



# KARAJET®

Since 1995

COMMITTED TO THE HIGHEST EFFICIENCY



General  
Catalog

COMMITTED TO THE  
**HIGHEST**  
EFFICIENCY

# KARAJET®

Since 1999

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## KARAJET at a Glance

KARAJET® is a highly vibrant, innovative company and pioneer manufacturer of ejector and vacuum system in Middle-East. Since 1995 our company is raring to go by innovative solution for every problem, with hand-picked elites from highly venerable academic sources. Due to having an insatiable appetite to remain original over time, we have managed to develop endogenous technology for designing and manufacturing several types of mechanical equipment for process industry with substantial application in Oil, Gas, Petrochemical, Chemical, Food and Beverages, Steel and Alloys, Power and other related Industries.

## CERTIFICATES



## AWARDS

### Knowledge-Based Company Certificate

With an official degree of technology from Iranian Ministry of Science, Research & Technology

## KARAJET VALUES

At KARAJET we define a unique identity by creating a suitable environment for continuous development and enhancement with specific purposes. We value our company's resources and try to get to optimum synergy between the man, the machine and our ultimate objectives through green policy.

The policy of the company is planned based on below principals and these are our commitment to the customers:

- 1 - Designing equipment with supreme efficiency and lowest energy consumption
- 2 - Manufacturing equipment with preeminent quality
- 3 - Decreasing customers' procurement and utilization costs

## EDUCATION LEVEL OF STAFF

Masters or higher	19
Bachelors	11
Associate's degree	22



# DESIGNING & ENGINEERING

KARAJET uses in-house design software programs to solve specified problems by the customers. The software development accomplished based on our indigenous knowledge and enables us to calculate the most challenging process requirements. Employing elite graduates from top Iranian universities has been led to continuous improvement in our products' quality and services.

## APPLICABLE STANDARDS



# FABRICATION

The factory is well-equipped by test facilities, modern fabrication and inspection equipment which guarantees the best product performance and efficiency.

## EQUIPMENT

Equipment	Quantity
NC Rolling Machine (4 roller)	1
Rolling Machine (3 roller)	2
CNC Drilling Machine	1
Radial drilling Machine	1
Vertical Drilling Machine	2
CNC Milling Machine	1
Milling Machine	4
CNC Cutting Machine	1
Lathe Machine	4
Hydraulic Press (250 Ton)	1
Press Burke	1
Plasma Cutting Machine	1
Welding Machine (Tig/Mig)	20
PWHT Furnace (up to 1650c)	1
Painting Room	1
Sandblasting Room	1

## CRANES

Ceiling Crain	Capacity : 10 tons	2
Ceiling Crain	Capacity : 5 tons	2
Ceiling Crain	Capacity : 3 tons	1
Ceiling Crain	Capacity : 2 tons	1

## AREA

Factory Area	7000 M <sup>2</sup>
Office Area	1300 M <sup>2</sup>
Workshop Area	3600 M <sup>2</sup> ( 120m x 30m )

# KARAJET®

Since 1995

Committed to the Higher Efficiency



# EJECTOR

Ejectors are devices of rugged and simple construction which are used in a wide range of applications to generate a suction force. This suction force may be used to create vacuum and/or draw a secondary fluid. Pressurized liquid, gas or steam could be used as the motive medium, while any liquid, gas or steam can be introduced as the suction fluid which includes wide range of applications.

#### Advantages:

- Simple and compact
- No moving parts
- Low maintenance cost
- Safe and reliable operation

## WHY WE OBLIGE OURSELVES TO SUPPLY **HIGH EFFICIENCY EJECTORS ?**

Ejectors are usually considered as permanent functioning equipment. In other words ejectors might be at service around 8760 hours per year. In this case, if consumption of vacuum package which consumes 1000 kilograms per hour reduces only %10 by optimization, it will consume 100 kg lower steam per hour. So total yearly consumption would decrease by 876000 kg. Therefore, the cost of saving within three to four years will be equal to the equipment price.



