صنایع پتروگاز نامداران

NAMDARAN PETROGAS INDUSTRIES

CATALOGUE
2018

OIL, GAS & PETROCHEMICAL

Process Packages & Unit / Process equipment / Wellhead equipment / Pipeline equipment

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Introduction

Namdaran Petrogas Industries Co. (NPI) is a leading company in design and manufacturing of prosess packages, process equipment, pipe lines and well head equipment in offshore and onshore oil, gas and petrochemical industries as well as steel industries and power plants. High quality and on time delivery of products is our policy and have been successfully led achieve the main objective of the company which has been customer satisfaction.

انجمن سازندگان تجهیزات صنعت نفت ایران
S.I.P.I.E.M

IMS

TÜV INTER CERT SAAR

IAF MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT

DAkkS Deutsche Akkreditierungsstelle D-ZM-19276-01-00

Products

The company is proud of gaining objectives customer satisfaction by utilizing experienced and well-trained staff on one hand, and efficient management of human resources on the other hand. It is now capable of designing, supplying and manufacturing the following equipment on offshore and onshore:

Units / Packages

- Absorption package with MEG, TEG & DEG
- Adsorption package with silica gel
- Adsorption package with molecular sieve
- Sulfur recovery unit (SRU)
- Gas / Liquied metering
- Incinerator
- Condensate deoiling
- Condensate polishing
- Ejector package
- Fired heater package
- Termal oil heater
- Crude oil desalting unit
- Chemical injection package
- Gas sweetening unit
- Propane package
- Flare package/system
- Slug catcher finger type

Process Equipment

- Heat exchanger
- Ejector
- Indirect water bath heater
- Electrical heater
- Desuper heater
- Pressure vessel
- Chemical injection package
- Gas scrubber & multi cyclone
- Filter separator
- Dry gas filter
- Basket strainer
- T-type strainer
- Auto washing filter
- Auto cleaning strainer
- Burn pit system
- Column
- Tower
- Stripper
- Reboiler
- Reactor
- Mobile Oil Test Separator
- Vessel type slug catcher
- Three phase separators
- Two phase separators
- Knock-Out- Drum
- Sump drum
- Multi gas scrubber
- Filter separator

Products

Offshore Equipment

- SPM Swivel
- Chain stopper
- Pig launcher & receiver package
- Filter separator package
- Auto washing filter
- Auto cleaning strainer
- Pressure vessel
- Insulating joint
- Oil test separator
- Basket strainer
- Y-type strainer
- Chemical injection package
- Electrical heater
- Three phase separators
- Two phase separators

Pipeline Equipment

- Pig launcher and receiver trap
- Split tee
- Anchor flange
- Insulating joint
- Pig signaler

Well Head Equipment

- Mobile Oil Separator package (MOS)
- Mobile Oil Treater (MOT)
- Slug catcher package (Finger type)
- Slug catcher package (Vessel type)
- Three phase separators
- Two phase separators
- Grit trap
- Stone trap

Weld Overlay Cladding

With Inconel 825/625, Monel,Cobalt estellite 6,
Stainless steels 304L/316L,CuNi 30/70, NiCu7 & etc.

- Pressure vessels
- Heat exchanger
- Pipe
- Flange
- Fitting
- Roller

SPM Swivel

| DESCRIPTION

Namdaran Petrogas Industries Co. (NPI) has been successful in designing and manufacturing of SPM Swivel strategic equipment, utilizing high technical, engineering knowledge locally fabricated by our experts in Iran for first time. It is worth noting that a few of the world›s advanced countries have the technology of designing and manufacturing such equipment. With high performance of the delivered swivel by our company, Iran is among the pioneers in this field.

Single point mooring (SPM) is a floating buoy anchored offshore to allow handling of liquid cargo such as petroleum products for tanker ships. SPM is mainly used in areas where a dedicated facility for loading or unloading liquid cargo is not available. Located at a distance of several kilometers from the shore-facility and connected using sub-sea and sub-oil pipelines, these single point mooring (SPM) facilities can even handle vessels of massive capacity such as VLCC.

Some of the major benefits of using SPM are:

- Ability to handle extra large vessels
- Doesn't require ships to come to the port and thus save fuel and time
- Ships with high drafts can be moored easily
- Large quality of cargo can be easily handled


KATO

Absorption Packages

| DESCRIPTION

Namdaran Petrogas Industries (NPI) absorption packages are mostly used in separation processes in oil, gas and petrochemical industries since they have multiple usage of fluids to make the separation procedure more applicable by using MEG (mono ethylene glycol), TEG (tri ethylene glycol) and DEG (diethylene glycol).

Absorption process is usually carried out under pressure using liquid solvent of higher molecular weight than that of the vapors being recovered. Vapors are separated from the rich solvent, which is recycled in the process as the lean solvent.

For a better performance the wet natural gas enters the absorption vessel (glycol contractor) near its bottom and flows upward through the bottom tray to the top tray and out at the top of the vessel. Usually six to eight trays are used .lean (dry) glycol is fed at the top of the vessel and it flows down from tray to tray, absorbing water vapor from natural gas. The rich (wet) glycol leaves the bottom of vessel to the glycol regeneration. The dry natural gas passes through mist mesh to the sales line.

| Regeneration

Glycol regeneration unit is composed of re-boiler where steam is generated from the water in the glycol. The stream is circulated through the packed section to strip water from the glycol. Stripped water and any lost hydrocarbons are vented at the top of the stripping column.

Adsorption Packages

| DESCRIPTION

When very low dew points are required, solid bed dehydration becomes the logical choice. It is based on fixed-bed adsorption of water vapor by a selected desiccant.

The system may consist of two-bed, three-bed or multi-bed operations. In three-bed operation, if two beds are loading at different stages, the third one would be regenerated. The feed gas in entering the bed form the top and the upper zone becomes saturated first. The second zone is mass transfer zone and is being loaded. The third zone is still not used and active. While the bed is in operation the outlet concentration has very low water concentration and the mass transfer zone moves downward. At a certain point the outlet water content rises to the point that is equivalent to the initial wet gas content as if bed is not present. Thus, the beginning of this period is called the breakthrough period. Closing valve after the bed has been used and loaded with water, then it is regenerated by hot gas and finally, cooled by switching to cold gas. The appropriate temperature for inlet gas during heating and cooling off the bed is needed to desorb water, and then for cooling off the bed it is essential to prepare it for the next cycle and then the outlet gas temperature is used to repeat the process in the same period.

| Application

- Dehydration of natural gas
- Hexane purification unit
- NGL and LPG sweetening unit

Desalting Unit

| DESCRIPTION

The salts that are most frequently present in crude oil are calcium, sodium and magnesium chlorides. If these compounds are not removed from the oil, several problems arise in the refining process. The high temperatures that occur downstream in the process could cause water hydrolysis, which in turn allows the formation of corrosive hydrochloric acid. Sand, silts and salt cause deposits and foul heat exchangers. The need to supply heat to vaporize water reduces crude pre-heat capacity. Sodium, arsenic and other metals can poison catalysts. By removing the suspended solids, they are not carried into the burner and eventually flue gas, where they would cause problems for the environment such as flue gas opacity norms. Crude oil often contains water, inorganic salts, suspended solids, and water-soluble trace metals.

