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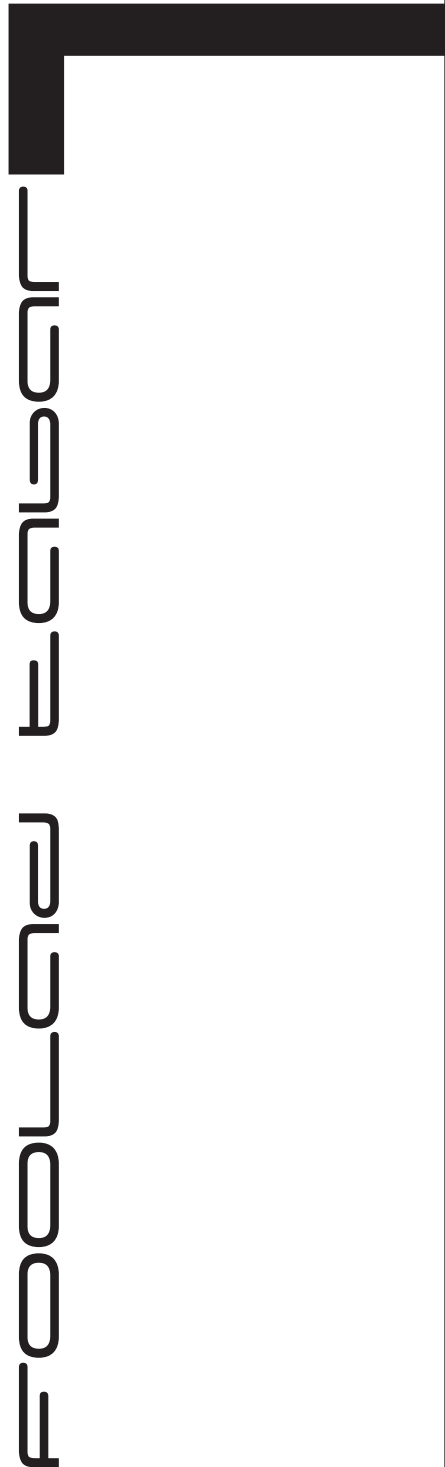
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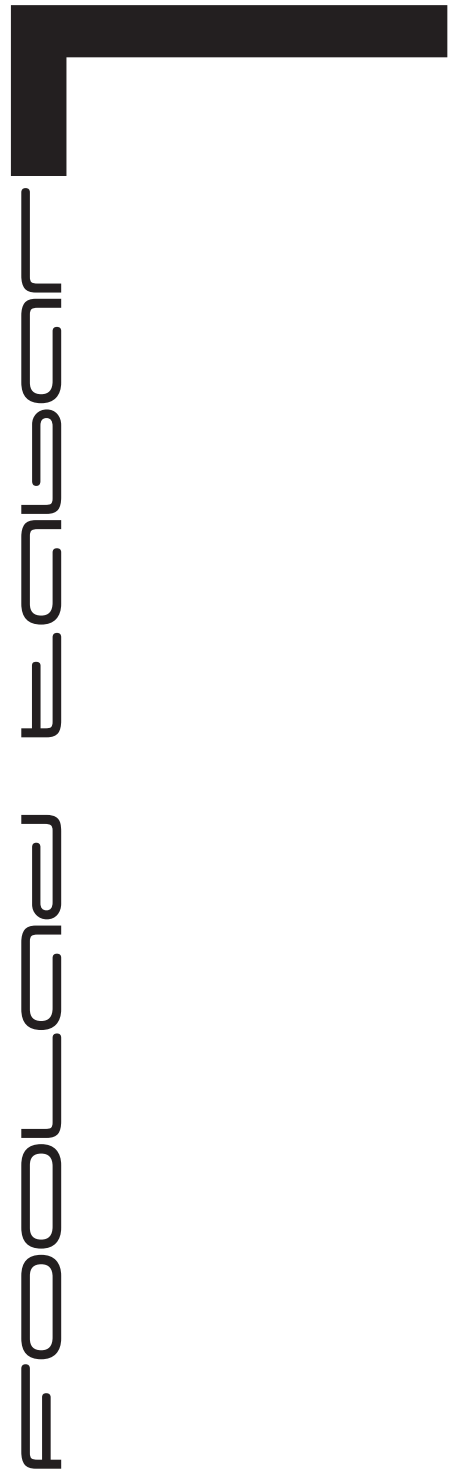
MISSION AND VISION

We tried to be brilliant with the aim of consulting and supplying the equipment needed by the industries active projects such as oil, gas, petrochemical, steel, power plant, offshore, water and sewage, heating and cooling.