According to the motive fluid, ejectors are categorized into three main types;

## Steam Jet Ejectors

### Single stage steam ejectors

Vacuum pumps (down to 100 mmHg)	<ul style="list-style-type: none"> <li>• Low temperature boiling</li> <li>• Vacuum filtering and cleaning</li> </ul>
Ventilators	<ul style="list-style-type: none"> <li>• Replacing fans for ventilation or low vacuum service exhausting</li> </ul>
Thermo-compressors	<ul style="list-style-type: none"> <li>• Heat recovery of low pressure process vapor</li> </ul>

### Steam jet liquid pumps

Heaters	<ul style="list-style-type: none"> <li>• Installation in vessels and/or pipelines and noiseless injection of steam into the liquid</li> </ul>
Liquid pumps (syphon)	<ul style="list-style-type: none"> <li>• Simultaneous conveying and heating of liquids</li> </ul>

## Gas Jet Ejectors

<ul style="list-style-type: none"> <li>• Gas jet compressors</li> <li>• Gas jet vacuum pumps</li> <li>• Gas jet ventilators</li> </ul>	<ul style="list-style-type: none"> <li>• Extensive applications in natural gas industry, flare gas recovery</li> <li>• Priming, leak oil or petrol collection</li> <li>• air circulation, or ventilation applications</li> </ul>
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## Liquid Jet Ejectors ( Eductor )

Liquid jet liquid	<ul style="list-style-type: none"> <li>• Proportioning chemical solutions</li> <li>• Acid/alkali/lye dilution</li> <li>• Handling mediums such as suspensions or mud</li> </ul>
Liquid jet compressors	<ul style="list-style-type: none"> <li>• Flare gas recovery</li> <li>• Wide variety of chemical applications</li> </ul>
Liquid jet vacuum pumps	<ul style="list-style-type: none"> <li>• Start-up evacuation of suction pipelines</li> <li>• Diverse chemical vacuum processes</li> </ul>
Liquid jet ventilators	<ul style="list-style-type: none"> <li>• Replacing fans for ventilation or low vacuum service exhausting</li> </ul>
Vessel jet mixers	<ul style="list-style-type: none"> <li>• Tank mixing</li> </ul>
Liquid jet solid	<ul style="list-style-type: none"> <li>• Conveying granular solids, sand, gravel</li> <li>• Semisolids such as crushable foodstuff, etc</li> </ul>



# EJECTOR

# VACUUM PACKAGE

(MULTI-STAGE STEAM EJECTORS)

These are combination of multiple single stage ejectors in series, possibly with condenser stages in between to minimize steam consumption, to achieve higher vacuum levels:

- |   |  |
|---|--|
| <b>2 - stage systems</b><br>(down to 10 mmHg)   | <ul style="list-style-type: none"> <li>• Vacuum distillation, evaporation and crystallization for chemical products</li> <li>• Steam condensers</li> </ul> |
| <b>3 - stage systems</b><br>(down to 2 mmHg)    | <ul style="list-style-type: none"> <li>• Steam jet chillers</li> <li>• Stripping and deodorizing edible oils,</li> <li>• Vacuum packaging</li> </ul>       |
| <b>4 - stage systems</b><br>(down to 0.2 mmHg)  | <ul style="list-style-type: none"> <li>• Freeze drying or dehydrating in food and pharmaceutical industry</li> </ul>                                       |
| <b>5 - stage systems</b><br>(down to 0.04 mmHg) | <ul style="list-style-type: none"> <li>• Steel degassing</li> <li>• Electronic and high-tech applications</li> </ul>                                       |

## Different variations of vacuum systems include:

- Vacuum systems used with surface condensers
- Vacuum systems used with direct contact condensers
- Hybrid systems ( combination of ejector and liquid ring vacuum pump with surface or direct contact condensers )

## Supplying more than

### 35 power plant units & dozens of petrochemical complexes and refineries

Shiraz Petrochemical Company % Damavand Combined Cycle Power Plant % Abadan Oil Refinery % Parsand Combined Cycle Power Plant % Hengam Qeshm Heavy Crude Oil Refinery % Yazd Combined Cycle Power Plant % Kishan Combined Cycle Power Plant % Sirjan Combined Cycle Power Plant % Behbahan Combined Cycle Power Plant % ...

# 35



# SILENCER

Vent and blowdown silencers find applications in noise reduction of steam and other gases discharging to the atmosphere. The silencers are completely custom designed for desired applications, have no operating pressure and temperature limitations.

- Vent Silencer
- Duct Silencer
- In Line Silencer



# KARAJET

# 300

KARAJET has designed and manufactured more than 300 silencers for petrochemical complexes, oil & gas refineries and power plants until now.

Bushahr Petrochemical Co \ Kishan Combined Cycle Power Plant \ Gachsaran Petrochemical \ Assaluyeh CCPP \ Persian Gulf Star Oil Co. (PGSOC) \ National Iranian Oil Company (NIOC) \ Shiraz Petrochemical \ Bandar Abbas Oil Refinery \ Behbahan Combined Cycle Power Plant \ Kahrizj Combined Cycle Power Plant





## DE-SUPERHEATER

De-superheaters are used to reduce the temperature of superheated steam through the direct contact and evaporation of water within the steam flow. The most frequently used types are :

- Spray Type
- Single Venturi Type
- Double Venturi Type



## STATIC MIXER

Static mixers provide complete, efficient and predictable residence time control for mixing of solids, liquids and gases in any combinations under laminar as well as turbulent flow conditions. They have no moving parts and the construction of these kinds of equipment is simple and low cost compared to mechanical driven mixers. Furthermore, they are practical in a wide range of fluids viscosities.

