bbl/day	300	3%	2018



Characteristics of Persian Gulf Star Oil Refinery

- One of the world's largest condensate refineries (Feed: 360 thousand barrel per day)
- Investment of 3.8 billion Euros
- Sales of 7 billion Euros and average annual net profit of 500 million Euros
- Production of light products
- Daily production of 35 million liter of gasoline- euro IV (60% of capacity)
- Daily production of 16 million liter of gasoil (25% of capacity)
- The privileged position to export products
- Promising a favorable prospect for TAPPICO's share value in the future by start-up of the project

Financial highlights (2013)

Total Asset	Net sales (group)	Capital	Net profit	Market cap
\$ 4,218,248,958	\$ 3,998,468,682	\$1,160,000,000	\$ 1,327,079,935	\$ 6,800,000,000

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Private Companies

- Abadan Petrochemical Company
- Bistoon Petrochemical Company
- Carbon Iran Company
- Ehtemam Jam Company
- Esfahan Petrochemical Company
- Fanavaran Petrochemical Company
- Farabi Petrochemical Company
- Ghadeer Petrochemical Company
- Ilam Petrochemical Company
- Jam Petrochemical Company
- Jam Polypropylene Company
- Kermanshah Petrochemical Industries Company
- Kharg Petrochemical Company
- Khorasan Petrochemical Company
- Marun Petrochemical Company
- Mehr Petrochemical Company
- Morvarid Petrochemical Company
- Navid Zar Chimi Industrial Company
- Razi Petrochemical Company
- Regal Petrochemical Company
- Shahid Rasouli Petrochemical Company
- Shimibaft Company
- Shiraz Petrochemical Company
- Tabriz Petrochemical Company
- Zagros Petrochemical Company

Abadan Petrochemical Company



A badan Petrochemical Company is the first and leading petrochemical plant in the Middle East which consists of 11 production units on the main site.

Main product	
Product	Capacity (1000) T/Y
Poly Vinyl Chloride (P.V.C.)	110
Caustic soda	23
Dodecyl Benzene (D.D.B.)	10

Most of the products are distributed in the local market and the rest is exported abroad.

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Bistoon Petrochemical Company

In the course of executing the second five-year development plan of petrochemical industries, implementation of LAB project has been granted to Bistoon Petrochemical Company (BPC) in 2001. The complex is located at the northeast of Kermanshah in a plot of land measuring 63 hectares.

Basic engineering of the project was performed by Axens, a French company and detailed engineering and equipment procurement were carried out by Tecnicas Runidas (TR) of Spain & Enershimi of Iran.

Main feeds of the plant are kerosene and Benzene with the rates of 386,000 and 19,000 tons/year respectively. Linear Alkyl Benzene (LAB) and Heavy Alkylate (HAB) with the rates of 50,000 and 6,480 tons/year respectively are the main products of the plant.

Production process

The kerosene feedstock containing $C_6 - C_{18}$ cuts, is first processed in unit 100 (pre-fractionation), where the heavy cut ($C_{10} - C_{13}$) is separated from the Light-cut ($C_6 - C_9$) & Heavy-cut ($C_{14} - C_{18}$), with the last two cuts being returned to the refinery.

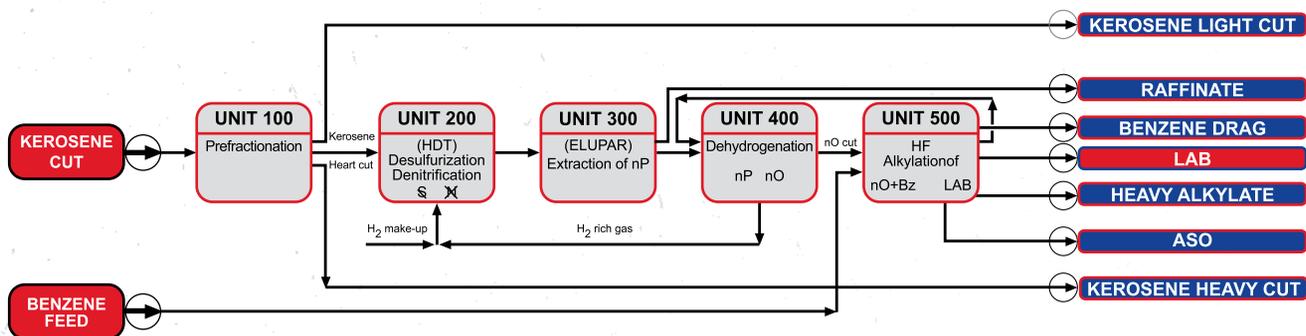
Heavy cut is then routed to unit 200 where it goes under a hydrotreatment operation for removing sulfur, nitrogen and oxygenated compounds. This operation needs a big quantity of hydrogen.

Unit 400 ensures supplying part of hydrogen. A hydrogen make-up line provides the remaining part. The hydrotreated heavy cut is then routed to unit 300 (ELUPAR), where only normal paraffin is extracted from raffinate. The operation is based on Elupar absorbers which retains only normal paraffin (linear shaped). Raffinate goes through the absorber and routed to refinery like Light and Heavy cuts.

Normal paraffin are then desorbed from Elupar absorbers and routed to unit 400, where they are dehydrogenated into normal olefins. At the same time this unit produces a Hydrogen rich gas, which is used for hydrotreatment operation in unit 200.

Normal olefins are finally routed to unit 500, where they are added to Benzene for manufacturing of LAB product. This alkylation step is based on a homogeneous catalytic reaction, using a liquid acid catalyst (HF). A part of the LAB product, unit 500, produces a Heavy alkylate cut as by-product (HAB).

LAB Plant General Scheme



Heavy alkylate (HAB)

Heavy alkylate (HAB) as a by-product of alkylation’s process can be used as heat transfer media, transformation oil, metal working fluid ,hydraulic fluid, lubricating grease , emulsifying agent and industrial detergent.

Sale and production (T/Y) in 2014			
Product	Capacity	Export	Domestic sale
LAB	15,515	5,960	10,798
HAB	1,007	800	2
Total	16,522	6,760	10,800

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Carbon Iran Company



Carbon Iran Company is the biggest producer of carbon black in Iran with more than 40 years of industrial experience prioritizing domestic production. Based on its strategic plans, the company has grown into the holding company of carbon products in Iran. This specialized holding company includes Pars Carbon Black, Sahand Rubber Industries and Chemical Industry Development Investing Companies.

The factory of Carbon Iran Company is located in “Karoon Industrial Zone” in Ahwaz city in a piece of land covering 13 hectares. The agreement to build the first unit of factory with the annual production capacity of 14,000 tons, started in 1972 after conducting some studies on participation with National Petrochemical Company (NPC), mine and industry development Bank and Cabot Corporation from the U.S.A, in order to meet the carbon black needs of Iran and officially started operation in 1974.

Construction of the second unit of the factory started by Iranian experts in 1989 and its production activities began in 1995 with annual production capacity of 21,000 tons.

At present, Carbon Iran Company, as a member of “Petrochemical Industry Investing Group”, with a nominal capital of 250 billion rials, is one of the companies, the shares of which are offered in stock exchange. This industrial group in addition to trying to produce and improve the quality of industrial products, pays special attention to environmental, organizational, quality promotion and human resources development issues besides meeting its social responsibilities.

One of the great achievements of Carbon Iran Company is the attention paid to environmental issues as one of the strategic management principles. Receiving ISO 14001 and “Green Industry” letter of commendation from the “Environmental Protection Agency” in the past years indicates the great importance attached to protect the environment as a national capital.

The endeavors of employees in Carbon Iran Company during the past years improved the company’s productivity. The greatest achievement of the company is 30 years of high quality production and sustainable development.

In addition to the different honorific titles like the Best Production Company, the Best Exporting Company, the Best National and State Exporting Company, achieving third position in Stock Market, the Best Industrial Company, the Best Entrepreneur of Province, this company has also received, by the endeavors of its employees, some other unique titles during the past 5 years such as, receiving (EFQM), ISO 9001 and ISO 14001, ISO 18001, ISO 17025 certificates, international prize of “Diamond Eye” for quality from Germany, standard golden image and was also selected as the best company in the first festival of industry champions of Iran.

Ehtemam Jam Company



Ehtemam Jam Co. was fully funded by Iranian private sector & officially established under Reg. No.1658-Kangan (ID No.10102723590) in 2003.

The first production unit of Ehtemam Jam Co. "Jam Pars Plastic Factory" was constructed in the South Pars of Iran, Assalouyeh, in 2004 and started its activity in the field of producing high-quality packaging plastic items such as plastic pallets and FFS bags in 2008 which are entirely produced by virgin raw materials to fulfill all the industrial packaging requirements for nearby petrochemical companies.

Formalin production plant is the Ehtemam Jam second factory located in Assalouyeh, Pars Special Economic Energy Zone (P.S.E.E.Z) which was constructed in 2008 to produce formalin and Urea Formaldehyde Concentrate (UFC85).

Annual production capacity

- Plastic pallet: 17,850 MT
- FFS: 5,500 MT
- UFC: 25,000 MT

Products

- Plastic pallets
- Form, Film, Seal (FFS)
- Formalin (intermediate product)
- Urea Formaldehyde Concentrate (UFC85)

Application

- Plastic pallets & FFS for packing of industrial and petrochemical products
- Formalin: Industrial adhesive for pulp & paper plants can be used as Hygienic and as feed in some petrochemical plants
- UFC: Agricultural Fertilizer resins and can be used as feed in some petrochemical plants

Contact details

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	Jam Pars Formalin Factory	: North of Pardis P. C., Assalouyeh - P.S.E.E.Z, I.R. Iran
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	Fax	: +98773 732 2019
	Website	: www.ehtemamjam.com
	Email	: info@ehtemamjam.com

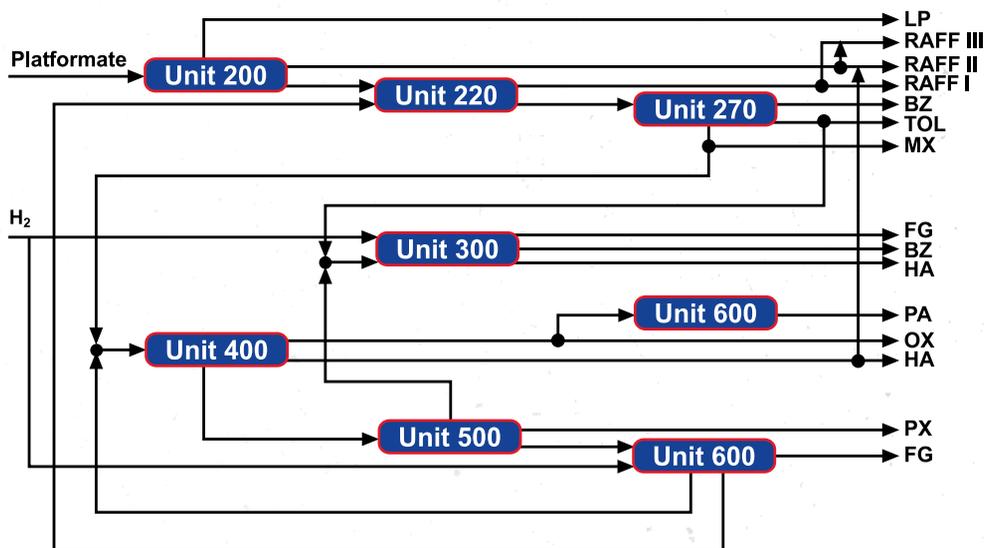
Esfahan Petrochemical Company (EPC)



Esfahan Petrochemical Company (EPC) is the first producer of aromatics-benzene, toluene, Ortho -xylene and Para-xylene in Iran. In 1992, EPC joined other petrochemical producing complexes in Iran. As a basic petrochemical plant among Iranian manufacturing plants, EPC's products are fed to numerous downstream manufactures of detergents, plastics, textiles, fibers plasticizers, paint and other petrochemical – based products.

EPC is located at the vicinity of Esfahan Refinery its major feed supplier. In line with EPC's development strategies, a phthalic anhydride plant with a capacity of 40,000 MTPY was launched in 2009.