Step 1 in the refining process is to remove these contaminants so as to reduce corrosion, plugging, and fouling of equipment and to prevent poisoning catalysts in processing units.

The two most typical methods of crude-oil desalting are chemical and electrostatic separation, and both use hot water as the extraction agent. In chemical desalting, water and chemical surfactant (demulsifiers) are added to the crude, which is heated so that salts and other impurities are dissolved or attached to water, then held in a tank to be settled out. Electrical desalting is the application of high-voltage electrostatic charges to concentrate suspended water globules at the bottom of the settling tank. Surfactants are added only when the crude has a large amount of suspended solids. A third (and rare) process filters hot crude using diatomaceous earth.

Direct /Indirect Fired Heater

DESCRIPTION

Namdaran Petrogas Industries Co. (NPI) is a highly specialist engineering company in the field of refining, petrochemical and chemical industries. NPI is a specialist in designing, engineering and supplying direct fired process heater systems to the downstream oil, gas and petrochemical industries. NPI provide high integrity solutions for a wide range of diverse applications that meet Client›s challenges with reliable, safe and cost-efficient solutions that have minimal environmental impact. Direct Fired Heaters are designed to international standards such as API 560 or ISO13705 as a norm.

Design requirements

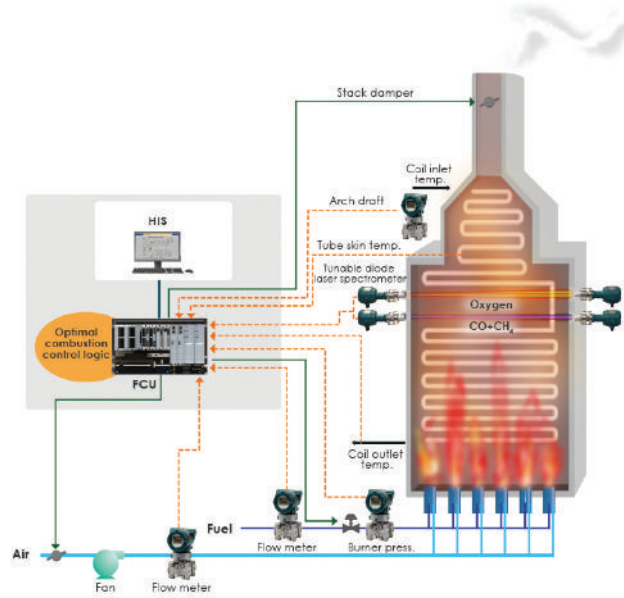
· The required heater duty
· Process fluid composition and flow rate
· Process fluid required inlet and outlet temperatures
· A required, or at least a desired heater efficiency
· Maximum allowable flue gas temperatures
· Maximum allowable tube wall temperatures and/or process fluid film temperatures
· Allowable process coil API erosional velocities, mass velocities or ρV 2 -values
· Process coil fouling factors
· Fuel gas composition
· Ambient conditions

Features

· High-efficiency crossflow convection tube banks
· Optional air preheaters
· Customized shell and tube exchangers and crossflow tubular exchangers
· Available with on-line cleaning by sootblowers
· Vertical heaters occupy smallest possible footprint

Control System

Namdaran Petrogas Industries Co. designs control systems to meet your specific process requirements. This includes system upgrades for existing equipment, as well as new heater control systems.



Flare Package

| DESCRIPTION

Namdaran Petrogas Industries (NPI) flare's Services offers a unique approach to supporting the oil and gas industry with the design, supply of flare systems both onshore and offshore. Our focus is based upon providing a service dedicated to meeting targets of low operational and maintenance costs together with reduced environmental impact, wherever possible.

| Types

- Pipe flares
- Single / Multi point sonic flare
- Endothermic flare
- Assist gas flare
- Derrick supported flares
- Guy supported flares
- Self-supported flares

| Accessories

- Knock-out drum
- Liquid sea
- Molecular seal
- Burn pit
- Ignition system
- Control panel system

Chemical Injection Package

| DESCRIPTION

We create tailor-made packages and skids engineered according to your specifications, compliant with international standards (e.g. ASME, API, ATEX), and synchronized with our global project handling and fabrication facilities. With the latest know-how, we design your package and take full functional responsibility.

The chemical injection packages are custom made and based on plunger or diaphragm type injection pumps. The motor of these pumps can be either electric, air or gas driven. The packages further consist of a multi compartment tank, suction and discharge lines valves and instrumentation. The injection rate of the chemicals is adjustable by a variable pump stroke length or a frequency drive of the (electric) motor. The packages are based on customer specifications.

| Services

- Slug catcher MEG pump package
- HP separator injection pump package
- Methanol injection package
- Caustic solution dosing package
- Anti-foam agent unit
- Catalyst dosing unit
- Biosid & corrosion inhibitor dosing package
- Hypochlorid dosing package

Indirect Water Bath Heater

| DESCRIPTION

Water Bath Heaters are indirect fired type usually designed to API 12K, these devices are traditionally used to heat natural gas and oil.

Namdaran Petrogas Ind. Co. (NPI). designed heaters operate on an indirect heating basis which consists of a water bath with two high pressure inspiriting natural draft burners firing into immersion tubes. A separate serpentine tube bundle immersed into the water bath is used to transfer and absorb heat into the process natural gas. The principle of incirect or bath type heating has been around for decades meaning modern units are very reliable.

Designed and constructed in accordance with API 12K as standard, the bath heaters comprise a horizontal, cylindrical heating tank containing the heat transfer medium, into which the fire tube and process heating coil are immersed. Custom designs to other codes such as ASME are available.

| Types

- Water or Water/Glycol Bath heating to 90-80 °C
- Steam Bath heating to 110 °C
- Oil Bath heating to 250 °C
- Salt Bath heating to >350 °C

| Usage

- Regeneration gas heating
- Heat transfer fluids
- Heat sensitive gas and fluids
- Molten salt heaters & crude oil
- Vaporizing and superheating LPG & LNG

Heat Exchenger

DESCRIPTION

A heat exchanger is a device used to transfer heat between a solid object and a fluid, or between two or more fluids. The fluids may be separated by a solid wall to prevent mixing or they may be in direct contact. They are widely used in space heating, refrigeration, air conditioning, power stations, chemical plants, petrochemical plants, petroleum refineries, natural-gas processing, and sewage treatment. The classic example of a heat exchanger is found in an internal combustion engine in which a circulating fluid known as engine coolant flows through radiator coils and air flows past the coils, which cools the coolant and heats the incoming air.