With a management system based on the policy of purpose and result, by providing all the principles of customer orientation, to provide services at the highest quality and quantity. Relying on the capability and experience of professional, young and faithful personnel, as well as technical and commercial experts, this group has gained a good position in this field and in order to optimize the process of its activities, has implemented and obtained ISO 9001 - ISO 14001 - ISO 45001 - IMS standards. And has used customer relationship management (CRM) systems and has formed a wide network in various sectors of the field.

In this regard, we have established a direct relationship with the top domestic and international brands, and through this, we have been able to meet the main needs of the country with the best quality and the shortest time. The company offers its services with unique methods such as free shipping and standard packaging to be recognized as the most special supply chain in the country. It should be noted that the establishment of several offices in the countries of origin has created the ability to provide the equipment needed by the customers.





تلاش کردیم، تا با هدف مشاوره و تامین تجهیزات مورد نیاز صنایع فعال درکشور و پروژه های مادر از قبیل نفت، گاز، پتروشیمی، فولاد، نیروگاهی، دریایی آب و فاضلاب، حرارتی و برودتی درخشان باشیم.

با سیستم مدیریتی مبتنی بر اصول هدف و نتیجه، بارعایت تمامی اصول مشتری مداری، در بالاترین سطح کیفی و کمی ارائه خدمات نماییم. این مجموعه با اتکا به توانمندی و تجربه نیروهای متخصص، جوان و مومن در عین حال خبره فنی و بازرگانی، جایگاه مناسبی را در این عرصه بدست آورده و درجهت بهینه سازی روند فعالیت های خود اقدام به پیاده سازی و اخذ استاندارد های ISO 9001 - ISO 14001 - IMS 45001 - ISO 14001 نموده است و از سیستم های مدیریت ارتباط با مشتری (CRM) استفاده و اقدام به تشکیل شبکه گسترده ای از مخاطبان در بخش های گوناگون این عرصه نموده است.

در این راستا ارتباط مستقیم با برترین برندهای داخلی و بین المللی برقرار کرده ایم و از این طریق توانسته ایم عمده نیازکشور را با بهترین کیفیت و کوتاه ترین زمان تامین کنیم. این شرکت خدمات خود را با روشهای منحصر به فردی از جمله حمل رایگان و بسته بندی استاندارد ارائه میدهد تا درکشور به عنوان خاص ترین مجموعه تامین شناخته شود. لازم به ذکر است راه اندازی دفاتر متعدد درکشورهای مبدا این توان را ایجاد کرده است تا در صورت عمومی نشدن درخواست کارفرمایان محترم تجهیزات مورد نیازشان را بدون توجه به شرایط تحریمی موجود تامین نماید.

هر جا که صنعتی می درخشید
روح فولاد تبار را در آنجا حس می کنید

شرکت فولاد کادو جنوب کیش



مجمع ذوب آهن پاسارگاد



شرکت کالیمین زنجان



مجمع فولاد میانه



پخش فرآورده های نفتی اراک



شرکت گاز استان کرمانشاه



شرکت گاز آذربایجان شرقی



شرکت ذوب و نورد کرمان



هر جا که صنعتی می درخشید
روح فولاد تبار را در آنجا حس می کنید

شرکت نفتی پنا



شرکت نفت سپاهان



بنیاد مسکن انقلاب اسلامی



شرکت صنایع فرا ساحل (س)