Production process flow diagram



BZ=Benzene
TOL=Toluene

PX=Para-xylene
OX=Ortho-xylene

MX=Mixed-xylene
PA=Phthalic Anhydride

RAFF=Raffinate
HA=Heavy Aromatics

FG=Fuel Gas
LPG=Liquified Petroleum Gas

Products & Specification		
Product	Final (T/Y)	Purity (%)
Benzene	56,000	99.9 min.
Toluene	72,000	99.9 min.
Ortho-xylene	22,000	98 min.
Para-xylene	44,000	99.7 min.
Mixed-xylene	75,000	According to relevant standard
Phthalic Anhydride (PA)	40,000	99.85 min.
Raffinate I	50,000	According to relevant standard
Raffinate II	20,000	According to relevant standard
Raffinate III	50,000	According to relevant standard

Environmental improvement initiatives

- Receiving the EMS ISO -14001 certificate in 1998 and developing it to ISO 14001:2004.
- Receiving Iran's Green Industry Trophy in 1997 and 2002.
- Recognized as clean environment supporter by Iranian society of environmentalists.
- Replacing CFC refrigerants in all industrial & non-industrial areas with environment-friendly substitutes.
- Carrying out operational risk assessment and analysis in plant production and storage facilities.
- Implementation of Energy Management System throughout the plant.
- Substituting the consumption of utility water with treated wastewater in irrigation system.
- Implementation of drop irrigation system for watering trees and planted area.
- Optimization of combustion in boilers and furnaces by implementing dynamic air-to – fuel ratio control system.
- Implementation of waste management.
- Installation of hydrocarbon detector system in operational units.
- Substituting hydrazine with environment friendly chemicals.
- Receiving appreciation trophy in 2008 from Esfahan Province Department of Environment for serious efforts dedicated to natural environment protection and using environmental technologies.
- Accomplishment of a self declaration for pollutant monitoring since 2007.

Achievements

- Holding pioneering position for implementation of Management Systems.
- Having Zero waste production since start-up of the plant.
- Certified as Technical/Engineering Service Provider and Research & Development Firm in 2002.
- Recognized as responsible company by Iran Stock Exchange Organization in 2006.
- Certified for Commitment to Excellence (An Iranian TQM Award) in 2003, 2004, 2006 & 2007).
- Certificate of "Recognized for Excellence-2009" from Iranian National Productivity and Excellence Award.
- Recognized as the Best Iranian Petrochemical Plant in 1993, 1994, 1995 & 1996.
- Achievement of two consecutive 1000 days and 2181 days of non-stop production.
- Recognized as Esfahan Province's Best Exporting firm in 2002, 2003, 2004 & 2008.
- Obtaining and receiving bred of selected green industry from environmental protection agency in 1997, 2002, 2004, 2011 and 2012.
- Obtaining QC100 statue from BID institute in 2012.
- Recognized as one of the best exporter in Iran in 2009 & 2010.
- Recognized as five star appreciation letter at green industry award of excellence in 2010.

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Fanavaran Petrochemical Company (F.N.P.C.)



Fanavaran Petrochemical Company was founded in 1998 in order to produce methanol, acetic acid, carbonmonoxide, propylene and vinyl acetate monomer with the aims of:

- Achieving petrochemical higher valued products, using natural gas as feed
- Moving on, in accordance with adjusted industrial exports main plan in Islamic Republic of Iran
- Specialists training
- Job creation
- Technical knowledge transfer

This company is located in the south-west of Iran within the Special Petrochemical Economic Zone of Imam Khomeini Port in an area of 25 hectares, on the coast of Persian Gulf.

Methanol unit

The methanol unit of F.N.P.C. nominally uses 610,000 tons of natural gas, supplied by National Iranian Gas Company plus 270,000 tons of CO₂, from Maroon and Razi Petrochemical Companies to produce 1 million tons of methanol annually, based on rich gas design case. Feed gas enters the reformer with steam, just after desulphurization. Then it is transformed into a synthesized gas under the temperature of 900°C which converts into hydrogen, carbon monoxide and CO₂.

The synthesized gas produces the raw methanol after compression and cooling process happens in the synthesis reactors.

By the abstraction of impurities, in distillation unit, pure methanol with the grade of AA is produced.

The cost of this project, including: license purchasing, basic engineering, detailed engineering, procurement and technical services is 134 million Us Dollars and the total expense of the project equals to 1541 billion Rials.

Haldor Topsoe Company of Denmark is the provider of the project technology and designing and the procurement of equipment were carried out by Iranian and Italian companies: Sazeh and Snamprogetti.

The structure construction and installation were performed by Mehvarsazan Technical Company. Methanol unit was brought on stream by the end of construction and installation phases in 2004.

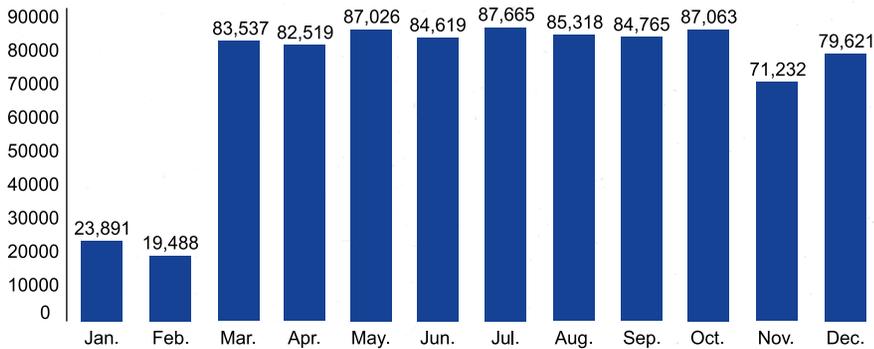
Methanol applications in F.N.P.C.

- 178,000 tons for MTBE
- 82,000 tons for acetic acid unit as raw material
- 700,000 tons for export

Methanol commercial applications.

- Paint industry
- Pharmaceutical industry
- Resin production industry
- Formaldehyde production
- Solvents production
- Acetic acid production
- MTBE production as raw material for producing clean and unleaded fuels

Methanol in 2014 (ton/month)



Acetic acid unit

This unit produces 150,000 tons of acetic acid, using 80,000 tons of methanol and 81,000 tons of CO gas, produced in methanol and carbon monoxide units of F.N.P.C.

Acetic acid is produced by chemical reaction between methanol and CO gas and Rhodium catalyst as catalyst at a CSTR reactor with methyl iodide as promoter under the temperature of 187 °C and pressure of 28 bars. The design technology is by KMT company from Ukraine and designing and procurement were carried out by OIEC, the Iranian and LG from South Korea. This unit became operational in 2006.

Applications in F.N.P.C.

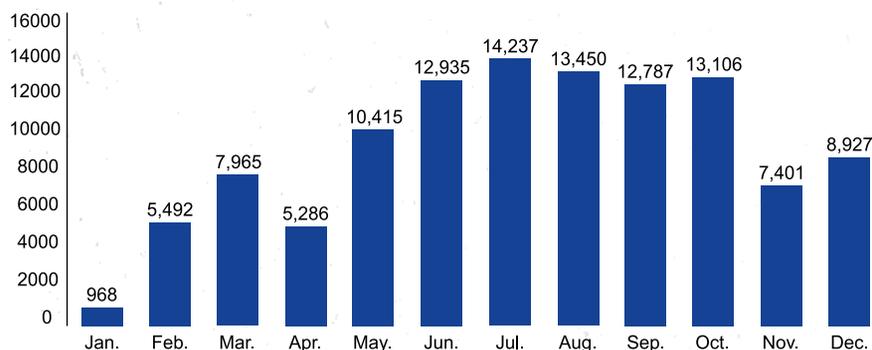
- 110,000 tons for vinyl acetate monomer
- 40,000 tons for PTA projects of Shahid Tondguyan Petrochemical Company

The main applications of acetic acid

- Vinyl acetate production
- Terephthalic acid
- Cellulose acetate
- Pharmaceutical industry
- Paint industry



Acetic acid in 2014 (ton/month)



Carbon monoxide unit

This unit produces 140,000 tons of carbon monoxide gas annually, using 86,000 tons of natural gas supplied by National Iranian Gas Company.

The feed gas of this unit, after desulphurization is mixed with steam and goes to the pre-reformer, and reformer for producing CO, CO₂ and H₂ as synthesized gas. Then the CO₂ gas is separated by amines and re-injected into the reformer again.

The gas containing CO, hydrogen and methane goes to the cryogenic section, where hydrogen and methane are separated and the final pure production (CO gas) returns to the end-user units.

The cost of this project was 37 million US Dollars for license, basic engineering, detailed engineering, procurement and technical services. The total expense of this project was 346 billion Rials.

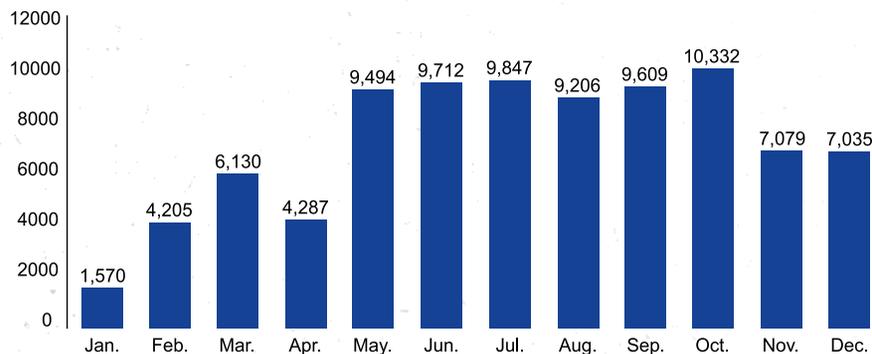
The technology was designed by Haldor Topsoe company from Denmark and designing and procurement were carried out by Sazeh company from Iran and Snamprogetti from Italy.

The construction operation was carried out by Tehran Jonob company. This unit became operational in 2006.

CO applications in F.N.P.C.

- 81,000 tons are used in acetic acid unit
- 59,000 tons of remaining CO is used in Iso-syanide projects.
- This product is mainly used as a feed for engineering polymers, production of acetic acid and organic chemicals.

CO in 2014 (ton/month)



Farabi Petrochemical Company



The growing consumption of plastic, as well as a booming paint industry in Iran, prompted the launch of an industrial complex in 1973 to produce phthalic anhydride (PA) which was to cover domestic needs and create export opportunities.

The construction of the complex was contracted to the Japanese Mitsubishi Heavy Industries. The plant was built through a joint venture by National Iranian Petrochemical Company and the Japanese group of Mitsubishi and Nissho Iwai, each with 50% shares, under the name of Iran – Nippon Petrochemical Co. The production lines were fully operational by mid-1977.

In 1988, the National Iranian Petrochemical Co. purchased the shares of the Japanese shareholders to gain full ownership of the company, then renamed the company to Farabi Petrochemical Co.

Farabi petrochemical complex was bombed twice by Iraqi airstrikes during the Iran-Iraq war, due to which 13 staff were killed and parts of the facilities were damaged. The damaged facilities were reconstructed following the United Nations Security Council Resolution 598 and were back on the production line on April 28, 1989.

Following the policy of the Islamic Republic of Iran's government in privatizing the state owned companies, the company was leased to the Petrochemical Industrial Investment Company for a while. It then changed status from a privately held company to a public one in February 1996. The company's name was then registered in Tehran Stock Exchange.

Roughly 90 percent of Farabi Petrochemical Company's shares are currently owned by Tamin Petroleum and Petrochemical Investment Co. (TAPPICO) which is affiliated to the Iranian Social Security Organization.

The company is headquartered in Tehran and the production complex is located in the Mahshahr Petrochemical Special Economic Zone by the Persian Gulf. The company's annual output is 60 thousand tons of DOP and 21 thousand tons of PA .

Products

The main products of Farabi Petrochemical complex are as follows:

- Phthalic anhydride is the first item on Farabi Petrochemical Company's product portfolio. The product is an essential need in resin and paint industries. PA is produced as O-xylene, the unit's main raw material, is oxidized when exposed to vanadium oxide.
- The second product is the oil-resembling Dioctyl Phthalate (DOP), of which the basic raw material is 2-ethylhexanol is one of the prominent softeners for various types of PVC powder. In Farabi, DOP is produced when coming in contact with a catalyst in a discontinuous fashion in a reactor equipped with blender. The product prepared in this way is of a higher quality than those produced otherwise.

Besides meeting the country's domestic demand, the complex's output is currently exported overseas. Based on the customer's order, the products are carried in tankers, by ship, or in 200-kg barrels.