Types of Heat Exchangers

Shell and Tube heat exchanger

- Baffle type
- Segmental baffles
- Double segmental baffles
- No-tube-in-window (NTIW) baffles
- Rod baffles
- EM baffles
- Helical baffles
- Tube Enhancements
- Twisted tubes
- Low finned tubes
- Tubes inserts (twisted tapes, Cal Gavin)
- Plane type

Compact type heat exchanger

- Plate & frame heat exchanger
- Spiral
- Blazed plate & frame
- Plate-fin heat exchanger
- Printed circuits

Air-cooled heat exchanger

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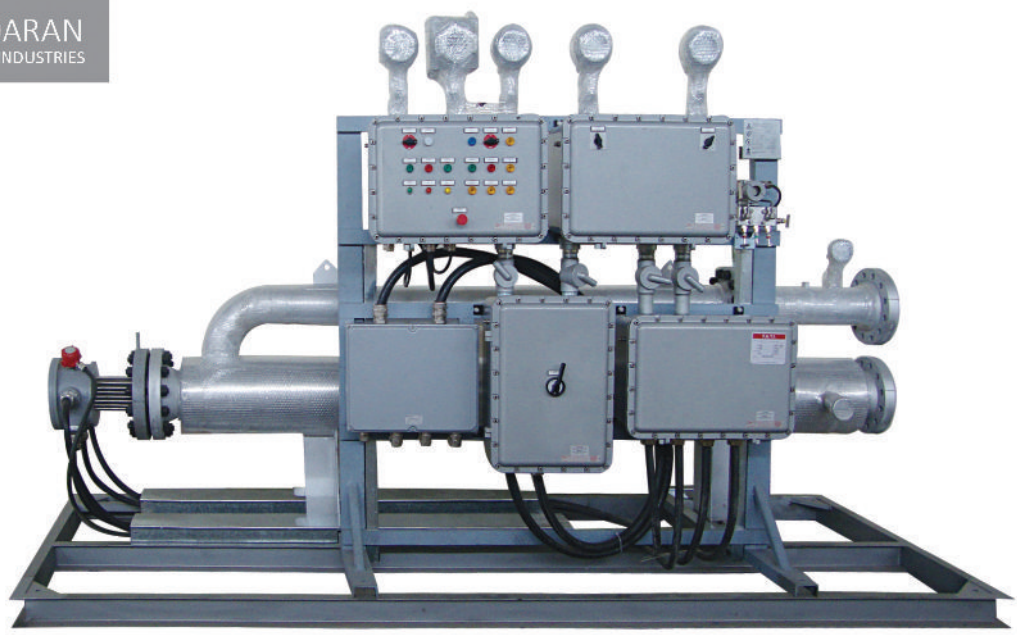


Electrical Heater

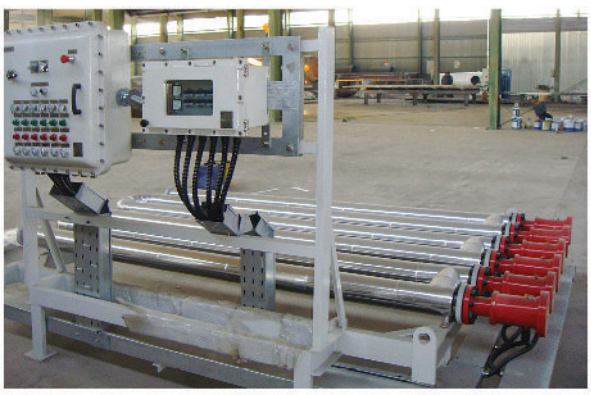
DESCRIPTION

Namdaran Petrogas Industries Co. (NPI) design and manufacture different kind of electrical heater and control system for oil and gas process. Our company offers simple solutions for complex requirements. NPI design teams support customers from the conceptual design throughout the life cycle of the equipment. NPI meets the stringent requirements of design codes international standards and client specifications.

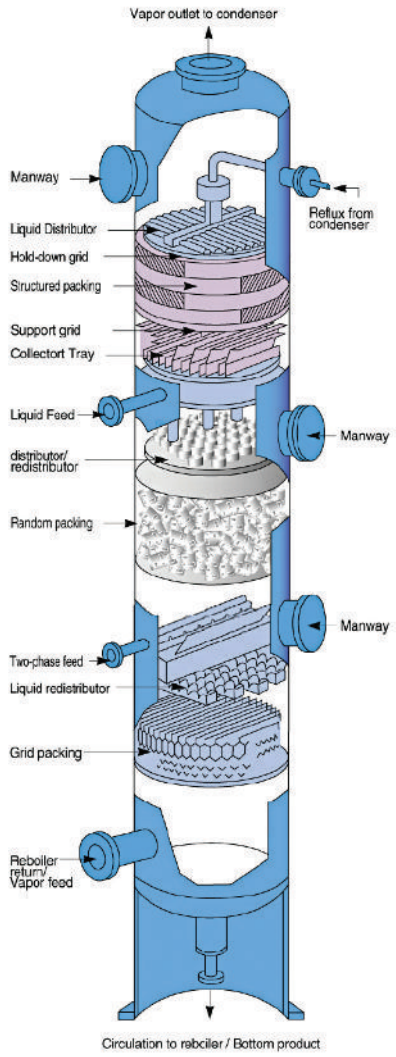
Our design features allow us to provide heating solutions for extreme processes from cryogenic service to gas regeneration and for pressures in excess of 500bar.Element to tube sheet sealing using bite coupling design, automated orbital welding or cartridge elements inserted in pockets to facilitate withdrawal of the elements without the need to drain the system.

Features

- Electrical heaters up to 8 MW
- Desuper heater
- Thyristor control panel
- On/Off control panel
- PLC base system
- Skid mounting
- Immersion type & L-type heater
- Line type & flanged type heater
- Thermal & electrical design
- Process & mechanical design
- Instrumentation requirement
- Custom built design for higher capacities
- In house manufacturing and testing
- Site supervision, commissioning and training

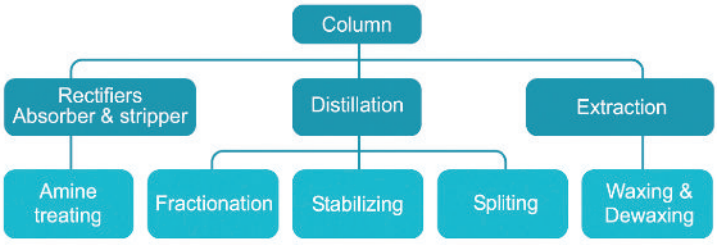


Distillation Tower and Column



DESCRIPTION

There are three different methods of separation process in distillation columns and towers.