پخش فراورده های نفتی هرمزگان



شرکت گاز استان فارس



شرکت نفت فلات قاره



شرکت پالایش گاز پارسیان



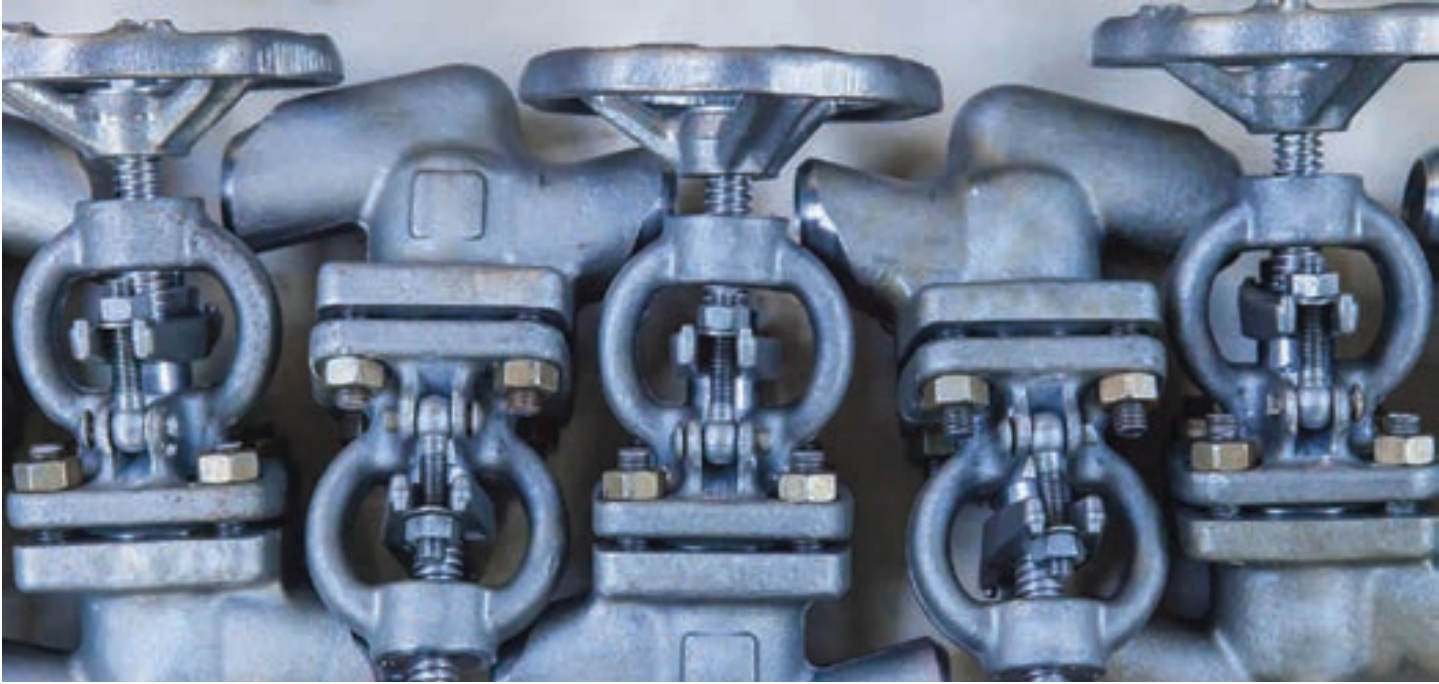
INDUSTRIAL PROCESS

- Valves
- Pipes
- Ironware & plates
- instruments
- Fittings
- Gaskets
- Facilities
- Stud Bolt
- Firefighting
- Food industry
- Expansion Joint
- Safety Valve



Butt - Weld
Socket Weld
Threaded
Flanged
Wafered Type
Lug Type

VALVES - Butt weld



Butt-weld Valve End Connections. In this case, the ends of the valve are bevelled to match wall thickness and machined bevel at the end of a mating pipe. A circumferential weld is made at the abutted mating bevels.