Since the oxidation of O-xylene is one of the most heat-producing reactions in the petrochemical industry, to be able to continue the production, a mechanism must be devised to take the extra heat out of the production area. Then, the heat is used to produce water vapor which is used by the complex's facilities. Some of the PA produced is usually used as input material in producing DOP, while some other is turned into Phthalic Anhydride Flakes (PAF) and sacked in 25 or 500-kg bags to be used in resin and paint industries.

The product is produced according to the current international standards and with over 99.5 percent purity. A large portion of the output is exported to Asian and European countries as well as to the Indian subcontinent. The production procedure is constantly monitored by the company's highly – equipped laboratory. The laboratory is accredited with Qualification Certificate for Testing and Calibration Laboratory and also cooperates with the Iranian Standards Organization in conducting quality tests on DOP and PA produced across the country.

Beside the main production lines, Farabi Petrochemical Complex includes secondary units producing nitrogen, cooling towers, boilers, emergency power system, industrial sewage collection and water treatment system, as well as 9 tanks with a total capacity of 45 thousand cubic meters .A number of the tanks are used to store the company's raw material and products, and the rest are rented out. Also, to meet the stakeholders' satisfaction, the company has prioritized and strenuously pursues the expansion of its product portfolio.

The company's strategic objectives include keeping its production procedures in compliance to the latest international standards , meeting the satisfaction of stakeholders and customers in particular, following safety points and protecting the environment; ideals that the company has always adhered to.

As the first Iranian company to produce DOP and PA, Farabi has tried to outdo all other Iranian companies and to rival others abroad by adopting a universal management system in keeping with the latest international standards. Such efforts helped the company gain the top national prizes in production, sales, and technology development in 2013 among the companies managed by the Gas, Oil, and Petrochemical Investment Company (TAPPICO). In early 2014, also, the company was recognized as the top producing unit in Khuzestan Province.

The company has also strenuously pursued improving its management system according to international standards, and has been able to garner the following certificates:

- ISO 9001:2008; ISO/TS 29001:2010; ISO/IEC 17025:2005; OHSAS 18001:2007
- ISO 14001:2004; HSE - MS

By adopting "We can" as a maxim, stressing constant improvement, and propagating self - esteem, self-control, self – dependence; as well as providing an atmosphere of empathy and group participation, the company has paved its way to success.

Indeed, by observing these points, the large family of Farabi Petrochemical Company will present a good example to Iranian, regional, and international industrial communities.



Ghadeer Petrochemical Company

Ghadeer Petrochemical Company is a private joint-stock company. The company is located in a 15.2 hectares area in site No.3 of Petrochemical Special Economic Zone (PETZONE) in a district of Bandar Mahshahr and started operation since 2009. The company's annual production capacity includes 150,000 tons of Vinyl Chloride Monomer (VCM) and 120,000 tons of Polyvinyl Chloride (PVC). The products are used for making different types of pipes and piping material, hoses, electrical insulators, door and window frames, kitchen cabinets, automobile industries and etc.

Shareholders

- Social Security Investment Company (SSIC), known as Shasta in Iran, 90%
- Bandar Imam Khomeini Petrochemical Company (BIPC), 10%

Vision

Ghadeer Petrochemical Company aims to be the top-notch and pioneer company in the field of PVC production and supplying among the Middle East countries.

Mission

Producing and supplying PVC in accordance with the quality and environmental standards in domestic and foreign markets, in order to increase the shareholders' wealth.

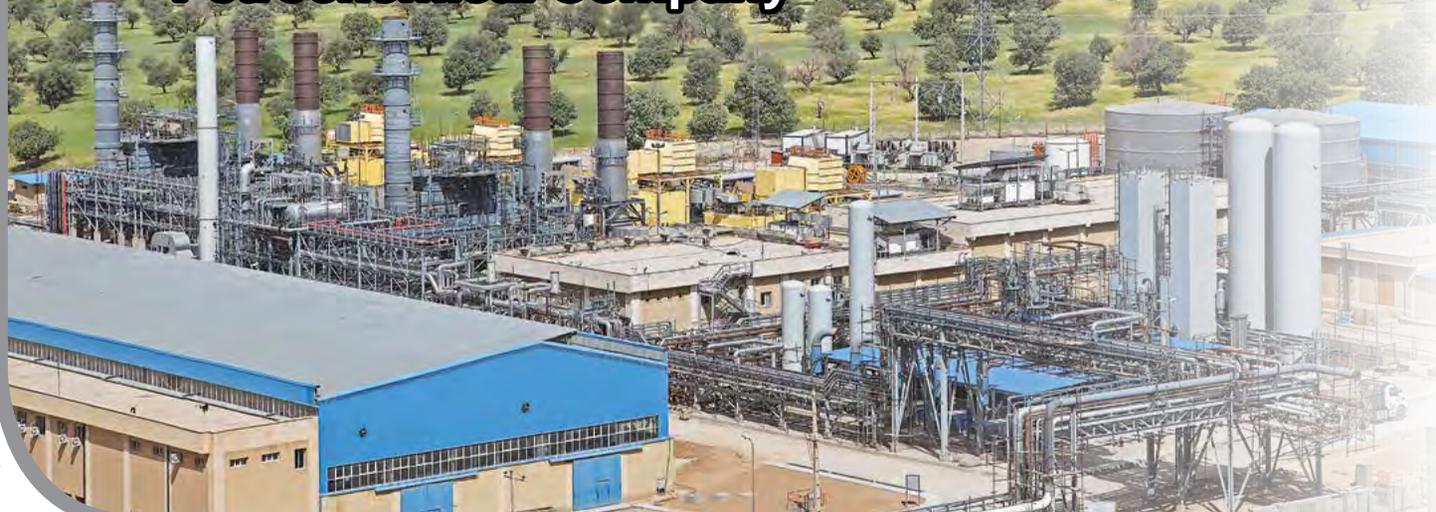
Objective

- Increasing profitability
- Eliminating bottlenecks
- Upgrading maintenance system
- Increasing customers satisfaction
- Upgrading information technology capabilities

Basic values

- Preservation of human resources and respecting their dignity, as one of the basic values of the company
- Focusing on satisfying the beneficiaries
- Special attention to the Health, Safety and Environment (HSE)
- Attaching great importance to creativity, innovation and continual improvement in all activities
- Development of co-operation and team-working
- Confidence in meritocracy in all levels of the company
- Regularity and discipline of the organization
- Endeavor to achieve an optimized level of energy management
- Creating a friendly and cheerful atmosphere in the workplace

Ilam Petrochemical Company



Ilam Petrochemical Company has been established in July 2003 in order to make the best usage of Ilam gas refinery products and convert them into high valuable products. The construction of the company was started in a 122 hectares area, 18 km away from the North West of Ilam city in Abzay Chavar.

Ilam Petrochemical Complex consists of 2 phases

First phase consists of the following plants: (in operation)

- High Density Polyethylene (HDPE)
- Utilities & Off-site
- Power & Steam plant
- Ethylene pipeline

Second phase consists of the following plants: (under construction)

- Olefin
- Sulfur removal unit

Since the ethylene from the first phase is not yet available, HDPE has been put into operation using the ethylene flowing in West Ethylene Pipeline which is passing by the west side of Ilam Petrochemical Complex.

Sources of feed			
	Description	1000 (T/Y)	Sources
1	C ₂	232.8	Ilam gas refinery
2	C ₃ ⁺	327.8	Ilam gas refinery
3	C ₅ ⁺	391.2	Ilam gas refinery
4	Ethylene	300	West Ethylene Pipeline

Product	Capacity 1000 (T/Y)
Ethylene	458
Propylene (chemical grade)	106
Propylene (polymer grade)	18
High density polyethylene	300
Pyrolysis gasoline	134
Fuel oil	33

Second phase consists of olefin and SRU projects in Ilam Petrochemical Company

Phase 2 overall progress			
Description	Weight factor	Plan	Actual
Olefin	88.82%	80.57%	59.56%
SRU	11.18%	88.75%	9.85%
Total	100%	81.48%	54.00%

Olefin overall progress

Description	Weight factor	UP to Nov. 2013		This period		Total	
		Plan	Actual	Plan	Actual	Plan	Actual
Engineering	10.00%	97.58%	70.36%	1.20%	20.57%	98.78%	90.93%
Procurement	44.00%	88.82%	63.83%	2.63%	9.94%	91.45%	73.77%
Construction and Pre- commissioning	42.00%	61.76%	26.06%	10.74%	16.81%	72.50%	42.87%
Training	0.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Commissioning & Start-up	3.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total	100%	74.90%	46.07%	5.67%	13.49%	80.57%	59.56%

SRU overall progress

Description	Weight factor	UP to Nov. 2013		This period		Total	
		Plan	Actual	Plan	Actual	Plan	Actual
Engineering	10.00%	0.00%	0.00%	99.94%	49.76%	99.94%	49.76%
Procurement	44.00%	0.00%	0.00%	62.69%	10.64%	62.69%	10.64%
Construction and Pre - commissioning	42.00%	0.00%	0.00%	43.09%	3.25%	43.09%	3.25%
Training	0.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Commissioning & Start-up	3.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total	100%	0.00%	0.00%	55.54%	9.85%	55.54%	9.85%





Jam Petrochemical Company (JPC)

Jam Petrochemical Complex is one of the Iran's largest non-oil products exporter. Located in the heart of the country's energy zone, its special geographical location has given it a distinguished position and caused the continuous development and improvement to become the main goal of this company.

During the last year, JPC promoted from 37th to the 28th rank among the top 100 companies of Iran, which shows the company's institutional and strategic capacities in value adding for its stakeholders as well as Iran's economy. Therefore, doubling production capacity of JPC is an achievable target within the next 5 years. During this period, Jam will remain as a leading company in the field of producing petrochemical products in Iran and the region, while trying to play a major role as a world supplier.

Focusing on production of some special grade polymers, engineering polymers and strategic products like ABS-rubber is amongst strategic plans of this company in the coming years.

Access to energy sources and international waters, benefiting from 3000 young and energetic manpower are the most important resources of JPC in achieving its goal of being a global and local distinguished company. Always going forward. We start our daily work with this term.

History

Petrochemical industry is the leading industry in the field of privatization in Iran. Since mid 2000, major portions of existing plants were privatized. Jam Petrochemical Company is the country's first petrochemical mega size project, constructed by private sector from the beginning. This plant has been constructed on a land of over 77 acres, some parts of which are reclaimed land.

Even one decade after start-up, this complex is considered as one of the largest ethylene producing plants in the world and one of the largest producers of polymeric products, of which a major portion is exported.

Implementation of some development projects such as ABS-rubber, will maintain its leadership role in Iran's industry. In 2014, JPC was ranked 27th among the 100 top companies in Iran.

Location and advantages

JPC is considered as one of the largest producers of chemical and polymeric products in Iran and owns production lines of olefin, LLDPE and HDPE, butadiene and butene-1.

Company's registered capital reaches to about 170 million USD. It owns 49% of Jam Polypropylene Co., 100% of Jam Sanat Karan, 100% of Tappico Co. and 25% of Gohar Ofogh Industrial Park's shares.

Other advantages of JPC are as follows:

- Annual production capacity of 1,320,000 MT of ethylene and 306,000 MT of propylene, which makes the company one of the largest of its kind in the world. One of the unique specifications of this unit is its high production capacity and possibility of utilization of dual furnaces that makes it capable of using both gas and liquid feedstock.
- HDPE unit's annual capacity reaches to 300,000 MT. This unit, along with capability of producing 26 main grades, is also capable of producing black, yellow, blue and normal grades which is an exclusive advantage of the company in Iran.
- JPC is the largest petrochemical plant of the region in terms of personnel number and export rate.

Vision

Jam Petrochemical Company is a committed company and is considered as a preference symbol with competitiveness preference in higher level of the world petrochemical industry field.

Mission

As a market-oriented company and leader in petrochemical industry and supplier of diversified products in olefin chain, Jam Petrochemical Company seeks to achieve maximum value through the development of value chain and increases sustainable competitive advantage in international scale. This company, as one of the largest olefin complexes in Iran and the world, is committed to meet the expectations of the stakeholders, safe and sustainable production, accepting social responsibilities and improving the environment relying on human capital by using unique position of Iran.

Goals

Development and completion of value chain of olefin-based products.

