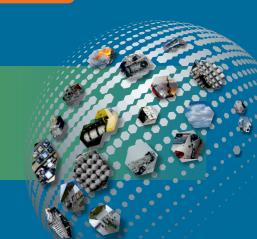


# TAMKAR GAS

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#### Introduction

Tamkar Gas Co was established by a group of entrepreneurs in industry sector in 2000 in order to internalize the design and production knowledge in energy sector.

This complex is a dominant symbol of participation of private sector in growth industry, employment, and development of Iranian economy and endeavor to flourish industrial potentials in country.

Since internalizing technical knowledge of design and manufacturing of industrial machinery and equipment is the strategy of all companies in this group, this company has continuously tried to step in the path of independence of country by its attempts and paying expensive costs.

The background of this attempt include activity in private and public sector designing, manufacturing, installing and commissioning more than 450 CNG stations around country; distribution of LPG stations; commissioning gas station data gathering center; manufact-uring Mother & Daughter gas stations.

This background encouraged this company to enter in the modern activity areas such as manufacturing drilling equipment and pipes, manufacturing flare gases compressors, etc.

The combination of Board members and directors of this company provides a valuable treasure of experience and specialty knowledge in technology, execution, industry, and trade areas, and this importance cannot be ignored in making logical decisions toward benefits of organization, customers, contractors, clients, and buyers.

Tamkar Gas Co. intends to enter into different internal and external energy areas regarding environment issues by development of its affiliated companies, utilizing all available facilities, and consensus knowledge and healthy competition in order to do steps toward independence of country and development of economic capabilities and to dominate the name of this company in national and international areas.





## Values:

Values are orientation and beliefs of Tamkar Gas Co. towards the events. In fact, they are guides of company from "what is" to "what shall be".

Tamkar Gas Co. uses the following values regarding its perspective:

- Customer-oriented
- □ Up-to-date requirement
- Making decision by study and analysis
- Respect to environment and ethical principles
- Value creation for customers and other beneficiaries
- Social accountability and observing rules and regulations
- Team working, creativity, innovation, and continuous improvement
- Capital and human force productivity and retaining material and virtual capitals













#### **Mission:**

Tamkar Gas Co. tries to promote its services and products quality through development of quality culture and continuous improvement, and will satisfy customers and respond their requests through the following strategies:

- To produce high quality products with suitable prices to obtain a larger share in internal and external markets;
- To provide high quality after-sale services with suitable prices;
- To execute projects on time;
- To deliver products on time according to schedule and received orders;
- To use high quality goods and services through qualified suppliers;
- To improve human resources through empowering programs and increasing staff scientific levels:
- To observe national and international rules and standards in production and services;



#### **Technical Potentials, Introduction of Projects**

- Flare gas utilization project
- Production of appliances for CNG stations
- Manufacturing drilling pipes for oil and gas wells

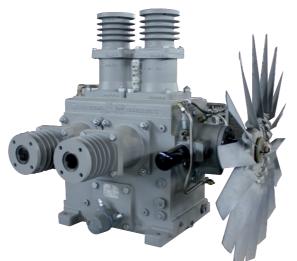




#### Compressor Model Cc and Ct, from 250 to 2000 M3/h

#### **Technical specifications**

- Output pressure: Max. 350 bar
- Min & Max input pressure: 4 and 17 bar (60 and 250 PSI)
- Flow rate: 250-2000 m3/h
- Motor power: Max. 278 kW
- Voltage and frequency: 400 V, 50 Hz, 3 phases
- Power Transmission: Belt
- Easy repair and maintenance
- No special foundation because:
  - · Design of Trunk piston and lack of Crosshead, and lower inertia
  - Compressor is equipped with anti-vibration
- Independence of utility units such as compressed air and water
- Lower compression level in each compression step, resulting:
  - High return
  - Low output temperature
  - Minimum depreciation
- Using air-cooled system