'Backing rings' which are basically sleeves fitting inside the pipe, are sometimes used to align the pipe and valve bores also to prevent 'icicles' and weld spatter from entering the pipeline. Butt-weld ends are used only on steel valves, normally in sizes 50mm and upwards, for the higher pressure/temperature applications in pipelines which do not require frequent dismantling.



VALVES - Socket Weld



A Socket Weld is a pipe attachment detail in which a pipe is inserted into a recessed area of a Valve, fitting or flange. In contrast to butt-weld fittings, Socket Weld fittings are mainly used for small pipe diameters (Small Bore Piping); generally for piping whose nominal diameter is NPS 2 or smaller. To join pipe to Valves and fittings or to other sections of pipe, fillet-type seal welds be used. Socket Welded Joints construction is a good choice wherever the benefits of high leakage integrity and great structural strength are important design considerations.

Fatigue resistance is lower than that in butt-welded construction due to the use of fillet welds and abrupt fitting geometry, but it is still better than that of most mechanical joining methods.



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VALVES - Threaded



Threaded connections usually use female end connections but sometimes feature male threaded ends. By putting a threaded pipe into the opening, you create a strong seal.

If you are using a straight thread, it will require some sort of soft seal or o-ring against fluid. Meanwhile, a tapered pipe thread connection serves as a natural fluid seal with the use of a sealing agent or PTFE tape.



VALVES - Flanged



Do you anticipate changing out parts of the valve on a frequent basis? In that case, a flanged valve is likely your best choice.

These valve connections typically use flanges on the ends of the valve to attach it to flanges on the pipe itself. The use of such flanged connections makes it easy to remove and replace parts as necessary. Often flanged connections are made with a soft gasket seal to keep the connection tight.

Flanged connections are used in both America and Europe. However, the connections in these different areas must abide by different standards.



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VALVES - Wafered Type



In a wafer connection the valve is installed between the pipe flanges and tightened to its place with the bolts for the pipe flanges.

In some wafer types there are some centering holes on the body to ensure valve's correct position between the flanges.

Wafer type body is the lightest body version for mounting between piping flanges. Therefore a wafer valve use to be cheaper than other valves. Also it is fast mounting.



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VALVES - Lug Type



In a lugged connection the valve is fastened directly to the pipe flange by connecting the pipe flange with bolts to the valve body also drilled with threads.

This valve is designed to be installed to the end flange of piping or between flanges which are drilled in accordance with DIN EN 1092-1 or ANSI Class 150 and working pressure up to 16 bars (ANSI Class 300 and higher as per request). In open position, disc will be in the middle, allowing best flow condition with minimum pressure loss. The seat is in U-shape rubber liner which covers inside of the body, is replaceable and provides a reliable sealing from both directions. Note: There is no need for sealing

Advantages:

- Low pressure drop
- Bi-directional sealing
- Replaceable body seat
- Short body and low weight
- Easy installation and maintenance
- No need of sealing washer for installation to the pipeline
- Possibility of installation in any desired position (Horizontal, Vertical, diagonal)