- Increasing the flexibility and diversity of products in accordance with the market needs.
- Developing the strategic relationships and partnership with other companies to create greater value for the company.
- Continuous improvement of managerial structures, systems, processes and practices to increase the company's efficiency.
- Designing and operating the integrated systems of Management Information System (MIS) and Knowledge Management (KM).
- Utilizing the latest international scientific and technological achievements for organizational learning and excellence.
- Ever-increasing value creation for customers and strengthening international competitive advantage.
- Institutionalizing and continuous improvement of relationship with customer and stakeholders.
- Continuous strengthening of moral values and ever-increasing attention to social responsibilities.
- Hiring, retaining, developing and utilizing human capital in accordance with the company's strategies.

Vital values

- Human beings are noble and spiritual creatures who deserve respect and merit proportionate to their spiritual value and dignity. This is our important criteria for approaching the staff and the clients.
- Jam Petrochemical Company is not just after doing business, but it looks to do good works as well. This is our social responsibility and to do so, we should first do our duty properly.
- Preserving and protecting the rights of shareholders and other stakeholders and paying special attention for protecting the environment.
- Legalism; we regard administering national and international laws related to our mission and the performance of the company as an infrastructural value.
- Alignment and coordination of the organization goals with personal goals of the staff for balancing work and family, so as to provide the employee's satisfaction and loyalty.
- Continuous organizational excellence, manifested in whatever we perform.
- We like our clients to buy our products because of our reputation and quality level.
- We regard being economical as an intrinsic part of our business in Jam Petrochemical Company, therefore; we do care for protecting company's resources as much we do care and are vigilant for our personal resources.
- Quality assurance of processes, products and customer-orientation.
- Developing a culture of learning, innovation, creativity, continuous improvement, teamwork and participation.

Olefin unit

Licensor: Technip

Annual production capacity: 1,320,000 MT of ethylene and 300,000 MT of propylene

Feed: Four liquid feed furnaces and six gas feed furnaces have been installed in this unit.

Gas feed of the complex is supplied either by South Pars project phases and Pars Petrochemical Complex and liquid feed is supplied by Noori Petrochemical Complex.

Products: Ethylene, propylene, pyrolysis gasoline, fuel oil, butadiene, raffinate, butene-1, hydrogen and C₄ cut

Features

- The largest olefin producer in Iran and one of the largest in the world
- Benefiting from the state of the art and environmentally friendly technology
- World class capacity
- Having flexible furnaces to use both liquid and gas feed

Application

Supplying complex' other units feedstock and other plants in the region

LLDPE unit

Licensor: Lyondell Technimont

Annual production capacity: 300,000 MT

Feed: Ethylene, hydrogen, butane, propylene, propane and hexane-1

Number of grades: 54

Products: HDPE, LLDPE, VLDPE, HP-LLDPE, HP-VLDPE, HP-LLDPE-Hexane and HP-HDPE

Features

- One of the largest of its kind in Iran
- Extruder capacity: 48 MT / Hour

Application

Packaging, home appliances, textile, agriculture and automobile industries



HDPE unit**Licensor:** Lyondell Basell**Annual production capacity:** 300,000 MT**Feed:** Ethylene, hydrogen and butane**Number of grades:** 23**Products:** Small blow molding, large blow molding, stretched tape, monofilament, cable pipe (natural color) and film**Features**

- High variety of grades
- High production capacity
- Capability of producing coloured grades and 2 packaging extruder line
- Capability of producing coloured products in injection, extrusion and blow moulding grades

Application

Home appliances, packaging, PE pipes, automobile and agriculture industries

Butene -1 unit**Licensor:** Axens**Annual production capacity:** 100,000 MT**Feed:** Ethylene and hydrogen**Features**

The largest production unit in Iran

Applications

LLPE and poly butane's co-monomer

Butadiene unit**Licensor:** German BASF**Annual production capacity:** 115,000 MT**Features**

The largest production unit in the Middle East

Applications

Rubber industry, SBR, ABS and PBR

Development projects**ABS-rubber line**

JPC's the most important development project is ABS production line which will be established in the second phase of South Pars Special Economic Zone (Assaluyeh) and is expected to be operational by 2019. This plant's annual production capacity will be 200,000 MT of ABS and 36,000 MT of rubber.

ABS market analysis was made based on ICIS 2013 report. According to this report, ABS consumption in 2012 was about 616 million MT which showed 2% increase by 2013 and is expected to have a 4% annual growth by 2025. ABS is mostly used in electronic and automobile industries.

Currently, domestic ABS production capacity is about 70,000 MT (nominal capacity). Market analysis shows that by 2017, domestic consumption of this product will reach 100,000 MT, whilst JPC will supply 40,000 MT of this demand and the rest will be exported.

The total investment of this project is expected to be about 520 million USD, with IRR of 36.25% and IRRE of 96.40%.

The Middle East countries, (especially Iran and Saudi Arabia), are considered as the world leaders in production of naphtha and LPG and consequently raw materials for ABS. The core competencies of producing ABS are: reduced raw material and its transportation costs and Iran's proximity to the European markets in comparison with south eastern producers.



Jam Polypropylene Co. (JPPC)

Jam Polypropylene Co. (JPPC) was established in 2004 in Pars Free Energy Zone on the northern shores of the Persian Gulf. JPPC holds a unique position to contribute to the global petrochemical downstream markets while observing all quality standards.

To achieve this goal, Jam Polypropylene Co. enjoys some significant logistic advantages including availability of low-cost feedstock, prominent production capacity, strategic location and proximity to port Assaluyeh that expedites the export operation and timely delivery of products. The competitiveness of the company is believed to be due to a number of fundamental factors including but not limited to:

- Commitment to maintain quality at high standards
- Commitment to meet deadlines and on-time delivery
- Commitment to deliver high quality products at reasonable prices
- Commitment to provide customers with technical services

Technology

Jam Polypropylene Co. has acquired the unique state-of-the art Spheripol technology from Lyondell Basell, as the world leading technology for production of a very wide range of polypropylene (PP) grades.

Products

Jam Polypropylene Co. (JPPC) produces 300,000 tons/annum of a wide range of polypropylene (PP) grades with premium quality under the brand name of "JAMPILLEN". JPPC is capable of producing more than 100 grades of polypropylene homopolymer, random copolymer, impact (heterophasic) copolymer and terpolymer focusing on all polypropylene applications within the global markets.

Jampilen homopolymers

Jampilen homopolymers offer optimum performance for injection moulding (automotive parts, thin wall articles, caps and closures, syringes, housewares, etc), blow moulding, film (BOPP, cast, blown), fiber (CF, BCF, monofilament, nonwoven, staple, raffia, etc), extrusion (sheet, pipe, profile), and thermoforming applications.

Jampilen random copolymers

Random copolymers and terpolymers contain superior optical and aesthetic characteristics and seal initiation temperatures in compliance with FDA regulations for food contact. Typical customer applications include high clarity/transparency packaging, injection moulding (thin wall items, housewares, and appliances), blow moulding, film, pipe, and thermoforming.

Jampilen impact (heterophasic) copolymers

Typical customer applications include thick extruded sections, pipe extrusion, film applications, thermoforming, and injection moulding (caps and closures, pails, thin wall articles, and automotive applications including bumper, under the bonnet, HVAC system, and battery cases)

Services

The highlight of Jam Polypropylene Co.'s operation is the customer-oriented attitude and sustainability of relationship with customers.

Establishment of R&D center as well as an Engineering & Business Development Department, not only facilitate the improvement of available grades according to the customers' needs, but also enhance development of new grades with distinct characteristics.

Facts & Figures in 2014

Sales	:174,647 MT
Turnover	: more than 200 million USD
Gross profit	: more than 60 million USD
Number of grades produced	: 12
Domestic share	: 80.4%
Export share	:19.6%
Export destinations	: Turkey, Azerbaijan, Armenia, Uzbekistan, Tajikistan, Iraq and Georgia

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Kermanshah Petrochemical Industries Company (KPIC)

Population growth in Iran, particularly after the Islamic Revolution, led to an increase in consumption of agricultural products which in turn caused a great deal of demand for chemical fertilizers.

Thanks to abundant sources of gas and availability of experts and professional manpower, petrochemical industry has experienced a significant growth in Iran, leading Kermanshah Petrochemical Industries Company to further develop this field of industry in the country.

Kermanshah ammonia and urea producing complex was constructed in the west of Iran to supply chemical fertilizers demanded by Kermanshah and neighboring provinces. Implementing this project, in addition to supplying chemical fertilizers, has played an important role in creating jobs in the region, developing technical capabilities of the province and improving the technical knowledge of the experts.

After the imposed war, some members of Kermanshah Chamber of Commerce, having investigated the effects of war on the economy of the region, considered different ways to improve the economical situation of the province and as a result, the necessity of establishing producing companies for developing economical activities was set on the agenda.

According to the demand from Kermanshah and neighboring provinces for chemical fertilizers, establishment of a chemical fertilizer plant was approved and Kermanshah Petrochemical Industries Company (KPIC) was registered in 1996.

In 2000, subscription was widely carried out by KPIC. Afterwards, the board of directors investigated entering into a consortium with the government, and due to the importance of developing petrochemical industry in the west of the country, National Petrochemical Company (NPC), being authorized by the government, accepted participation in implementing the ammonia and urea project.

Considering the low level of income in the city, the enthusiasm shown by the people of Kermanshah in purchasing the shares of the company, indicated their interest in developing the industry in Kermanshah and their appreciation for the efforts of the officials who had endeavored to establish a petrochemical company in the city.

Executive activities of the project were started after subscription, when financial sources were supplied. National Petrochemical Company which was in charge of implementing the project until commissioning and start up, bought 38.5% of the shares of the company in order to keep playing an active role in the operation stage as well.

Production (T/Y) in 2014

Product	Nominal capacity	Actual production	Performance%
Urea	692,000	631,865	91.31%
Ammonia	407,160	373,471.09	91.73%
Total	1,099,160	1,005,336	91.46%

Domestic sale & Export in 2014

Product	Domestic sale (T/Y)			Export (T/Y)		
	Planned	Actual	Performance%	Planned	Actual	Performance%
Urea	339,529.32	323,774.76	95.36%	327,539.18	358,615.72	109.49%
Ammonia	12,111.82	12,296.27	101.52%	428.18	750.00	175.16%
Total	351,641.14	336,071.03	95.57%	327,967.35	359,365.72	109.57%



Kharg Petrochemical Company



Kharg Petrochemical Complex is located in Kharg Island, which is situated at 29°-15' north and 50°-20' east on the Persian Gulf, 57 km from Bushehr Port. It has an average altitude of 3 meters above sea level. Due to its exceptional topography and suitable water depth, Kharg Island is an ideal location for the export of oil and petrochemical products and has gained its importance in this field. Among its attractions, the remains of Towers of Silence from the Sassanid Dynasty, Mir-Mohammad Mausoleum with over 700 years of history, beautiful sand beaches, flocks of free-roaming gazelles, fig trees and Indian crows are significant.

History

Kharg Petrochemical Complex was primarily established as Kharg Chemical Co. to recover propane, butane, naphtha and sulfur from the offshore oil fields associated gases by a joint venture company between National Petrochemical Company of Iran and Amoco of America on a 50/50 basis with a capital of 900 million Rials. The engineering work of the operational units was carried out in 1967 by J.E. Prichard of the U.S. and the construction and installations by Chiyoda of Japan. They were commissioned in 1969.

Expansion

In 1992, the company decided to construct a methanol plant with a host of objectives in mind including preventing flaring of surplus gases, producing a product with considerable added value and reducing environmental pollution as well as generating job opportunities. Established in an area of 24 hectares with an investment of \$149.5 million and Rials 465.5 billion, the plant, which uses Lurgi technology, was brought on stream in 1998.

Complex feed

Kharg Petrochemical Complex utilizes 4 million cubic meters per day of associated sour gases from offshore and onshore oil production field as its feed. The feed contains sulfur components as well as heavy and light hydrocarbons.

Production capacities:

- Propane (115,000 mt/year)
This product is used as raw material for production of olefins and also as fuel.
- Butane (120,000 mt/year)
Butane is used as fuel and also as raw material in production of olefins.
- Naphta (C5+) (70,000 mt/year)
It is used as fuel and raw material for production of olefins.
- Sulfur (170,000 mt/year)
Sulfur, is used as a primary material in producing sulfur compounds, sulfuric acid, fertilizers, electric insulators, pharmaceuticals, tire, gun powder and matches.
- Methanol (660,000 mt/year)
Methanol is the primary material for production of MTBE, acetic acid formaldehyde and industrial solvents.