- KMS
- SMX
- SMV
- LPD & LLPD



## PROCESS EQUIPMENT

The following equipment can be designed and fabricated according to customer's order:

- Condenser
- Scrubber
- Evaporator
- Degassing
- Filtration
- Separator



## PERFORMING METHOD OF EACH PROJECT IN KARAJET

### PROJECT MANAGER

- 1 Choosing a project manager for each order who is in fact employer's representative for strict control over entire stages of the project

### CUSTOMIZED DESIGNING

- 2 Customized designing of each equipment to assure the maximum possible efficiency. (After designing each ejector, our engineering team provides the best geometry with the highest efficiency using simulation and CFD methods.

### QC

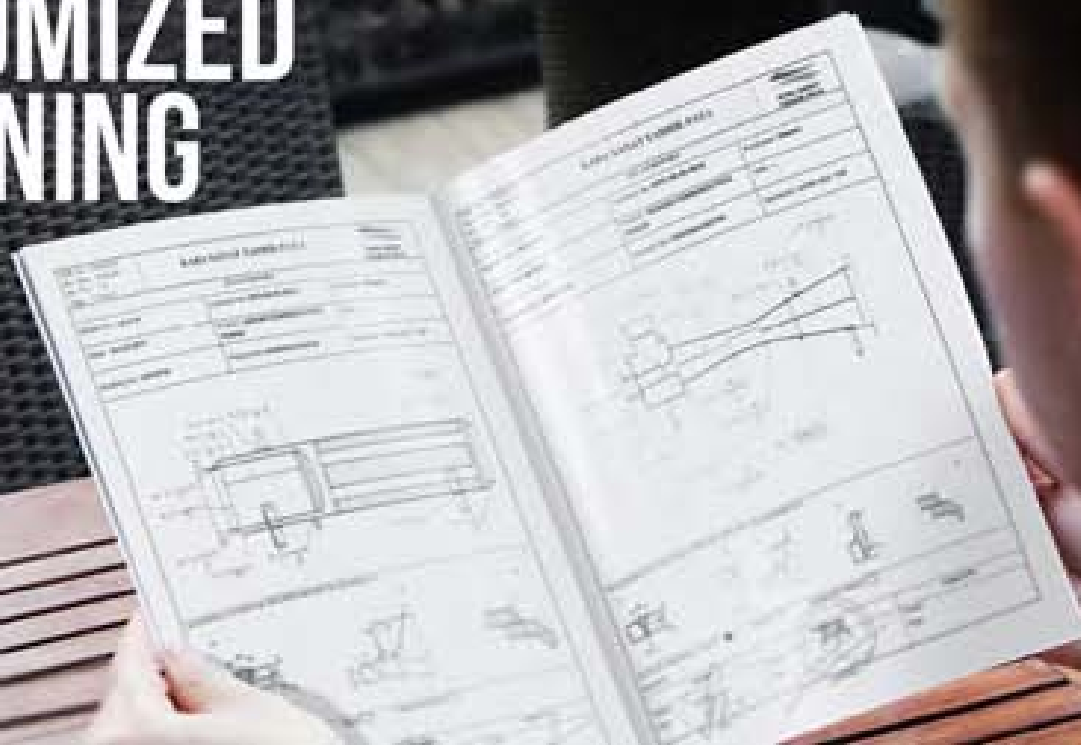
- 3 The QC department ensures the highest quality of products by strictly enforcing the standards from the time the materials are supplied to the end of manufacturing and testing processes.

### PERFORMANCE TEST

- 4 By performing various tests in our factory, we prove our commitment to the highest efficiency. Performance test of equipment assures our clients that the products will operate properly; moreover it truly shows how our engineering, project, QC and production team efforts have been efficient. Using our test facilities, performance test is possible for majority of orders. The whole vacuum systems and most of our ejectors have been tested up to now. Even we could run the speaker test of silencers by means of simulating their real performance and the inlet noise in our shop.