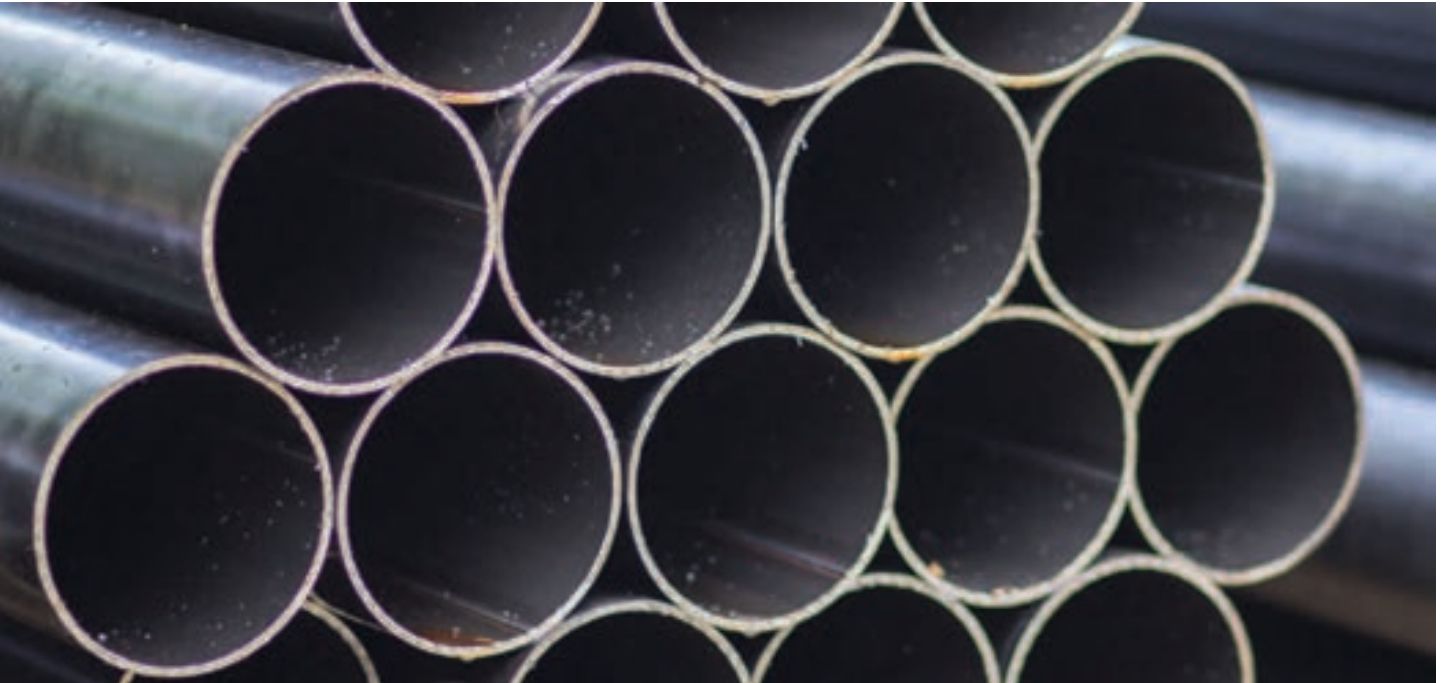


PIPES



Welded
Seamless

PIPES - Welded



Special Piping Materials supplies its clients all over the world with a wide range of welded pipes in a variety of materials from super duplex welded piping to nickel alloy and 6% molly. We ensure that the welded pipes our trusted mills and manufacturers produce are of the high possible quality and they have been fully tested to international standards.

While it is correct that the seam in a welded pipe makes it theoretically weaker than seamless pipe, manufacturing methods and quality assurance procedures are far more superior these days. This means that as long as a welded pipe's specified tolerances for temperature and pressure aren't



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PIPES - Seamless



Special Piping Materials (SPM) is a specialist supplier of Duplex, Super Duplex and exotic alloy products. We have one of the largest stockholdings in the market of high- specification and high-performing pipes, fittings and flanges.

This range of products includes seamless pipe, round bar, forged fittings and welded pipes. SPM warehouses around the globe also stock a wide selection of 'semi- finished products such as part machined flanges.

Our extensive stock holdings mean that we are able to supply clients with products quickly and efficiently, wherever they are required. The relationships we have cultivated with some of the leading mills across the world mean that if we don't have something in stock, we are able to source it quickly and professionally organize the shipping as well.