Operational units and utilities

LPG recovery plant which consists of:

- Feed gas compression unit
- Sweetening unit
- Dehydration unit
- Absorption and fractionation unit
- Sulfur recovery, granulation & storage unit
- Demercaptanization unit
- Recovery gasoline purification unit
- Storage facilitation

Methanol plant which consists of:

- Feed gas compression
- Reforming unit
- Synthesis gas compression unit
- Crude methanol synthesis unit
- Distillation unit
- Storage facilitation

Utilities which consists of:

- Water treatment unit
- Steam generation unit
- Power generation unit
- Plant & instrument air unit
- Nitrogen unit



Loading and export facilities

Kharg Petrochemical Complex has 2 exclusive jetties to export its products. The jetties are located on the south eastern corner of the island consisting a loading platform and 8 dolphins. It is linked to the coast via an access bridge and is capable of loading vessels whose dwt ranges between 5,000 to 45,000 tons.

Ownership

Kharg Petrochemical Co. is registered as a public company with a capital of 2000 billion Rials. The major shareholders are as follows:

- Oil Pension Fund Investment Company
- Oil Industry Employees' Pension & Welfare Fund
- Civil Servants' Pension Fund
- Civil Pension Fund Investment Company
- Tamin Petroleum & Petrochemical Investment Company
- A number of real and legal persons

Certificates

Kharg Petrochemical Co. has obtained ISO 9001, ISO 14001, ISO 18001 and I.M.S certificated standards, certified by the German Company TUV NORT. This company is seriously after obtaining other certificates related to its current operations.

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Khorasan Petrochemical Company (KHPC)



Khorasan Petrochemical Company (KHPC) is located in the north of Khorasan province. Total area of the complex is about 500 acres out of which 75 acres is allocated to industrial zone, 337 acres to administration and recreation areas and the rest to the green spaces.

KHPC is the first fertilizer and petrochemical plant in the north east of Iran designed under the license of well known licensors with the most up to date technology and is equipped with modern equipment and control systems. KHPC began its production in 1996 and has achieved a number of national and global awards and records so far.

280 tons steam and 24 Mw of electricity are produced per hour in the power unit. 850 m³ of water is purified and 600 m³ of DM water is produced per hour in the water treatment unit. The NG feed of the complex is about 60,000 m³ per hour. Khorasan Petrochemical Company is planning to construct a “Gas to Polypropylene” (GTP) plant, with a production capacity of 500,000 tons per year in several grades to meet domestic needs of the country and for export. This plant will provide the feed for many downstream industries and also will create about a thousand job opportunities.

Product	Capacity (MT/D)	Application
Ammonia	1000	Production of urea, nitric acid and etc
Urea	1500	Agriculture
Crystal melamine	60	Production of melamine Formaldehyde resin
Nitrogen	600 NH ₃ /hr	Inert gas

The main feeds of this plant consist of natural gas and water. The units of the plant are as follows:

- **Methanol unit:** 1,650,000 tons of methanol per year is produced from natural gas
- **Propylene plant:** 500,000 tons of polypropylene per year is produced from methanol, applying the Lurgi process
- **Polypropylene unit:** The propylene produced in the previous unit, will be polymerized to polypropylene by a proper polymerization process which makes it possible to produce several grades of polymer based on the market demands. The production capacity of this unit will be 500,000 tons per year.
- **Utility:** In order to supply water, steam, electricity and high pressure air required for the above units, a new utility plant is needed, with a higher capacity than the current utility plant in KHPC.

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Marun Petrochemical Company

Aspirations to discover an elixir to change inexpensive metals into gold are as old as history. These aspirations never came true but they took a different shape with the advent of industrialization. The petrochemical industry in general and Marun Petrochemical Complex in particular are partly the focal point of attempts to realize one of the mankind's ancient dreams.

Marun Petrochemical Co. was established in 1998 to implement NPC's olefin number 7 project. With a production capacity of 1.1 million tons/year of ethylene, Marun Petrochemical Co. is one of the world's largest producers of olefins. It was Iran's first petrochemical plant that recovered C_2^+ from natural gas converting it into various olefins, polymers and chemicals.

Marun Petrochemical Co. is built in two separate sites covering a total area of 102.5 hectares

Curait camp

Marun's ethane recovery plant is built in an area of 9.5 hectares in the vicinity of Ahvaz city, the provincial capital of Khuzestan. A 95-km long pipeline will pump the extracted C_2^+ feedstock for the olefin plant located in the Petrochemical Special Economic Zone.

Petrochemical Special Economic Zone

The olefin plant plus HDPE, PP, EO/EG, UT and Off-site plants are built on Site No. 2 of the Petrochemical Special Economic Zone in an area of 93 hectares.

C_2^+ recovery plant

This plant yields the main feedstock for the downstream olefin plant. The operation at the C_2^+ recovery plant is run by a state-of-the-art technology. It has a capacity of 1,908,720 tons per year and extracts ethane and heavier components, initially used as fuels, from natural gas it receives from the (NGL) plants and transports them via a pipeline to the olefin plant to produce higher value-added products.

Gas cracking plant

With an annual output capacity of 1.1 million tons of ethylene, Marun's olefin plant is amongst the world's few mega-olefins that have become operational. The plant's main production slate also includes 200,000 tons/year of propylene. Besides, it yields pyrolysis gasoline, heavy C_3^+ , methane and hydrogen as by-products.

EO/EG plant

Ethylene Oxide (EO) is an important intermediate product used for the production of a wide range of products. A major portion of ethylene oxide at the EO plant reacts with water to yield 443,000 tons/year of different grades of glycols. Ethylene glycol is used for the production of synthetic fibers, films, automotive coolant and antifreeze. Other applications include unsaturated polyester resins, paper, protection shields, production of paints and inks. EO is used to produce antiseptics, pesticides and numerous other products.

Polypropylene (PP)

The PP plant has an annual capacity of 300,000 tons and produces various grades of PP. Marun is the first producer of the Hifax PP grade in Iran, a high impact polypropylene copolymer resin that is widely used in automotive industry.

PP is also used for the production of pipes, textiles, home appliances, toys, electronic parts, stationery, cable insulators, fishing goods and many more.

High Density Polyethylene (HDPE) plant

The plant produces 300,000 tons per annum of HDPE. It can produce 21 different grades. The product is used in the production of containers, bottles, chemical tanks, hygienic materials, cosmetics, films, high-impact fibers, cable insulators, high-pressure pipes and various packing films.

Utility and Off-site plant

The plant produces and includes:

- High-pressure steam (540 T/Hr)
- Medium-pressure steam (60 T/Hr)
- Sewage treatment with a capacity of 80 cubic meter/h
- Cooling towers with a maximum capacity of 120,000 cubic meter/h
- Water treatment Reverse Osmosis Method (ROM) with a capacity of 100 cubic meter/h
- Instrument air unit

Conclusion

In Marun Petrochemical Company, various stages of production processes are controlled by the advanced Distributed Control System (DCS) technology. Besides, modern laboratories continuously check and control the quality of the products.

Moreover, other plants and units such as safety & fire - fighting, medical emergency services, central workshop, instrumentation, telecommunication, electricity distribution, warehouses (which are the largest across the Petrochemical Special Economic Zone) as well as Off-site and utility services including steam, cooling water supply, raw material and products storage tanks, flare and intra-complex pipelines are working on 24/7 basis in tandem with the process plants.



Mehr Petrochemical Company (MHPC)

- **Established:** June 13, 2005
- **EPC contract effectiveness date:** Dec. 17, 2005
- **Initial start-up date:** May 22, 2009
- **Commercial run:** June 22, 2009

- **Shareholders:**
 - Alliance Petrochemical Investment Pte. Ltd. (API): (60%)
 - SCG Chemicals Co., Ltd, Thailand: (38%)
 - PTT Chemical Public Company Limited, Thailand: (12%)
 - ITOCHU Corporation Japan: (10%)
 - NPC International Ltd. (NPCI): (40%)

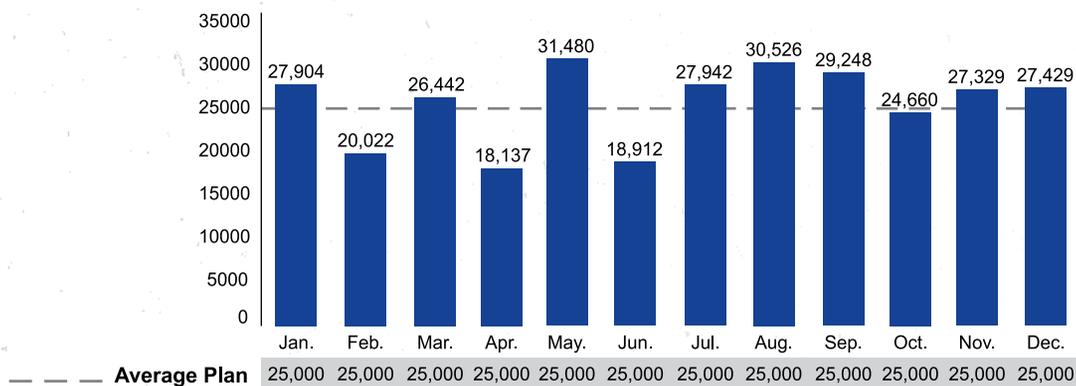
- **Production:** High Density Polyethylene (HDPE)
- **Capacity:** 300,000 T/Y

- **Feedstock:**
 - Ethylene supplied by Jam, Aray Sasol and Morvarid Petrochemical Companies.
 - Butene-1 supplied by Jam Petrochemical Company

Production (2014)

- **Total production Plan:** 300,000 T/Y
- **Actual production:** 310,030 T/Y
- In year 2014 approx.10 KT production higher than estimated (+3.34 %)

Production (T/Y) in 2014



- **Sale (2014)**

- **Total sale:** 301,100 T/Y
- **Export sale:** 243,600 T/Y valued at \$340,000
- **Domestic sale:** 59,500 T/Y valued at \$127,000
- Export sale is approx. 80% and Domestic sale is 20%

- **Plant reliability (2014)**

- Achieved plant consecutive running 190 days (Best record since operation Y 2009) at the end of year 2014.
- Achieved 2,000,000 manpower hours accident free production.

- **TQM received reliability (2014)**

- "1404 Productivity Award "
- "Extended IMS Certificate" in 2017 from "TUVNORD"
- Certificate "TS EN ISO 17025": Accredited in accordance with "TS EN ISO /IEC 17025:2012 standard" within the scope given in Annex, following the assessment conducted by "TURKAK".

Morvarid Petrochemical Company (5th olefin of Assaluyeh)

Morvarid Petrochemical Complex is located at a plot of land measuring about 20 hectare, in the Pars Special Economic/Energy Zone (Assaluyeh) and in 2nd phase of petrochemical industries. This complex consists of the following processing units and subsidiary services:

Ethylene plant

This unit was designed for 7920 hours production per year with the minimum of two years between the main repairs, and the product in this method is produced based on the cracking process, by the use of five furnace of pyrolysis.

Production capacity in this unit is five hundred tons of ethylene (polymer- grade) per year and the combination of C_3^+ , some amounts of burning gas and hydrogen gas are also the other products of this production unit.

After construction of Monoethylene Glycol (MEG) unit, the major part of produced ethylene (amounting to 340 thousand tons per year) is used as feed in the Monoethylene glycol unit. Providing some of the feed transferred by west ethylene pipeline and some products for export are also considered as other strategic goals of this unit. The feed required for this unit is 650 thousand tons of ethane per year and it has been agreed to provide such amount by the refinery complexes in the South Pars.

The initial production of this unit was started on February 23, 2010, and at present it is the main supplier of the required ethylene for Mehr Petrochemical Company.

Ethylene is produced in ethylene separation tower in the form of liquid and is stored in repositories. It is worth to mention that this system was designed for producing one hundred percent of its capacity in the form of ethylene gas.