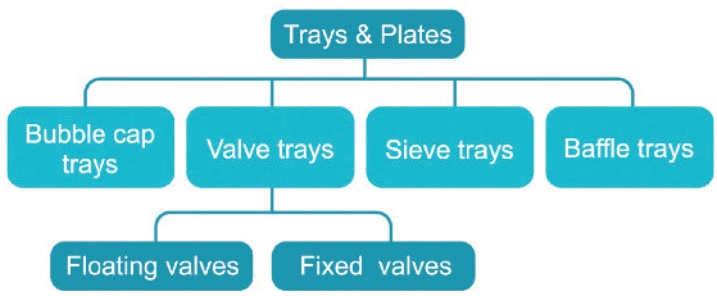


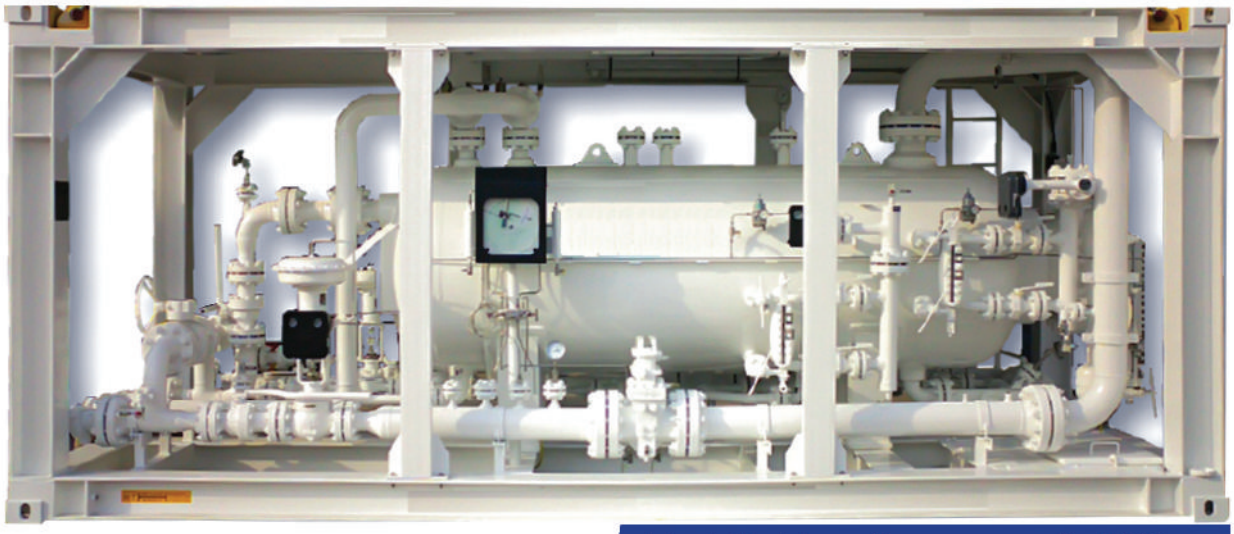
Column Internal

Column internal are being equipped into distillation column to provide better mass and heat transfer between the liquide and vapor phases in the column.
These included trays, packing, distributors and redistributors, baffle and etc.

Tray Column

In a trayed column, liquid flows down the column through down comers and then across the tray deck, while vapor flows upward the liquid inventory on the tray.





Mobile Test Separator(MOS)

| DESCRIPTION

Skid-mounted mobile test separators (MOS) perform a vital function in the analysis of both onshore and offshore wells. When gas and oil are contained in water effluent, site engineers need to accurately determine the relative composition of the fluid in order to make critical decisions that affect costs and production efficiency. Well test separators are considered essential equipment in the exploration, development and production of active wells. They provide an ongoing return on investment by giving onsite decision-makers crucial information that facilitates the more efficient extraction of valuable resources.

Typical MOT are made up of a storage vessel, a multi-meter measuring system that detects oil and gas flow rates, relief values to negate excessive pressure, and sampling points where effluent is extracted for analysis. Test separators are available in the following configurations:

Process Equipment Unit

- Two/three phase separator
- Crude oil transfer pumps
- Demulsifier Package which include tank and injection pumps

Utility Unit

- Gas oil storage tank
- Nitrogen package
- Diesel generator
- Instrument air system package (including air compressors, air dryers and air receivers).

Portable Cabin

Includes accommodations for operators and control cabin

Two phase separator

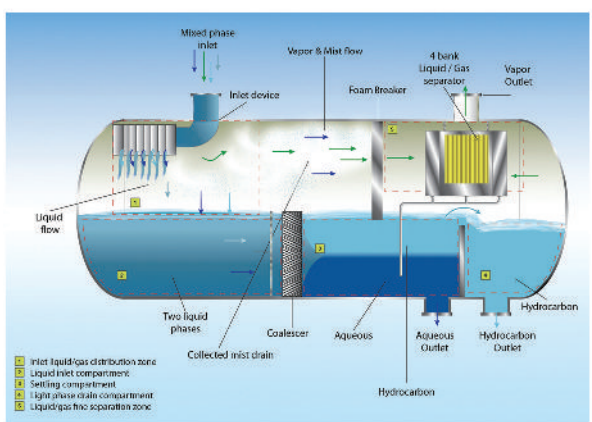
These are the simplest design, which simply extract oil and gas (phase one) from water (phase two).

Three phase separator

More advanced analysis is facilitated with a three-phases separator, which divide oil (phase one), gas (phase two), and water (phase three).

| Applications

- Exploration of both onshore and offshore wells
- Well development
- Well production and resource extraction
- Post-production cleanup
- Early production facilities and extended appraisal tests.
- Dill stem testing operations.



Slug Catcher

| DESCRIPTION

Namdaran Petrogas Ind. Co (NPI) is an industry leader in desighn and fabrication of finger type slug catcher .

Engineered to economically capture and store large liquid slugs from high volume applications, our top quality design deliver effective and predictable liquid separation.

Utilizing both our EPC partners and our own in-house team of engineering and fabrication professionals, we have the expertise and resources to serve your most demanding operations and accommodate your most pressing project schedules.

• Constructability - NPI finger designs keep constructability as a central focus, achieving the lowest installed cost possible with deep construction experience in building finger slug catchers. By utilizing shop prefabrication to create shippable modular sections, excessive field welding and other areas of costly field construction are eliminated.

• Cost and Lead Time - NPI finger designs utilize readily available pipe and fittings in a sophisticated design arrangement to keep the purchase price and lead time to a minimum. This is accomplished without use of extrusions or contoured outlet fittings, which are necessary for many of our competitors more complicated designs.

Footprint - NPI finger designs are compact and make efficient use of space. Generally speaking, the longer the finger the better and our standard finger offering achieves the greatest economy per BBL at 300 meter in length.

• Turn-Key Capability and Additional Services - In addition to deep expertise in finger slug catchers, we can also provide general Engineering, Design, Construction, or EPC services for slug catchers or other areas of oil and gas pipelines/facilities scope.

• Capacity - NPI finger designs can be configured in a variety of ways using modular sections.

• Expandability - NPI finger designs allow for future expansion that goes far beyond providing "tie in flanges" without any real plan for expansion. Pre-engineered expansion provisions can be made specifically for adding additional gas flow sections, liquid holdup sections, or both. The standard finger design can be expanded from the smallest size to the largest size by a gradual buildout of the same modular sections.

Two & Three Phase Separators

| DESCRIPTION

Namdaran Petrogas industries Co. (NPI) is designer and manufacturer of two and three phase separators for separating well fluids into gas and liquids (2 phase separator) or gas, oil and water streams (3 phase separator).

Each liquid separation operation is unique and our experienced fabrication experts together with process engineers brings formidable knowledge of separator operating principals combined with decades of oil and gas processing expertise to every project. We fabricate each separator vessel such to meet the exact site attributes, wellstream characteristics, operating demands and budgets of our clients.

Sizing your separator properly and correctly accommodating variables such as retention time, settling of oil droplets and droplet size all influence the performance of your vessel.