## **Gas Dryer**

#### **Technical Specifications**

- □ Type: Absorption dryer with automatic reduction cycle
- Min & Max input pressure: 4 and 17 bar (60 and 250 PSI)
- □ Dew point of output gas: -50°C at work conditions
- Dry cycle period: 16-48 hours
- Reduction cycle period: 4-6 hours
- Drying method: Molecule sieve
- Closed circuit, without venting natural gas
- □ To control absorption phase by dew point / time
- Equipped by Blower system for drying gas in a closed cycle when compressor is idle
- Separate control panel with data transfer capability



#### Dispenser

#### **Technical Specifications**

- Type: With mass flow meter
- Max. pressure: 250 bar (3600 PSI)
- Standard refueling pressure: 200 bar (2940 PSI) at 15°C
- Mass flow: 20-100 kg/min
- Measurement technology: Coriolis
- Number of fuel hoses:
- □ 1 or 2 (upon request of customer)
- Environment temperature: -30 to +60°C
- □ Fuel hose: 3/8"-3/4 ", 3.1 m long
- □ Dimensions: 500×750×2000 mm (L×W×H)
- Weight: 200 kg
- With 3- lines fast fill type
- □ With microprocessor control system
- With break-away coupling for higher safety
- With remote control



#### **CNG Storage Module**

#### **Technical specifications**

- Type: with 3 priority modules, on the frame
- Max. pressure: 275 bar (4043 PSI)
- Max. test pressure: 375 bar (5512 PSI)
- Pipe material: Stainless steel
- Storages installation on metal frames
- Increment of efficiency of storages by allocation of 3 separate banks
- With pressure gauge for each bank
- Equipped storage valves to PRD
- With 3 separate safety valves for each bank





at height

■ With UPS

tanks

system

**Technical specifications** 

**CNG Station Model EC250 and EC500** 

■ Can be installed in a limited space or

■ With anti-noise and anti-fire system

■ With power factor correction system

■ With fuel mass measurement system

■ High safety due to lack of high pressure

■ With automatic gas leakage detection

■ With automatic control system

■ No need to a separate dryer ■ No need to dispenser platform

■ Fuelling during 3-5 min

□ Input pressure: 4-17 bar

■ Output pressure: 250 bar

■ Power: Max. 110 kW

■ Air-cooled system

□ Capacity: 250 and 500 m3/h

#### Flare Compressors of 1000-5000 Nm<sup>3</sup>/h

#### **Technical Specifications**

- Input pressure: 15-120 PSI
- Flow rate: 1000 -5000 Nm3/hr Motor power: Max. 315 kW
- Voltage and frequency: 400 V, 50 Hz,3 phases
- Compression in one-stage,two-stage,... methods
- Power transmission: Belt
- Lower spare parts due to not using
- Crosshead and packing
  - Design of Trunk piston and lack of
  - Compressor is equipped with anti-vibration
- step, resulting:





- Output pressure: Max. 900 PSI

- Easy repair and maintenance

- No special foundation because:
  - Crosshead, and lower inertia
- Independence of utility units such as compressed air and water
- Lower compression level in each compression
  - High return
  - Low output temperature
- Minimum depreciation
- Using air-cooled system



#### Medium & Small Refueling Stations Advantages of using fuelling devices in house and work place:

- Independence from fuel stations
- Time saving due to lack of referring to fuel stations
- Cost saving for fuel price
- They can be used in residence complexes, so system costs are distributed between residents
- High safety with EC licenses
- Lower space for installation
- Approved by National Iranian Gas Co.