Ethylene	Pressure (Bar ground)				Temperature °C			
	Min.	Normal	Max.	Design	Min.	Normal	Max.	Design
Vapor product at plant B.L.(battle limit)	27	28	29	33.5	20	55	70	85
Liquid product to loading arms in jetty		10		12.2	-104	-102	-100	-104



Ethylene processing sections

Section No.	Description
10	Cracking furnaces
20	Hot section & dilution steam generation
30	Cracked gas compression, caustic wash, drying and spent caustic treatment
40	Ethylene recovery and purification
50	Propane and ethylene refrigeration cycles
60	Steam, flare and blow down, cooling water, fuel gas and other utilities
70	Ethylene, ethane, C ₃ ⁺ storages (outside process plant), loading arms
80	Atmospheric storages (inside process plant)

Monoethylene Glycol (MEG) plant

The other processing unit of Morvarid Petrochemical Complex, which was designed for a greater exchange technology, is Monoethylene Glycol (MEG) unit. This unit was designed for the purpose of continuous production of 7920 hours per year, based on the performance process of two catalysts of High Activity (HA) Catalyst and High Selectivity (HS) catalyst and effective useful life of these catalysts.

The amount of feed of this unit is 340 thousand tons of ethylene per year and 368 thousand tons of oxygen per year and the produced products include 500 thousand tons of Monoethylene Glycol (MEG) per year, 50 thousand tons of Diethylene Glycol (DEG) per year and 3.4 thousand tons of Triethylene Glycol (TEG) per year. (All these products will be produced in liquid form)

Product	Pressure (Bar ground)		Temperature °C	
	Normal	Design	Normal	Design
MEG (Liquid)	5	15	50	85
DEG (Liquid)	5	14	50	85
TEG (Liquid)	5	14	50	85

Monoethylene Glycol (MEG) processing unit section

Section No.	Description
100	Ethylene oxide reaction section
200	EO recovery and CO ₂ removal section
300	Light ends removal section
400	Ethylene glycol reaction and recovery section
500	Glycol purification section/glycol product storage and transfer/ vacuum system
600	Chilled water systems and condensate recovery/ steam and condensate system/ BFW treatment system

Subsidiary service units

Subsidiary services of the complex are located in an area measuring about four hectares, and in a non-centralized condition. These units are divided into three parts, based on the type of service provider as follows:

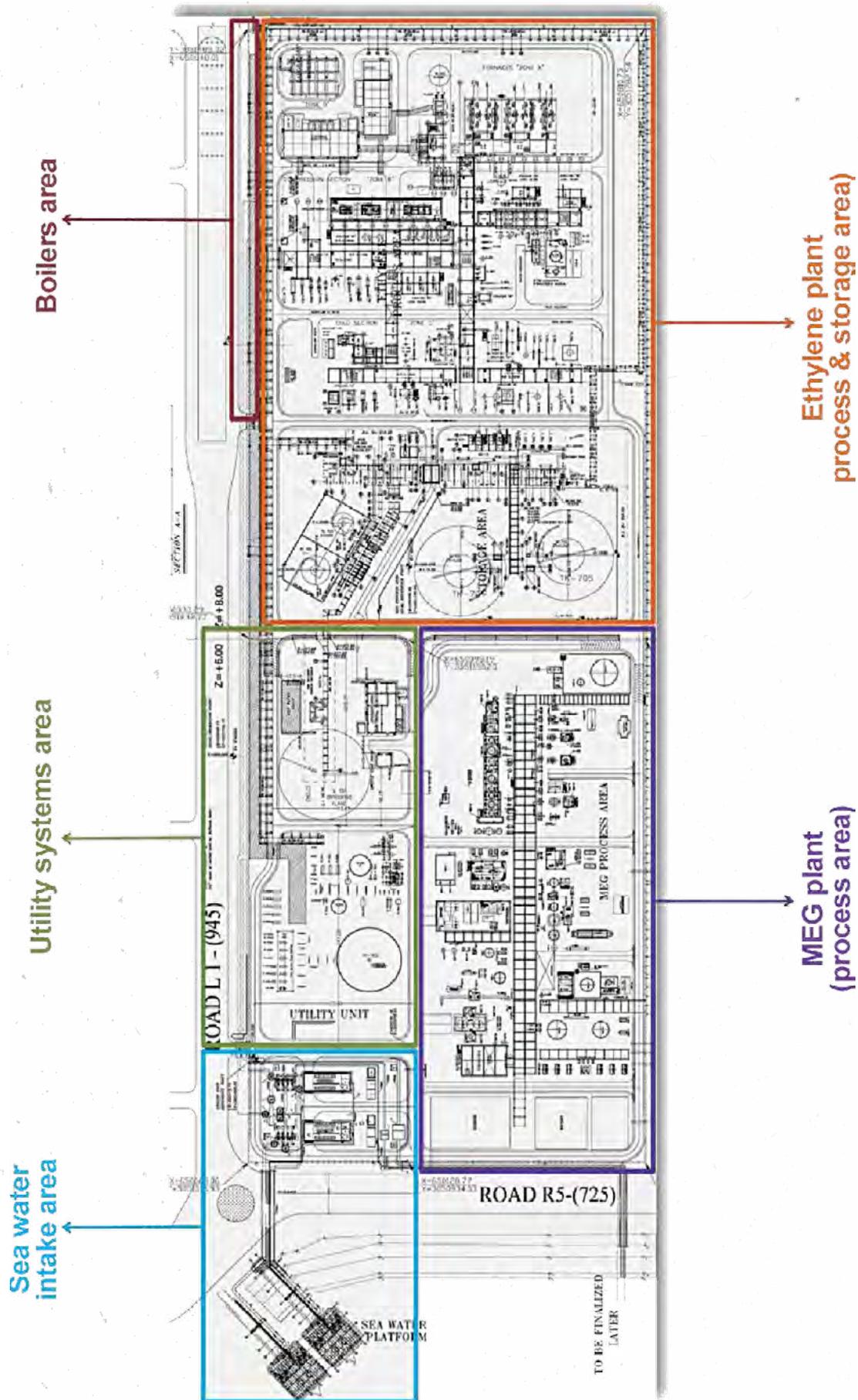
- Subsidiary units providing services such as supplying fire-fighting water, DM water, desalinated water, water for cooling closed circuit and drinking water.
- Water retention units one and two, which are responsible for providing cooling sea water for Morvarid and Mehr Petrochemical Complexes.

Steam producer unit, which is involved with providing steam for Morvarid and Mehr Petrochemical Complexes, in the following situations:

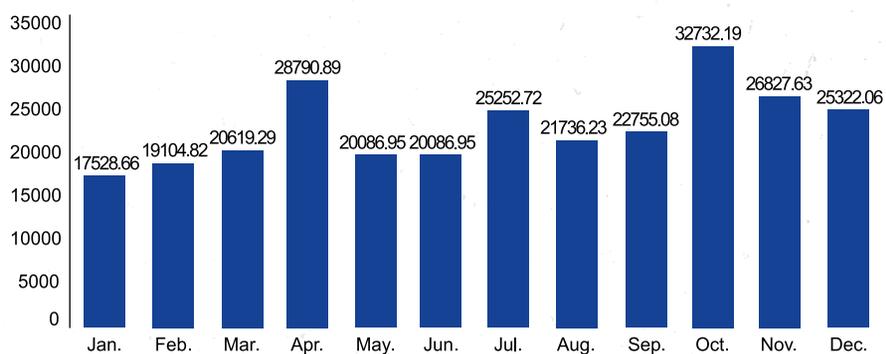
- In case that the required steam of the above mentioned complexes supplied by the phase one of Mobin Petrochemical Complex (centralized subsidiary services unit of the district) in terms of quantity, needs to be increased in terms of pressure and temperature.
- The aforementioned steam shall be solely provided through the existing boilers for the normal operation of Morvarid Petrochemical Complex.



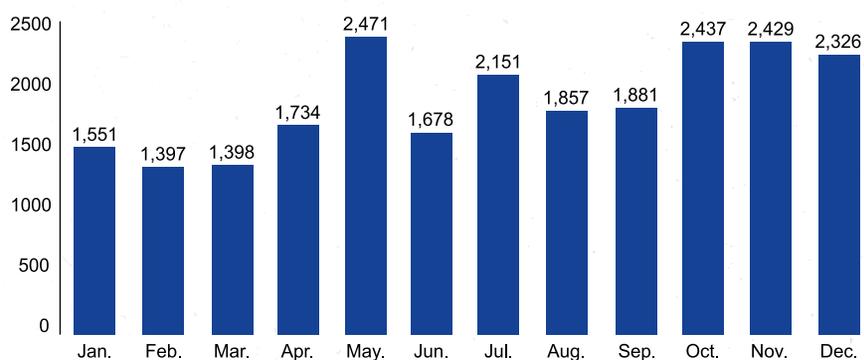
General view of the complex location



Ethylene production T/Y in 2014



C₃⁺ production T/Y in 2014



Navid Zar Chimi Industrial Company



Navid Zar Chimi Industrial Company is a private joint stock company, established in 1999 to meet the increasing demands of local and international markets for polypropylene.

The company is located in Bandar Imam Special Economic Zone, Khouzestan province and the plant is bordering with Amir Kabir Petrochemical Company olefin plant. The production unit was commissioned and started - up in September 2004. Parslen PP is the registered trade name for polypropylene, produced and marketed by "Navid Zar Chimi industrial company".

Parslen PP is manufactured by Spheripol process, introduced by Basell (Montell), which is the most advanced technology for production of polypropylene.

Parslen PP can be categorized into three broad groups: homopolymers; Random copolymers; and heterophasic copolymers. Upon specific applications, these can further be subdivided into a wider spectrum of grades with different additives and MFI, offering our clients with the widest range of products to suit their needs.

"Navid Zar Chimi Industrial Company", with the production capacity of 160,000 MT/Y, is applying the leading process technologies around the world to develop products that promote the quality of life.

- **Location:** Bandar Imam Petrochemical Special Economic Zone
- **Area:** 6 hectares
- **Founded in:** 1999
- **Ownership:** 100% private sector

Product	Capacity (KT/Y)	Feed	Licensor	Production date
Polypropylene	160	Propylene	Basell	2004

Application

Polypropylene with trade name of Parslen is produced as homopolymer, high impact copolymer, Random copolymer and terpolymer for many applications such as: yarn, fiber, BOPP film, pipes and etc.

Input feed	Amount (KTY)	Source
Propylene	155	Amir Kabir Petrochemical Co.
Ethylene	10	"
Butane-1	2	"

Standard certificates

- ISO 9001: 2008, ISO 14001: 2004, OHSAS 18001: 2007, ISO/TS 29001: 2007
- Production volume in 2014: 106,000 MT
- Export value in 2014: 208,000,000 USD

Major objectives

- Expanding new export markets
- Achieving higher local and international quality standards.
- Creating more economic value for the country.
- Investing in other petrochemical plants in Iran.

The company is currently the major shareholder of two petrochemical complexes and three major projects.



Razi Petrochemical Company



Razi Petrochemical Company is one of the most important producers of nitrogenous, phosphate fertilizers and chemicals in the country. Razi Petrochemical Complex, covering an area of 100 hectares is located in Imam Khomeini port, situated at the extreme northwest part of the Persian Gulf. The first phase of the complex units went on stream in 1961, followed by four years of construction operations. However, since the units were old and had been damaged in the war, available production capacity decreased to 2.4 million tons per year. By completion of the ongoing projects, it is expected that the production capacity to reach more than 3,000,000 tons per year.

Ownership and Shareholders

Since privatized in 2008, Razi Petrochemical Company has followed the trade law prevailing business conditions. In line with the implementation of "Article 44" of the Constitution, the company was privatized and a consortium consisting of "GuberFabrikalaritürkamonim (GuberehTash) and Tabosan Co. from Turkey and Asya Gas Energy Co., Shaghaiegh Sazeh Rangin Co. from Iran won the tender invited by Privatization Organization at 635 million USD price and the consortium acquired all shares of the the company.

Percentage	Shareholders
48.88	GubreTash (Turkish nationality)
23.91	Asya Gas Enerji (Turkish nationality)
10.88	Tabosan (Turkish nationality)
11.95	Shaghaiegh Sazeh Rangin (Iranian nationality)
4.38	Company staff

Products and modes of shipment

Liquid ammonia shipped by sea.

- Urea in two types: Granule and Peril, shipped by trucks, wagons and ships.
- Sulfuric acid in liquid form loaded on tankers and ships.
- Ammonium phosphate in granulated form shipped by trucks and wagons.