## CUSTOMIZED DESIGNING



## STEAM JET CHILLER

Steam jet chillers are the best choices to obtain chilled water demands as low as 1 °C in industrial plants where excess steam is available. The operating principle is so simple and is based on the reduction of water boiling point under vacuum. The required vacuum is generated by steam ejectors. Some of the advantages of this type of chillers include:

- High reliability; no moving parts
- Low operating cost— uses waste or low cost steam
- No electricity required
- Very low maintenance, especially with a barometric condenser
- No chemical refrigerants
- Low noise
- Few spare parts needed in inventory

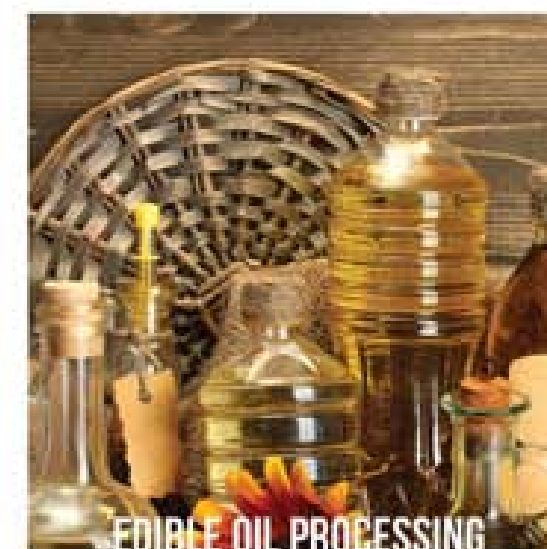
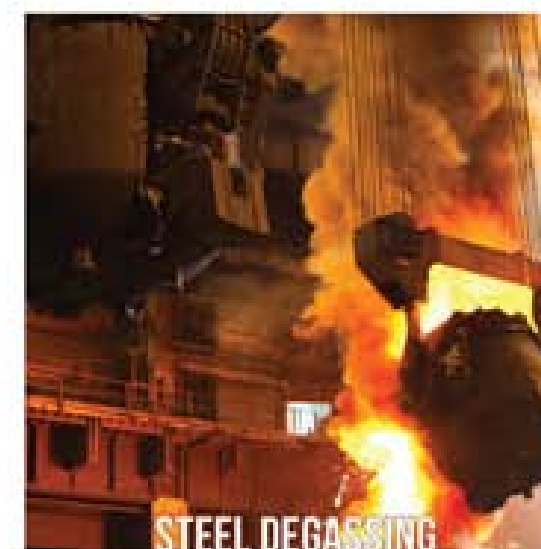
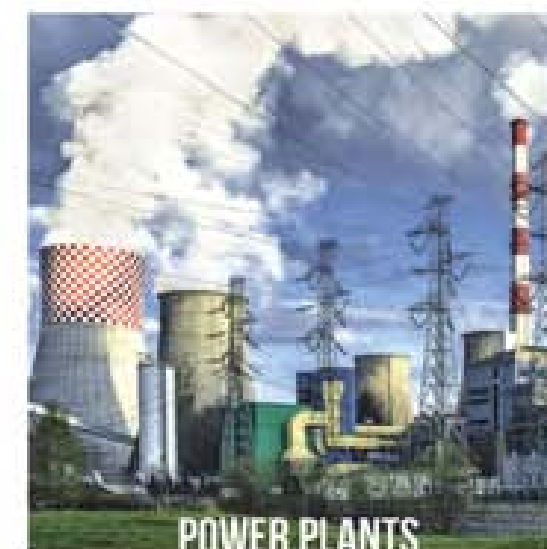
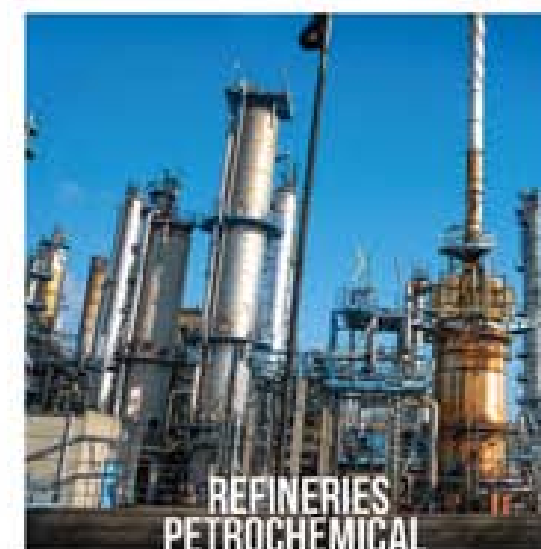


KARAJET®

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## BRILLIANT RESUME

Our products are supplied to dozens of power plants, refineries, petrochemical complexes, steel degassings, Edible oils, and industrial companies.



KARAJET®

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KARAJET®  
Since 1991





**KARAJET®**

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