Incorrectly sized vessels can promote the formation of emulsions, lead to gas and liquid carry-over and foster sand or paraffin accumulation. Our design experts have the know-how to address your particular fluid type and operating conditions and determine the proper vessel design to ensure reliable operations and the maximum sellable gas and petroleum liquids output.

| Horizontal and Vertical Orientation

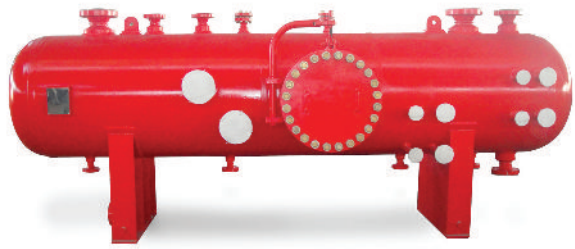
Our two- and three-phase separators can be designed for vertical or horizontal orientation. Horizontal separators are generally best at accommodating larger gas volumes, but require more space than vertical separators. Vertical separators offer a smaller footprint and typically provide preferable liquid surge capacity and solids handling, but are not as easily serviced as horizontal separators.

| Separator Deliverable Options

Your two- or three-phase separator can be delivered as a bare vessel, mounted to a skid, or can be incorporated into your own custom production skid.

| Features

- All vessels are fabricated and NDE per the latest addition of ASME SEC. VIII,
- Custom configured to your exact specifications,
- Inlet diverter
- Defoaming plates
- Wave breaker
- Vortex breaker
- Mist Extractor
- Liquid outled and pressure relief valve
- Instrumentation & controls
- Vessel insulation
- Access Manways



Gas Scrubber/ Multi Gas Filter Scrubber

Multi-Cyclones Scrubbers use centrifugal force to effectively remove solid particles and liquids from a gas. There are no moving parts. The high efficiency, low pressure drop, centrifugal separation is attained by using Namdaran Petrogas Industries (NPI) proprietary designed Cyclone Tubes.

The entrainment laden gas stream enters the distribution chamber of the scrubber, which contains multiplicity of small cyclone tube arranged in parallel. The gas enters each of the tubes through two tangential opening located near the top. The resulting centrifugal action moves the liquid droplets and/or solid particles to the outer periphery of the tube and downward, causing them to drop into the collection chamber at the bottom of the vessel. The clean gas then reverses direction at the vortex of the cyclone tube and moves upward through the riser and into the exit plenum.

| Cyclone

NPI uses multiple, small diameter cyclones arranged in parallel to achieve separation of small and large size particles. Depending upon the application, a bank of cyclones may contain as many as 200. Selection of 2" or 4" diameter cyclones will depend upon the gas capacity.

| Advantage

- High efficiency liquid and solids removal
- Handling a wide range of flows
- Tolerates intermittent flow spikes
- Maintenance free
- Fixed or removal cyclone elements

| Simulation of the Separation (CFD)

Today, Computational Fluid Dynamics (CFD) has become well-known in simulating real flow patterns and can be a useful tool to supplant the empirical methods in cost-consuming or impossible experimental cases. CFD can simulate the two-phase and high swirl flows in cyclones and determine the pressure and velocity profile in each part of the cyclone. The numerical solution of the fluid flow equations were carried out by commercial CFD Package Fluent 6.3. Discrete Phase Model of Fluent is capable to track the solid and liquid particles until they escaped from the outlet pipe or separated from the bottom. CFD is the best tool for simulating the separation mechanisms and designing the scrubbers with high separation efficiency in specified pressure drop and controlled abrasive wear.

Gas Filter Separator

| DESCRIPTION

Namdaran Petrogas Industries Co. (NPI) filter separator is a multi-stage unit that utilizes four or more methods of gas conditioning in order to remove %100 of the solid and liquid particle 8-5 microns and larger, and %99.5 of the particles as small as 3 microns. NPI provides and maintains high efficiency and performance throughout a wide flow range by conditioning particle in the gas stream.

| Applications

NPI filtration is a multi- stage separator used in a variety of applications in the natural gas and chemical process industries for below application:

· Gas & Petrochemical Plants

· Gas compressor station

· Gas Inlet to Chemical

· Gas Gathering Systems

· Metering station and city gates

· Transmission Stations

· Fuel lines to power plants and engines

| Element Life

The filter Coalescer element is designed for a collapsing pressure of 35 to 50 psi to insure that elements will not fail should the pressure differential reach this magnitude. To prolong the life of the elements, NPI filtration provides a blowdown connection to allow cleaning of the element while in operation.

| Pressure Drop

NPI filtration is normally designed for an initial pressure drop through the unit of 8 psi with clean elements and at maximum design flow conditions. However, this is not a limitation, lower or higher pressure drop design is used dependent on customer requirements.

| Configuration

NPI filter separators are available in vertical and single or double barrel horizontal configurations. Quick opening Closures used for access to the replaced filter elements.

| Vane Elements

NPI vane mist eliminators are high capacity inertial separators constructed as banks of parallel, chevron profiles which cause the gas to change direction several times from inlet to outlet. Momentum forces entrained liquid droplets to impinge on the vane surfaces where they form a liquid film and drain.

Pressure Vessel

| DESCRIPTION

Pressure vessels are used in a variety of applications in both industry and the private sector. They appear in these sectors as industrial compressed air receivers and domestic hot water storage tanks. Other examples of pressure vessels are diving cylinders, recompression chambers, distillation towers, autoclaves, and many other vessels in mining operations, oil refineries and petrochemical plants, nuclear reactor vessels, submarine and spaceship habitats, pneumatic reservoirs, hydraulic reservoirs under pressure, rail vehicle airbrake reservoirs, road vehicle airbrake reservoirs, and storage vessels for liquefied gases such as ammonia, chlorine, propane, butane, and LPG.

The pressure differential is dangerous and many fatal accidents have occurred in the history of their development and operation. Consequently, their design, manufacture, and operation are regulated by engineering authorities backed by legislation. For these reasons, the definition of a pressure vessel varies from country to country, but involves parameters such as maximum safe operating pressure and temperature.

| Types

- Reboiler
- Reactor
- Columns
- Towers
- Stripper
- Drums
- Steam drums
- Knock out drum
- Slug catcher (vessel type)
- Separator
- 2phase separator
- 3phase separator
- Filter separators
- Gas scrubber
- Multi gas scrubber

Dry Gas Filter

| DESCRIPTION

All gas lines have dry contaminants (such as pipe scale, dirt, and rust) that will damage or even destroy your downstream equipment. Using a Namdaran Petrogas Industries "NPI" Dry Filter will remove all forms of dry contamination, lengthening the life of your equipment and saving thousands of Rials in maintenance costs. NPI range of Dry Gas Filter is multiple elements filter designed for filtering dust and other solids from gas flows with a minimum pressure drop. NPI Dry Gas Filters offer efficient and effective removal of dust and other solids from gas flows at relatively low pressure drop. The larger, heavier particles settle to the bottom of the inlet chamber upon entering. The gas then passes through the filter elements which trap and retain the finer particles. A 'Quick Opening End Closure' is provided for access to and cleaning or replacement of the filter elements. The life cycle of the filter is dependent upon dust and dirt loading and the corresponding increase in pressure drop.

| Features

- Standard configurations NPI dry gas filters are available in a variety of sizes and configurations to meet virtually any piping configuration.
- Mechanical meatures ASME pressure vessel Code, Section VIII, Div. 1, and Div. 2
- Standard filters are constructed of carbon steel. however, filters can be custom designed and built from stainless steel and other steel alloys.
- High efficiency elements can be either in carbon steel or stainless steel construction.