Production units	
Description	Capacity
Gas treatment units (1,2)	141 (mega.ft ³)
Sulphur recovery units (1,2)	2x643 (tpd)
Ammonia unit (1)	1000 (tpd)
Service and steam utilities units	36 (MW) 450 (m ³ phr) 217/8 (tpd)
New gas treatment unit (3)	81 (tpd)
New sulphur recovery unit (3)	783 (tpd)
New sulphuric acid units	1900 (tpd)-(A&B2)-(12units)
DAP unit (2)	800 (tpd)
Ammonia unit (2)	1000 (tpd)
Ammonia unit (3)	2050 (tpd)
Urea unit (2)	1500 (tpd)
Construction of new industrial water unit	400 (m ³ /hr)
Sulphur granulation	1600 (tpd)
MIS unit	200 (mega.ft ³)
Gas liquid separation unit	10 (ton)

Complex products feed

Complex feeds include sour gas, excess hydrogen of the zone complexes, CNG gas, nitrogen, air, water and phosphate soil. The main feed of complex is sour gas being extracted from seven specific wells located in Masjed-e-Soleyman. The gas enters into the complex through 20-inch pipeline with a length of 174 km with an inlet pressure of 1200 pounds per square inch and the amount of 115 million cubic feet per day (based on need) after hydration process.

Another basic raw material used in the company is phosphate rock that is used for production of phosphoric acid of Arya Phosphoric. Arya Phosphoric Company is a private and independent company of the Razi supply chain, and a dedicated consumer for complex sulfuric acid and provides phosphoric acid as a feed for diammonium phosphate product of RPC. Phosphate rock is imported from countries such as Morocco, Togo, and Jordan and is discharged at complex dedicated pier by ship.

Excess hydrogen of the neighboring plants in the area is used for ammonia production in ammonia unit 3 and also CNG gas (according to company quota) is used as a feed for ammonia production and consumption for fuel of furnaces, burners and boilers. Nitrogen is one of the ammonia production feeds. The water required for the complex is provided by 80 km of transmission pipelines, supplying water from Karoon River, which is Iran's only navigable river, 720 km long passing through Ahvaz city.

Subsidiary companies

RPC has two subsidiary companies, namely RainTrade, which is located in Turkey and is responsible for marketing and sales of Razi products and Arya Phosphoric, which was purchased by Razi Company for production continuity.

	Amount	million Rials
Export	963.6	10,308,338
Local sale	451.7	2,589,854
Total	1,415.3	12,898,192

Regal Petrochemical Company



Regal Petrochemical Company (RPC), as the first Iranian full private petrochemical company, is located in Mahshahr Special Economic Zone, site No.3. This strategic location provides RPC with access to land and sea, assuring excellent delivery times and competitive transportation rates. The plant has been basically designed by ABB Lummus with the license of Novolen technology (Gas Phase). In fact RPC is the only pioneer in the execution ownership of a PP plant in Iran with the license of Novolen technology. Regal is the only private company that has accomplished all EPC phase of its PP project by its own powerful teams of engineering, procurement and construction.

This reliable, versatile and environment friendly process makes products to meet the requirements of even the most demanding applications. Polypropylene is a versatile thermoplastic material compatible with many processing techniques and is used in many different commercial applications. It is on the fastest growing classes of commodity thermoplastics. The moderate cost, lightness and favorable properties of polypropylene contribute to this growth rate.

RPC supplies raw materials used in production processes such as injection and blow moulding, general extrusion, thermoforming, spinning, film and sheet. Our comprehensive range of polypropylene homopolymers, random and block copolymers satisfy the market demand in many cases.

Production capacity

Regal PP plant has been designed to produce PP (of full grades) with a capacity of 220,000 tons per year.

Establishment

Regal was founded in 2001.

Start- up

Regal started the PP plant in November 2006 and since then this plant has been in full operation by supplying more than 30 grades to domestic and foreign markets.

Products

Regal is capable of producing nearly all available worldwide PP grades from MFI of less than 1 up to MFI about 120 in compliance with the international quality standards.

Plant area

The area owned by Regal plant is a land measuring 13 hectare, 80,000 m² of which is allocated to process buildings, administrative buildings and warehouses.

Ownership

Regal company is 100% private owned by Regal entity exclusive of any public or governmental share.

labors and human resources

A number of 340 people of different level of skills have all been full-employed by regal company, most of whom holding PHD, MS and BS in all engineering disciplines.

Export to foreign markets

In 2014 the amount of Regal PP grades exported to about 12 foreign countries was around 22.15% of its total sales.

Regal share on other projects

RPC is enthusiastically doing its utmost efforts to reach its required propylene feedstock by investing further on its own subsidiary companies.

Future projects

RPC is also trying to invest on Oil & Gas projects in neighboring countries so as to implement a refinery project to produce different fuels and refinery products.

Shahid Rasuli Petrochemical Company



Shahid Rasouli Petrochemical Co. (SRPC) was established in 2001, and started production in 2008, in order to meet the domestic requirements and reduce the problem of non-availability of pentaerythritol in the Middle East. The company was established in Mahshahr's Petrochemical Special Economic Zone with a total investment of 3,500 billion rials. The land measures at 90,000 m² with an infrastructure of 40,000 m² and an annual production capacity of 90,000 MT which consists of 5 various products.

SRPC consists of three plants:

- A pentaerythritol unit
- A formalin unit
- An acetaldehyde unit

The formalin unit started production in 2008. However, due to the economic sanctions, the production of the other two units was temporarily paused. In 2014, these two units have been under construction with the partnership of a third party Iranian company.

At present, the physical progress of the entire project (acetaldehyde and pentaerythritol plant) is around 50% with an over 80% of the machineries and equipment having been delivered to the site. It is predicted that the complete implementation and operation of the project will be accomplished by the second quarter of 2016.

The breakdown of the total 90,000 MTA production capacity and the specification of the products are as follows:

Products	
Product	Capacity (T)
Pentaerythritol	10,500
Di-pentaerythritol	500
Sodium formate	8,000
Formalin	66,000
Acetaldehyde	5,000

Specification of products	
Product	Purity (wt%)
Pure grade pentaerythritol	99.5 min.
Special grade pentaerythritol	98 min.
Technical grade pentaerythritol	95 min.
Di-pentaerythritol	90 min.
Sodium formate	95 min.
Formalin	37-55
Acetaldehyde	99.0 min.

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Shimibaft Company



This company, covering 5 hectares of land, is located at the site 3 of "Imam Khomeini Petrochemical Special Economic Zone". In 2002 the unit 1 of this factory with annual production capacity of 45,000 tons MTBE was launched for test and in 2002 the factory was officially inaugurated. In 2004 the operation of implementing the second MTBE project at Shimibaft factory was started by Iranian engineers with the same production capacity as of the first unit and in 2006 went on stream.

The company's products include

- MTBE as the main product (With an annual production capacity of 90 thousand tons)
- C₄ raffinate II as a by-product (With an annual production capacity of 60 thousand tons)

Activities

In line with the company's strategy to protect a safe and clean environment and to increase quality of products the following measures have been taken:

Establishing Integrated Management System (IMS) including:



- Implementing the project of Methyl Ethyl Ketone (MEK) from by-product of C₄ raffinate II
- Developing & maintaining green area of the factory
- Installing online analyzer on runoff water outlet of the factory
- Protecting exit of stack boilers by using relevant analyzer
- Utilizing Ro water for utility in order to decrease level of consumed water
- Regular monitoring by environmental self statement
- Regular monitoring of units to eliminate possible pollution
- Executing waste material management plan
- Offering environmental training courses for personnel
- Increasing the level of personnel awareness by publishing environmental brochures & holding related commemorations
- Participating in and supporting environmental conferences and exhibitions scientifically & financially

Shiraz Petrochemical Company (SPC)

In the vicinity of glorious city of Shiraz, the city of roses and great poets, lays the first fertilizer plant in the country.

Shiraz Petrochemical Company (SPC) was founded with an initial investment of 2900 million rials (about 400 million US dollars) in 1959, in 300 - hectare land, out of which 72 hectare is dedicated to infrastructures. The initial aim was to supply the fertilizer needs of the country. It is now producing almost 2,050,000 tons/year of a vast variety of upstream & downstream chemicals and petrochemicals and is counted on as a major petrochemical producer in the country.

SPC is the only fertilizer plant in Iran and the whole Persian Gulf region which produces both prilled urea & ammonium nitrate at the same time. This unique feature has enabled the company to introduce a new project on producing another unique downstream liquid fertilizer Urea Ammonium Nitrate (UAN).

Moreover there is a huge capacity development under construction in zone 3 of the complex which will come into operation in the year ahead, adding 1.8 million tons to SPC production capacity & 1.15 million tons to its final production capacity. This new mega ammonia/urea facility would also bring a new product inside the complex as granule urea.

SPC's products are partly exported to overseas destinations through SPC's own export facilities in south of Iran & other parts are sold in domestic markets. The major feedstock for the operating plants is natural gas, limestone and salt. The natural gas source is from the main cross-country pipeline, while the limestone and salt are extracted from the adjacent mines. Water needed for process as well as utilities purposes is supplied from the nearby dam. In order to support the production plants, foster the personnel skills and set safety standards, the following facilities are provided in the complex.

The company has established well-equipped workshops in order to repair and maintain the plant equipments and systems. The training department has offered courses in electronics, computer, mechanics, electrical fundamentals, english language, and many other fields. It is worth mentioning that many plant managers in NPC subsidiaries have obtained their valuable experiences in this company.

The fire and safety department is equipped with well-trained personnel, to safeguard the safety of personnel and plants against potential accidents. There also exists one medical clinic to take care of medical emergencies of employees. The management and personnel efforts have realized establishment of integrated management system, green management prize, EFQM 5-star certificate, Fars province Top Exporter title, etc. There also exists more than one hundred and twenty hectares of green land dedicated to sustain clean air.

Process plants

The constituent plants, depending on the year of their start up, divide the complex into three zones.

Zone one

This zone consists of one 111-MTPD ammonia unit, one 150-MTPD urea unit, one 360-MTPD soda-ash unit and one 80-MTPD sodium bicarbonate unit. The in-built utility plant provides all the utilities required for the process plants in this zone. The synthesis section of the ammonia plant has been shut down for safety & old technology issues but the syngas section is still in operation, helping ammonia plant in zone 2 to produce products with 5% higher capacity.

■ Sodium carbonate plant

The soda ash plant with 180 MTPD nameplate capacity was started up in 1973. Then, subsequent expansion projects increased the production rate to 360 MTPD. Table salt and limestone are feedstock for this plant. soda ash is used in glass and paper mills as well as in leather, food and textile industries as additive or feed-stock.

Unit	Capacity MTPD	Product	Start-up	Licensor	
Ammonia	111	Ammonia + Carbon dioxide	1963	Ammonia (France)	Casale
Urea	145	Urea	1963	Montecatini (Italy)	
Soda ash	240	Light & Dense soda ash + Sodium bicarbonate	1973	Industrial import (Romania)	Export



Zone two

The major expansion project in the company was implemented in 1984 by constructing ammonia, urea, nitric acid and ammonium nitrate plants of ten times in capacity as zone No. one. It also consists of bulk handling facilities for produced materials as well as utilities. The hydrogen and argon recovery unit was annexed to ammonia plant in 1994.

■ Ammonia plant

Ammonia is produced via steam reforming of natural gas. natural gas at pressure of 43 bars is first desulfurized and then mixed with steam prior to let into primary reformer. Air is injected to secondary reformer in order to provide the synthesis gas with nitrogen and also provides the necessary heat for further reforming of the exit gas for primary reformer. The carbon monoxide is converted into carbon dioxide in shift reactors.

Carbon dioxide is washed and recovered by hot carbonate solution and sent to the urea plant. The residual carbon oxides in the synthesis gas are converted into methane in methanator prior to gas compression stage. The make up gas is converted into ammonia in the synthesis loop and the produced ammonia is let down and sent to consumers while the unreacted gas is routed back to the reactor. The purge gas is dealt with in the argon recovery unit and the hydrogen rich gas is used as make up gas.