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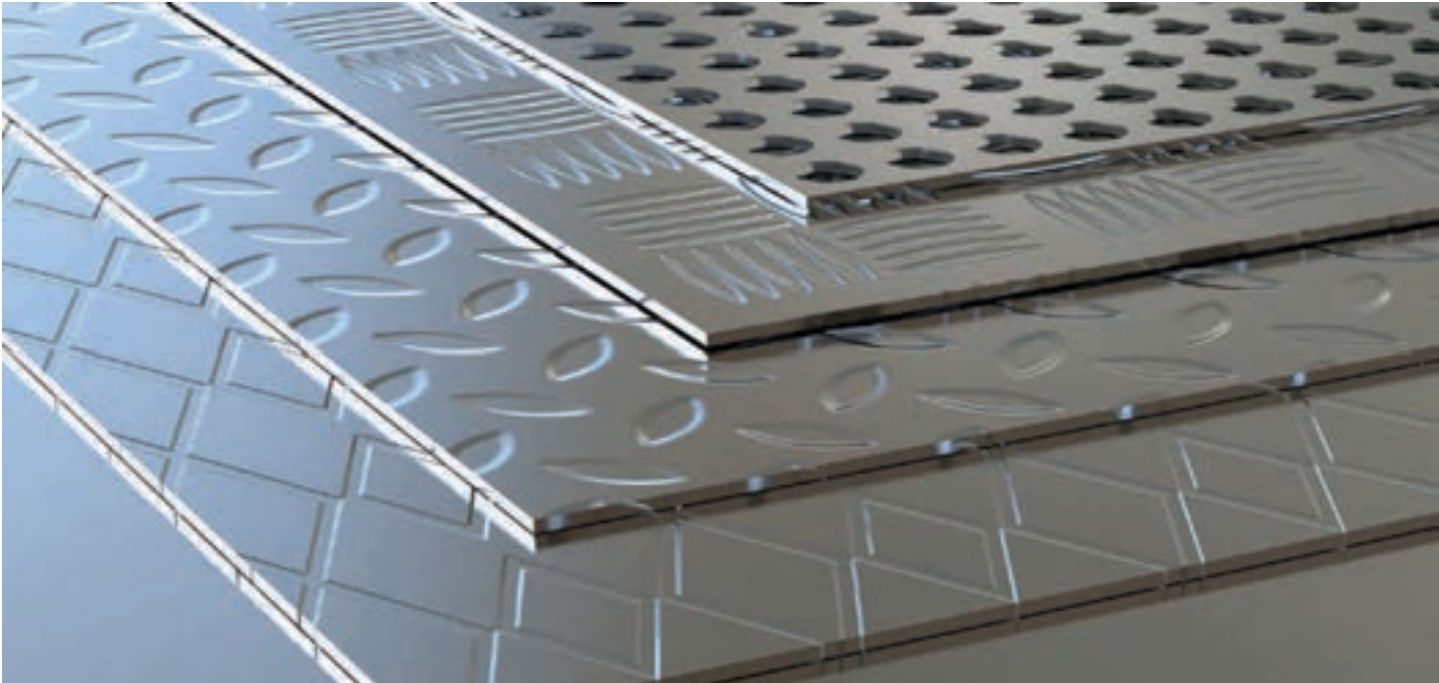
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IRONWARE & PLATES