Basket Strainer

| DESCRIPTION

Namdaran Petrogas Industries strainers are designed and fabricated to ASME Section VIII and ANSI codes. Basket and body sizes can be tailored to suit any pressure drop or space requirements the customer might have. Standard materials of construction are carbon and stainless steel; however NPI fabricate basket strainers to meet your requirements from any alloy. The basket strainer can be installed in horizontal pipelines only.

T or BASKET type

T/Basket -Type strainers are used to remove solids from flowing liquids and are ideally suited for process applications, water and utilities. On large pipelines basket type strainers shall be used .They shall provide greater dirt holding capacity and easier access for removal of the strainer for cleaning. They normally have a higher pressure drop than simple Y type strainers. We are engaged in manufacture of an exclusive range of basket type strainers, which is made from high quality raw material sourced from credible vendors. These basket strainers are available in various sizes and colors as per clients› specification. NPI Strainers are used to strain foreign matter from pipe line and provide inexpensive protection of costly pumps, meters, valves and similar mechanical equipment. These basket type strainers are available in a variety of materials.

| Features

- Flanged, butt-weld, grooved, socket weld and Screwed inlet/outlet connections available.
- Automatic/manual flush
- Body flange, Clamp and Quick opening closure.
- Full range of NDE/NDT testing
- Steam jacketing
- Special coatings
- Multi basket design
- Easy maintenance
- Configuration and flexibility of internal components
- Allow use of a standard man way.
- Pressure safety valve on vessel with relief line to edge of skid, diagonally opposed grounding points on base-skid, & explosion-proof lighting at the front and rear of the unit enhance

| Code & Standards

Size:	From 6" to 56"
Operating Pressure:	Up to 2500 psig
Design:	ASME Sec. VIII Div.1 & 2
Fabrication:	ASME Sec. VIII
Welding:	ASME Sec. IX
NDT:	ASME Sec. V

Pig Launcher & Receiver Trap

| DESCRIPTION

Pig Launcher and Receiver Traps are custom manufactured for sub-sea, off-shore and onshore applications. Pig launcher is used to launch the pig into the pipeline, and pig receiver is used to receive the pig after they have made a successful launch. The choice of these pig traps will depend on the type of pig to be run and pipeline design conditions. All equipment are designed and manufactured according to pipeline and vessel Code Standard (NACE, ASME VIII, BS 5500 and ANSI/ASME B31.3, B31.4, B31.8, etc). Our capacity of production allows matching pipe ranging from 3" to 56" with ANSI Ratings of #150 to #2500, using carbon steel, stainless steel and alloy steel materials.

| Multiple unit application

These units are designed to allow the sequential launching of pigs and spheres, in conjunction with release fingers and/or coordinated valve operation. The launch process can be controlled remotely enabling traps to be installed on unmanned platforms and facilities. This sequential launching to take place without having to repeatedly de-pressurize and re-pressurize after each launching. The process can also be controlled from a remote location. This is particularly relevant on unmanned platforms such as offshore platforms and sour service applications.

| Feature

- Bi-directional trap systems
- Inclined and declined construction
- Horizontal and vertical construction
- Pig storage
- Pig signalers (intrusive and non-intrusive)
- Local/remote control panel
- Sun shade
- All instruments
- All related valve
- Pig release mechanism flapper type
- Pig release mechanism finger type
- Mechanical safety interlock device
- Switch for closure
- Skid mounting
- Pig handling system

Insulating Joint

| DESCRIPTION

Namdaran Petrogas Industries Insulating Joint (IJ) is a high-resistance fitting used to electrically isolate sections of a pipeline to improve the effectiveness of cathodic protection systems and to reduce ground-loop currents. Unlike insulating flanges or flange kits that are field assembled and tested, the IJ is factory assembled, electrically tested at different stages of manufacturing, and hydrostatically tested. The IJ is provided by extension nipples that match the pipeline wall and grade and are long enough to eliminate any possibility of thermal damage to the IJ during field welding.

| Feature

- Maintenance-free
- A design which has proven successful throughout the world even for highest requirements
- Suitable for underground installation without the need for special precautions or for ground installation above
- Monolithic

| Materials

- Pipes, e.g. in accordance with DIN, API, ASTM and other standards
- Seamless rings made of forged material depending upon requirements and design calculations
- Seals of aging-resistant material, Viton, NBR, HNBR, EPDM and other materials
- Insulating materials made of tried and tested materials with application-specific properties
- Size: From 6 " up to 56"
- Rating : Class 150 # up to 2500 #

Electric and dielectric test

a) D.C. Resistance test (Megger Test) Each insulating joint will be megger tested with 1000 V(D.C) . Minimum resistance will be 60 Mega ohms.

b) Dielectric strength test Each insulating joint will also be dielectric tested at 5000 V (A.C, 50 Hz) for 1 minute. Maximum allowable leakage is 5 mill amperes on size up to 24 inch nominal pipe size and 10 milliamperes on size 30 inch and larger nominal pipe size.

Split Tee with/without guide bar

| DESCRIPTION

Namdaran Petrogas Industries provides the 6"-56" Split Tee with guide bar. Keeping the line pig gable, the guide bar blocks the tapped hole.

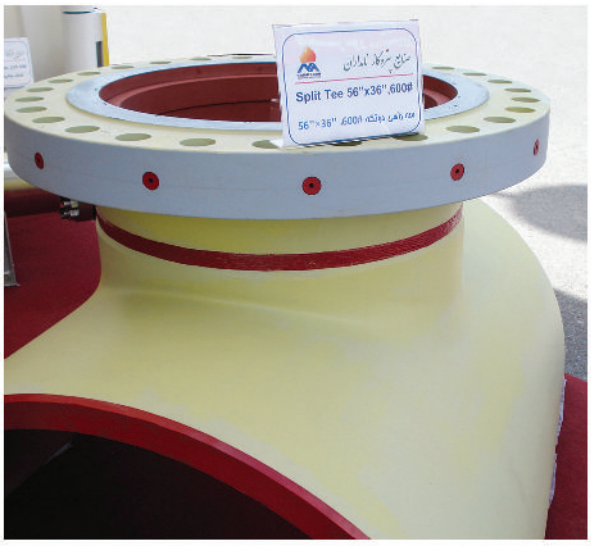
Natural gas transmission and distribution companies need to make new connections to pipe line many times a year to expand or modify their existing system using split tee without shutting down operation of system.