	Specification	MCH24	мсн5
	Input pressure (mbar, 1/4 psi)	17 mbar / ¼ psi	17 mbar / ¼ psi
	Output pressure (bar, psi)	200 bar / 2950 psi	200 bar / 2950 psi
	Capacity (Nm3/h)	24	5
	Compressor stages	4	3
	Piston diameter (mm)	120-60-32-14	60-36-14
	Piston course (mm)	50 mm	40
	Compressor cycle (rpm)	1200	1240
	Compressor pressure (bar)	3.2-16-70-200	5-40-200
	Motor power (kW)	9	2.5
	Voltage (VAC)	400	400 -230
	Frequency (Hz)	50-60	50-60
	Outside noise (Db(A))	72.4	65
	Environment temperature (°C)	-15 to +45	-15 to +45
	Tank filling time per 10 Lit (0-200 times) (min)	5	25
	Dimensions (L×W×H) (cm)	133×82×179	67×70×105

**MCH5 & MCH24** 



**TAMKAR GAS** 







#### Gas Distribution by Mother & Daughter (VPL) Methode

Mother & Daughter Method is a common gas supply method in the world, which has been noticed in the recent years. By this method, CNG is transported to the stations (daughters) by special CNG trailers, then its pressure is decreased and is injected to pipeline.

This method is suitable for transferring gas to hardly accessible places or villages with low population.

#### Specifications of PRU of Tamkar Gas Co.

Pressure Reduction Unit (PRU) is used for decreasing CNG pressure from 250 to 4 bar in gas-supply projects.

The specifications of this unit are:

- Capacity of 500-2500 m3/h
- Two pressure reduction lines
- Pressure reduction in two steps by two regulators
- Possible to use gas boiler or electrical heaters
- Activity for installing of volume metering with corrector for measuring of gas flow rate in each line.



#### Flare gas Utilization Project

According to the global statistics, after Russia and Iraq, Iran produces most flare gas in the world. Flare gas utilization is one of the national goals in order to prevent waste of natural gas and to prevent environment pollution and acid rains.

Tamkar Gas Equipment Co. is a pioneer in utilization of flare gas in country. This company put in its agenda the study and equipment manufacturing for flare gas utilization from 2013.

For the first time, Tamkar Gas Equipment Co. contracted with NIOC in 2016 to recovery oil fields flare gases.



## Tamkar's Actual Capability in Flare Gas Recovery projects:



#### **Manufacturing Drilling Pipes for Oil and Gas Wells**

Tamkar Gas Co. started its activities in designing and manufacturing drill pipes in Iran in 2015 with common investment with it's joint venture This company also produces a broad range of drill string accessories. We absolutely believe that quality of products of this company meets needs of customers and this is the success principle of each organization. Therefore, we considered quality principles in manufacturing according to API standard and Quality Management System according to ISO 9001:2008.

#### Features of Manufactured Pipes by Tamkar Gas Co.

- Friction welding design up to diameter 177.8 mm
- Production of tempered Tool Joint
- Heat treatment and stress-relieving after friction welding
- Production of drill pipes with diameter more than 177.8 mm
- Hard-banding welding
- Repairing all kind of drill pipes
- Making all kind of threads nittrated or phosphated threads









#### **Manufacturing and Production Department**

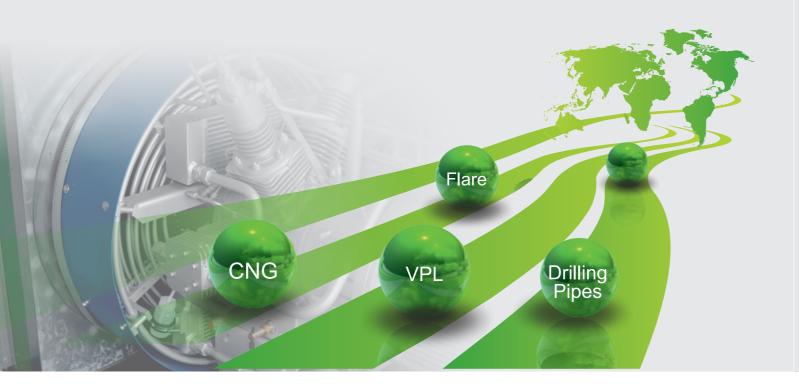
R&D Department is the heart of company, which monitors production process, designs and prepare devices and parts maps in oil, gas, and petrochemical industries.

The experts of this department use engineering software, such as Catia and Solid Works, for designing different equipment according to ASTM, ASME, and European standards.