Unit	Capacity MTPD	Product	Start-up	Licensor
Ammonia	1200	Ammonia + Carbon dioxide	1984	ICI (England)
Urea	1500	Urea	1984	Stamicarbone (The Netherland)
Nitric acid	1034	Nitric acid	1984	Grand Paroisse (France)
Ammonia nitrate	650	Ammonia nitrate	1984	Kaltenbach (France)
Argon	15	Argon	1994	Air-Liquid (France)

■ Urea plant

Ammonia and carbon dioxide are needed to produce urea. The urea plant is designed to produce 1500 MTPD urea. The ammonia and carbon dioxide is fed to the condenser to produce carbamate solution. It is then let to the reactor to be converted into urea. Then solution formed is concentrated in series of evaporators and sent to prilling tower. Airflow in countercurrent direction (drafted by six fans) solidifies the urea prill drops and cools it to 88 degrees celsius.



- **Nitric acid plant**

Nitric acid is produced by air oxidation of ammonia on a platinum-based catalyst. The oxidation product is nitrogen monoxide. It is further oxidized to nitrogen dioxide, which is then absorbed by water to form nitric acid.

- **Ammonium nitrate plant**

Nitric acid and ammonia are feedstock for this process. Ammonia is first vaporized in evaporator and then is mixed with nitric acid in the reactor to produce steam and ammonium nitrate solution. Vacuum evaporators are used to concentrate the solution thus formed. The 99.8% melt is poured into prilling tower via suitable showers. The prill drops are solidified and cooled by countercurrent airflow in prilling tower and fluidized cooler bed. Ammonium nitrate for industrial purposes is also produced in this plant.



- **Argon recovery unit**

The ammonia purge gas is used to produce 15 MTPD technical grade (99.999%) argon. It is used in welding as well as electrical bulb industry.

Zone three

This zone consists of methanol plant, which is in operation since 1990 and the new granule urea & ammonia plants are under constructions.

- **Methanol plant**

The methanol plant was designed to produce 255 MTPD grade "AA" methanol. The plant has been operational since 1990. Steam reforming of natural gas is used for this process. Methanol is applied in synthetic fibers, plastic industries as well as melamine, insecticides and MTBE production.

Unit	Capacity MTPD	Product	Start-up	Licensor
Ammonia	2300	Liquid ammonia	Pre 2015	Casale
Methanol	255	Methanol	1990	Lurgi (Germany)
Urea	3200	Granule urea	Pre 2016	TEC

Tabriz Petrochemical Company

Established in 1990, Tabriz Petrochemical Company (TPC), operates a large production complex at Tabriz city suburb in north-west of Iran. Becoming operational since 1996, it mainly produces raw plastics such as polyethylene, polystyrenes and ABS.

Tabriz Petrochemical Company holds a production capacity over 800,000 MT/Y of raw plastics, liquid products and liquefied gases. (See table below for final products)

Final products of the complex and their typical applications

Product	Capacity (T/Y)	Application
LLDPE/HDPE	100,000	Liquid storage tanks, shopping bag, plastic films, toys and household appliances
High impact polystyrene	94,000	TV and radio casing, automotive, refrigerator and washing machine parts, toys, household appliances, disposable utensils
General purpose polystyrene	25,000	Body of ball point pens, toothbrushes, lighting fixtures refrigerator and automotive parts, disposable utensils and cups
Expandable polystyrene	15,000	Ice boxes, Insulation walls, packing for fragile parts and products
Acrylonitrile Butadiene Styrene (ABS)	35,000	Body of monitors, electrical parts, refrigerator internal parts, stationery, phones and auto parts, keyboards, suitcases
Propylene	56,000	Production of polypropylene (PP) and chemicals
1,3-Butadiene	17,000	Production of ABS, PBL, SBR
Toluene	2,000	Production of various chemical solvents

The main feedstock for the complex is light and heavy naphtha and liquefied Petroleum Gas (LPG). Major portion of the feedstock is supplied by Tabriz Refinery and the rest by Tehran Refinery through pipeline as well as by petrochemical companies located at the southern Iran, shipped by the truck.

Export destinations include neighboring and ME countries, China, Europe and Africa.

TPC is a Public Limited Liability Company (PLC) its main shareholder is Tabriz Oil Refining Company that operates Tabriz Refinery.



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Zagros Petrochemical Company (ZPC)

Zagros Petrochemical Company was established in 2000 within the framework of Iran's third economic, social and cultural development plan for entering the global markets and gaining a considerable share of methanol market. In order to enable the company to compete in international markets and considering the rich gas resources in Pars Special Economic Zone (PSEZ) and its strategic location, 31 hectare of land was allocated to ZPC and the production complex was founded in Assaluyeh.

On the other hand, the complex was designed to exploit maximum of produced energy in synthesis reactor and also the recycled energy in reforming unit for supplying the required energy. As a result almost 205 t/h of pressure steam with 40 bars pressure will be produced and sold. The contract of basic engineering, detailed engineering design and procurement of equipment was signed with a consortium of Lurgi Oil Gas chemise and Petrochemical Industries Design and Engineering Company (PIDEC) of Iran.

All the construction activities have been conducted by Iranian contractors. According to the contract signed with Lurgi and PIDEC companies, the first phase was implemented in 2001 and completed with the capacity of producing 1.650 million tons per annum of methanol grade AA in 2006.

By finishing construction activities of the second phase in 2009, ZPC with the production capacity of 3,300,000 ton methanol per annum has been known as the largest methanol producer in Iran and one of the five largest methanol producers in the world.

Executive agreements

Phase	License	Contract	Detailed engineering & procurement	& Installation construction
First phase	Lurgi of Germany	EP	Lurgi of Germany & PIDEC of Iran	Ramshir & Machine Sazi Arak
Second phase	Lurgi of Germany	EP	Lurgi of Germany & PIDEC of Iran	Mehvarsazan

Application

Methanol is widely used in producing industrial products such as: paints, resins, solvents, antifreeze flat plywood. Currently the largest use of methanol is in the production of formaldehyde, MTBE, DME and acetic acid.

The largest use of methanol by far is in producing other chemicals. About 40% of methanol is converted into formaldehyde, and from there into products as diverse as plastics, plywood, paints, explosives and permanent press textiles.

Methanol-to-Olefins/Methanol-to-Propylene (MTO/MTP), among other processes such as: Metathesis, Propane Dehydrogenation (PDH), high severity FCC, and olefins cracking, is a new and novel lower-cost chemical process for on-purpose propylene production technology of high interest to the petrochemical market place, to supply the tight market with propylene.

The market became tight because of the ethane prices falling in the USA, due to the exploration of shale gas reserves. The low price ethylene produced from this raw material has given chemical producers in North America a feedstock advantage. Such change has put naphtha-fed steam crackers at a disadvantageous position, with many of them shutting down or revamping to use ethane as feedstock. Nevertheless, the propylene output rates from ethane-fed crackers are negligible

Production

In the year 2014, ZPC produced 2.485 million tons and exported 2.231 million tons of methanol.

Facts & Figures of Zagros Petrochemical Company

Nominal capacity	3,300,000 T/Y
Actual production	2,485,000 T/Y
Exports	2,231,000 T/Y
Domestic sales	70,000 T/Y
Product	Methanol

Quality management & Environment protection

ZPC has established HSE systems for maintaining its production capacity, ability to compete in the international markets, stable development and continuous improvement, as well as omitting or reducing hazards risk and protecting environment along with personnel's health, as its principle.

Zagros Petrochemical Company plans to obtain ISO 9001 and ISO 17025 certificates in 2015, deploying the quality management system.

	ISO 14001	OHSAS 18001	HSE-MS	ISO 9001	IMS	ISO 17025
	Recieved	Recieved	Recieved	In progress	In progress	In progress
ZPC	2008	2008	2008	2015	2015	2015

Iran's Petrochemical Industry Report 2014



Service Company

- Petrochemical Commercial Co. International Ltd. (PCCI)

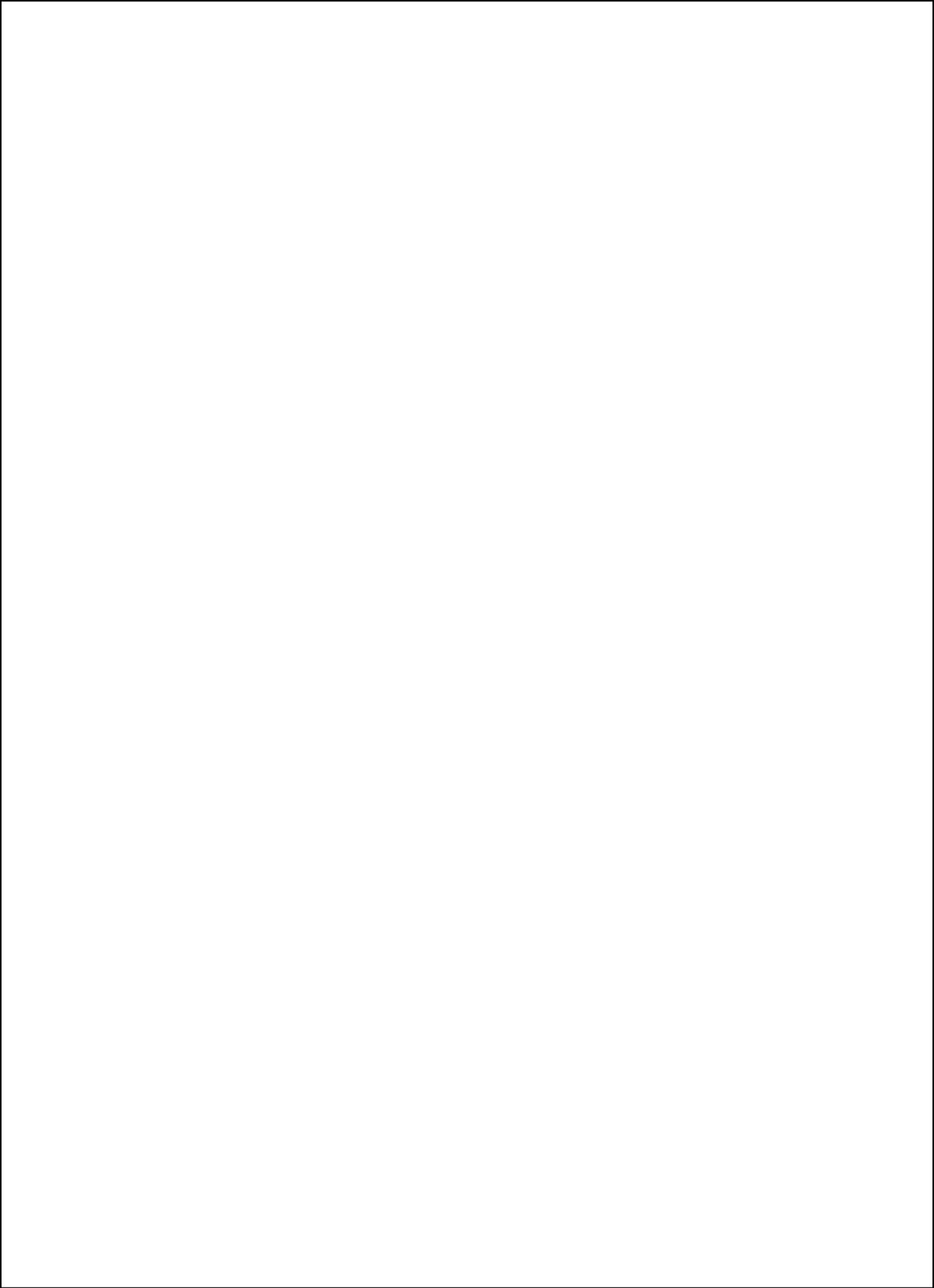
Petrochemical Commercial Co. International Ltd. (PCCI)



Petrochemical Commercial Co. International Ltd. (PCCI), registered in Jersey, Channel Islands in the year 2000 and continued in Labuan, Malaysia since 2011, is an International Trading Company mainly focused on purchasing oil, gas and petrochemical products from Iranian producers and exporting them to different target markets like China, S.E.Asia, India, Middle East, Africa, Turkey, Europe, CIS and South America. Moreover, PCCI is in a position to import chemicals, feedstock and requirements of Iranian petrochemical complexes from different reputable sources in Asia and Europe.

In 2014, PCCI's main exported products included polyethylene, polypropylene, crystal melamine, LPG, methanol, MEG, para-xylene, acetic acid with a quantity of more than 1.5 million tons and a multi-billion-dollar turnover.

PCCI with a strong network all around the world is in a position to supply the customers' requirements based on clear and trustworthy procedure.



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