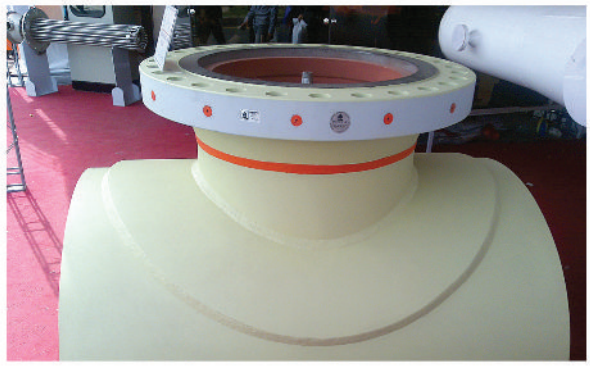
The Split Tee is an extruded or welded type.

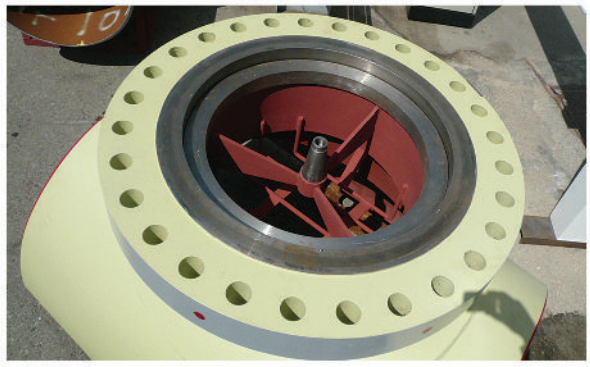
The fitting is furnished with a flange that is pressure rated to match ASME standard flanges. It is used with hot tapping and/or plugging machines to tap and temporarily plug the line for maintenance, without shutdown.

| Code & Standards

Design:	ANSI / ASME B 31.8
Fabrication:	ASME Sec. VIII
Welding:	ASME Sec. IX
NDT:	ASME Sec. V
Size:	From 6" up to 56"
Pressure rating:	class 150 to 2500







Anchor Flange

DESCRIPTION

Anchor flange is an important element in many thrust-control systems, especially those protecting pipeline pumping stations. Welded into the line and encased in concrete, they immobilize the pipe at predetermined locations and transfer built-up stresses to external structures.

- Restraining the movement of pipeline sections is a design factor that must be considered particularly at points of directional change, connections to equipment at meter run locations, at river crossings, and for pipe runs at locations of discontinuity of restraint from the earth surrounding the line.
- Forged steel Anchor Flanges are pressure retaining members that butt weld directly into the pipeline and provide an integral «flange» or collar which can transmit restraint from an anchor to the pipeline.
- The forces resulting from the restraining anchor are gradually absorbed by the fitting without imposing a concentration of stresses on the pipeline itself. Fillet welding of external collars, supports, lugs etc. is eliminated.
- Anchoring devices can be installed in many different ways to accomplish partial or complete restraint to axial, vertical, lateral or twisting forces. Most commonly, they are embedded in a reinforced concrete pit or block.
- Anchor Flanges are usually forged of carbon steel which can be heat treated to equivalent mechanical properties as that of the matching pipe, or can have the hub thickness (wall) at the welding ends made proportionally thicker than that of the mating higher yield-strength pipe to compensate for the slightly lower mechanical properties of the flange. This increase in wall thickness does not result in any objectionable transition across the weld and has proven itself in countless applications.
- Anchor Flanges are used installations with a variety of operating service conditions. For maximum efficiancy Anchor Flanges should be designed specifically for each application.
- Accordingly, Namdaran Petrogas Ind. has established a design method which applies to specific service conditions. These service conditions involve the thrust through which the anchor and pipe will cycle and the allowable bearing stress that can be maintained by the concrete adjacent to the anchor.
- Anchor flanges are manufactured to client specifications or we can provide design service for specified criteria.
- The materials supplied from overseas will bear the manufacturer test report; materia s that supplied from local market will bear the chemical analysis and mechanical test report from reputable laboratory.
- Sizes: from 6" up to 56"

Quick Opening Closure

| DESCRIPTION

Namdaran Petrogas Industries closures provide horizontal or vertical access to pipeline pig traps, filters, coalescers, strainers, separators, meter skid systems, hydro cyclones, or any other type of pressure vessel in seconds. Compared with other opening doors they can be operated safely at remarkable speed – any size of closure can be opened or closed by one person in less than one minute, with no special tools required.

| Features

I. The closures are available to suit a wide variety of pressure vessel sizes and pressures, from 6" up to 120" diameter and any pressures from class 150 # up to class 2500 #.

II. The closures are designed to meet requirements of ASME VIII Div.1. Furthermore, alternative pressure vessel design codes, such as ASME VIII Div.2, PD5500 and EN13445 can also be accommodated.

III. The locking mechanism incorporates a hand operated pressure warning screw and a Safety locking device and Stopper, which prevents the door being unlocked until there is no residual pressure inside the vessel.

IV. The closure hub and door are manufactured from materials that fully comply with the requirements of NACE MR 75-01 / ISO 15156 Latest Edition, HIC and SSC test resistance.

V. The stress and strain analysis has been successfully performed by finite element (Ansys software) and NPI calculation.

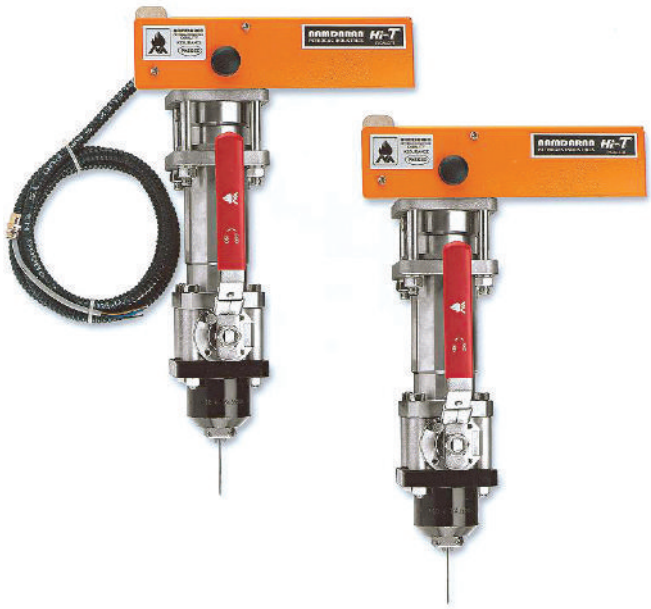
| Materials

a. Standard materials used in closures are made to ASTM specifications and are types permitted Under ASME Section VIII, Division 2, Boiler and Pressure Vessel Code.

b. Closure hubs and door materials are SA 350 LF2, SA 105, and A694 F70/65/60/52/42.

c. Materials for special applications, including hinges for offshore service, can be furnished upon request.

d. As per request, NPI can apply weld overlay clad on surfaces(Clad material are: Monel, Inconel, Incoloy, Stainless steel, Titanium, and other)



Pig Signaler

DESCRIPTION

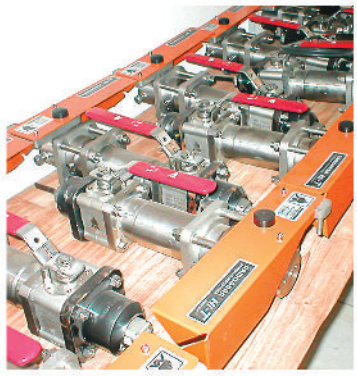
Namdaran Petrogas Industries (NPI) provides pig signalers / indicators for pipeline industry. The pig indicator is a device that is used, to detect the passage of a pig in the pipeline.