#### **The Important Activities Includes:**

- Designing and manufacturing CNG and flare compressors
- Designing and manufacturing CNG dryers
- Designing and manufacturing PRUs with various debits
- Designing and manufacturing gas supply stations by Mother & Daughter Method (VPL)
- Designing and manufacturing control panels for CNG, flare, and PRU stations
- Designing and manufacturing fluid transfer systems for oil and gas projects



#### TAMKAR GAS

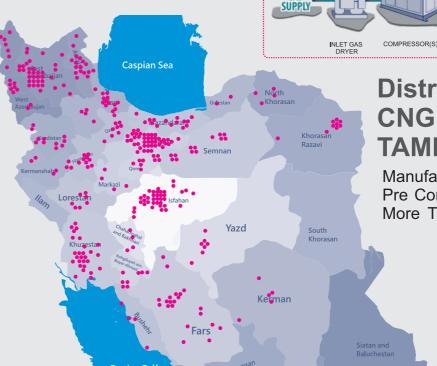
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#### **After-Sales Services Department**

After-sale Services Department of Tamkar Gas Co. provides technical services to CNG stations after startup of stations and supplies required parts for CNG stations.

This department has branches in all provinces and has more than 120 experts in CNG stations. This department has organized a special training system in order to develop potentials of operation and repair personnel in CNG stations, and holds specialty courses about operation, safety, repair, maintenance, and engineering principles in CNG stations. All covered personnel receive related certificates





# Distribution of Installed CNG Stations in Iran by TAMKAR GAS Company

PRIORTITY STORAGE PANEL VESSEL SYSTEM

Manufacturing, Procurement, Installation, Pre Commissioning & Commissioning of More Than 380 CNG Station in Iran

#### **Quality Control (QC) Department**

QC Department is responsible for quality of all produced equipment and parts. This department monitors proper manufacturing according to the related standards. The activities of QC Department are divided into three categories: Monitoring purchase of equipment, monitoring manufacturing, monitoring installation and commissioning.

Monitoring purchased equipment and manufactured equipment include the following steps according to the manufacturing standards:

#### □ Pre-Built Inspection

Pre-built quality control requirements are included in purchase and manufacture contracts.

#### □ As-Built Inspection

As-built inspection is according to manufacturing standards. As-built inspection includes inspection of manufacturing methods (raw materials, consumed appliances for manufacturing,...), inspection of as-built tests, etc.

#### □ Post-Build Inspection

Functionality tests are done after completion of manufacturing to ensure performance. In-service Inspection is done during operation of equipment regularly. After completion of manufacturing and commissioning, the role of QC Department changes to regular inspection of equipment and monitoring replacement of defected equipment.







## **HSE Department**

Tamkar Gas Company With over 18 years of experience in manufacturing equipment in the oil and gas industry, has been making great eco-friendly efforts. The most important project in this case was the commissioning and operation of the Kranj Parsi unit (cluster) at a rate of three million cubic feet per day to prevent the burning of gaseous fuels, change the approach and attention to environmental issues and eliminate or reduce pollution.

In order to standardize and secure the activities in units of Tamkar Gas company, the company has started to establish an integrated management system (IMS) in accordance with ISO 14001-2015, OHSAS 18001-2007 and ISO 9001-2015 standards in 2017.

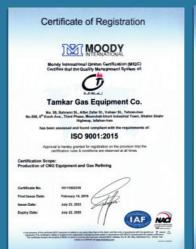
The company aims to continuously improve and upgrade HSE management to create a safe and eco-friend workplace for human resources, equipment and the environment. The main activities in the safety, health and environment are;

- HSE Plane Development and Performance in projects
- Risk assessment
- PHAST analysis in operational units
- HAZOP study in operational units
- ☐ Providing safety guides for process equipment such as compressors, storage tanks and...
- Measurement of harmful physical and chemical agents
- Establishment of waste management system





#### **Technical Documents and Certificates (Domestic and International)**





















(TUV)

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**Certificates & Technical Approvals** 