Features

. All pig signalers are bi-directional for operation through a minimum hole diameter of 39 mm. All models can be set to suit varying thickness of line pipe of any diameter of 6 "and above without being limited to pre set lengths of mounting base. The internal mechanism can be adjusted maximum 25mm.

. Pig signaler is manufactured in three pressure classifications - up to Class 2500. Standard models are designed for use at temperatures from -29ºC to 200ºC, dependent upon the line products anc pressure.

. Pig signalers are available in a wide range of models - mechanically operated signal flags, electrical auto resetting switches, or mechanical and electrical signals in combination, to suit either welded, or flanged type mounting.

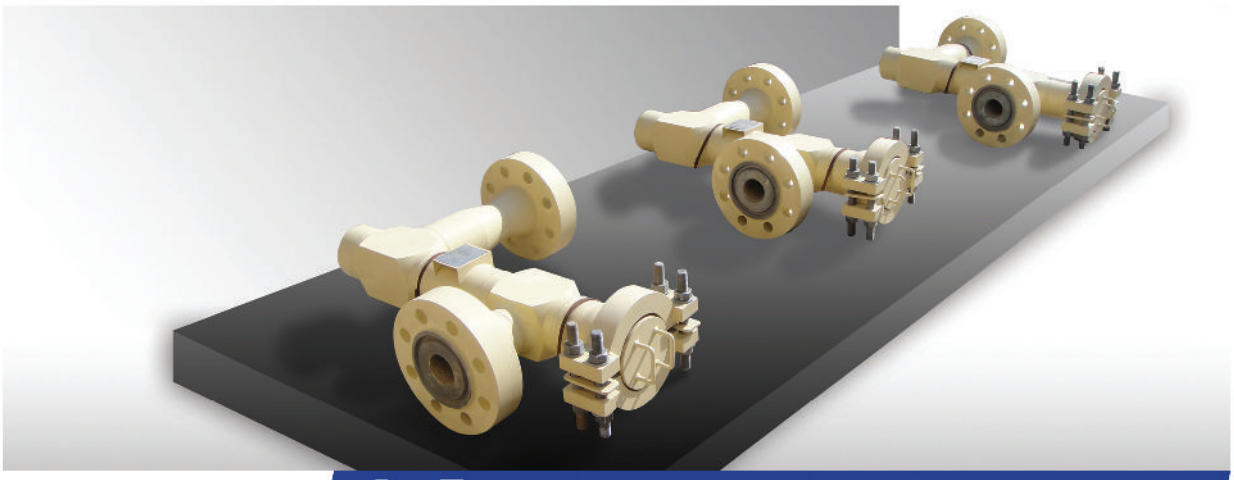


. Pig signalers can be supplied with integral valve/DBB to allow removal under line pressure.
. Pig signalers feature a unique trigger penetration adjustment facility to cater for variations in line thickness and flange standout

Removal Under Pressure

. The pig signaler is classified in two types: models which are not designed for removal while the line is under pressure, and models which are fitted with an integral valve and suitable for controlled removal when the pipeline cannot be de-pressurised.

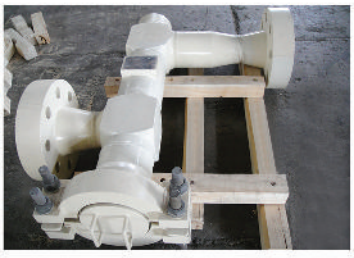
. A simple jacking bracket tool is available for this purpose, consisting of a safety screw mechanism and bridging clamps to allow rapid removal and re-installation of the pig signaler from the line under pressure.



Grit Trap

| DESCRIPTION

Namdaran Petrogas Industries offers several types of stone traps for oil and gas industry, according to international codes. The service is to trap the solid parts, running into the media coming from the wells. Materials are selected to withstand the severe corrosion and erosion the reduction of wall thickness, the internal surface of the trap is often hardened by a weld overlay clad like nickel, cobalt and other alloys. Traps are equipped by a closure or a flanged connection to remove the separated grits and sand.



Size Nominal	Working Pressure	Material Pipe	Material of Flange
4"	3000 psi	API 5LX52/X60	A694 F52/F60
	5000 psi	API 5LX52/X60	A694 F52/F60
	10000 psi	API 5LX52/X60	A694 F52/F60
6"	3000 psi	API 5LX52/X60	A694 F52/F60
	5000 psi	API 5LX52/X60	A694 F52/F60
	10000 psi	API 5LX52/X60	A694 F52/F60
8"	3000 psi	API 5LX52/X60	A694 F52/F60
	5000 psi	API 5LX52/X60	A694 F52/F60
	10000 psi	API 5LX52/X60	A694 F52/F60

Remark:

- All materials will be supplied NACE MR 0175 / ISO 15156.
- Cladding with COBALT STELLITE 6, INCONEL 825 & 625, SS 316L AND OTHER ALLOYS.

Stone Trap

| DESCRIPTION

Namdaran Petrogas Industries offers several types of stone traps for oil and gas industry, according to international codes. The service is to trap the solid parts, running into the media coming from the wells. Materials are selected to withstand the severe corrosion and erosion the reduction of wall thickness, the internal surface of the trap is often hardened by a weld overlay clad like nickel, cobalt and other alloys. Traps are equipped by a closure or a flanged connection to remove the separated grits and sand.

Size Nominal	Working Pressure	Material Pipe	Material of Flange
4"	3000 psi	API 5LX52/X60	A694 F52/F60
	5000 psi	API 5LX52/X60	A694 F52/F60
	10000 psi	API 5LX52/X60	A694 F52/F60
6"	3000 psi	API 5LX52/X60	A694 F52/F60
	5000 psi	API 5LX52/X60	A694 F52/F60
	10000 psi	API 5LX52/X60	A694 F52/F60
8"	3000 psi	API 5LX52/X60	A694 F52/F60
	5000 psi	API 5LX52/X60	A694 F52/F60
	10000 psi	API 5LX52/X60	A694 F52/F60

Remark:

- All materials will be supplied NACE MR 0175 / ISO 15156.
- Cladding with COBALT STELLITE 6, INCONEL 825 & 625, SS 316L AND OTHER ALLOYS.

NAMDARAN
PETROGAS INDUSTRIES

| Certifications

The company activities are and will be based on certain and clear principles and standards in order to satisfy customers and taskmasters. These have always been among the main values of our company as it goes on to improve on knowledge in terms of technicality, modality and economic principles. To achieve this, the company has secured its policy headlines according to implementation of integrated management system based on ISO standards such as ISO/TS 29001:2010, BS OHSAS 18001:2007, ISO 14001:2015 and ISO 9001:2015 to become an authoritative association among oil, gas and petrochemical equipment and instrument manufacturers. The company vows to be committed to efficient and effective implementation of the values and standards mentioned above.

Note

Note

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