Plates
Angle
U-Channel
Girder
Rod
Profile

Plates



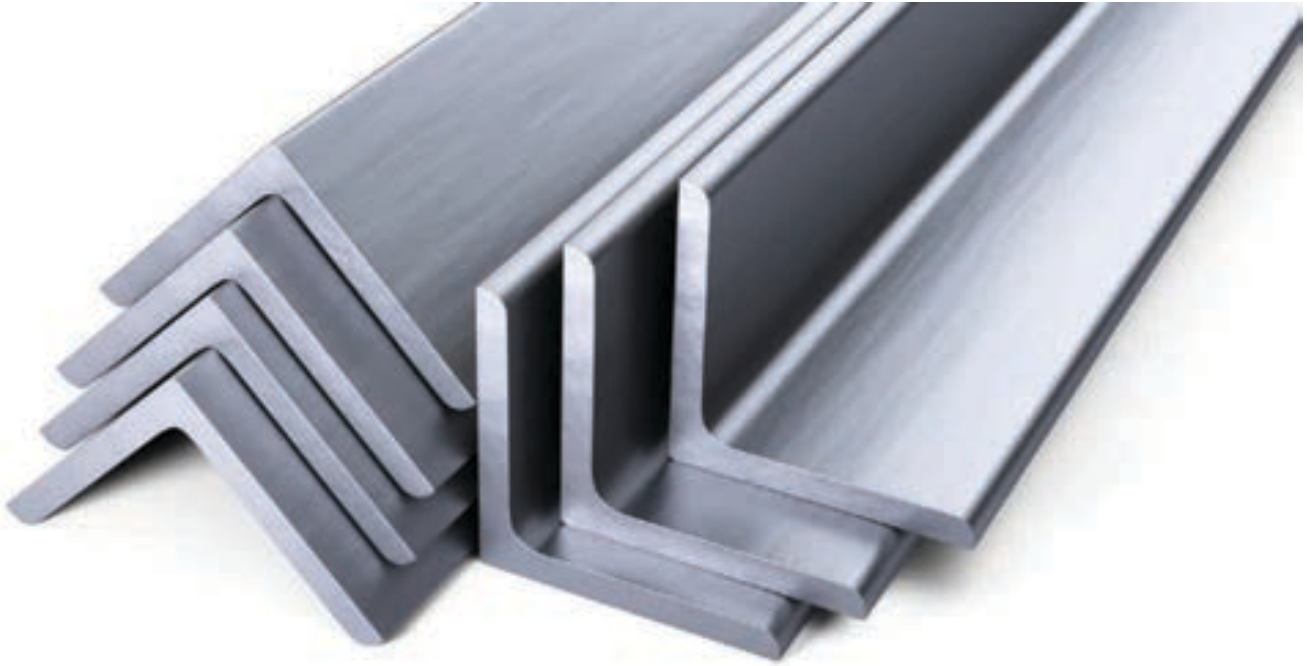
Steel sheets are very widely used sections that are used directly or used in the production of other sections. Steel sheets are defined under certain standards, the common standards in Iran are usually German, then the American ASTM standard and the standard Russian goose is rarely used. In this article, we will review the types of steel sheets, its production methods and applications.

Cold rolled steel sheet Unlike hot rolling, cold rolling of metal occurs below its recrystallization temperature. The whole process starts like hot rolling to get the initial shape without much resistance. The metal is then cooled to room temperature. The semi-finished products are then fed to the reducing roller. The metal is rolled to a thickness of 0.5 to 3 mm in the case of low carbon steel and 0.5 to 5 mm in the case of stainless steel. This material is cooled using oil, which also acts as a lubricant during the rolling process. As the sheet metal between the rollers becomes thinner, its speed increases. Cold rolled steel can be identified by its oily and smooth surface.

Heating processes are used more than cooling because they require less power and energy. Hot rolling occurs at temperatures above the recrystallization of materials, in the case of steels it is above 1000°C . First, the ingots or slabs are heated above the above temperature, in the next step, they enter the rolling machine and continuous rolling applies the desired final shape.

Because metal is easier to deform at high temperatures, it can be produced in larger quantities than cold rolled steel. Steel cools at room temperature, a process known as normalization, which alters the microstructure of a material in a way that increases ductility. Ductility is of particular importance when forming materials to provide the required shape. Hot-rolled steel experiences internal stresses due to subsequent cooling, and the results of non-uniform measurements have a tolerance of 2 to 5%. It also has a crusty surface due to oxidation, which makes it not have the highest surface quality. Rolled steels are a good option when precise tolerances are not considered.

IRONWARE & PLATES - Angle Bar



An angle bar, also known as an "L-bracket" or an "angle iron," is a metal bracket in the form of a right angle. It is made of galvanized steel and often used in masonry or applied to different surfaces through welding or drilling. Angle bars are often utilized to support beams and other platforms, but their usefulness goes beyond their usual role. Angle bars can provide additional strength, protect structures from corrosion and even provide additional stability.

Fortified Support to Structures

Large angle bars provide structural support to columns and beams, giving additional strength and stability. They also provide both vertical and horizontal supports for buildings, such as towers and broadcasting equipment. Since angle bars are made using galvanized steel, they are more resistant to corrosion and other weather effects.

Angle bars can also cover edges and corners, helping the structure stay in shape and avoid the usual wear and tear ordinarily caused by the weather. Sharp corners and edges reinforced with angle bars can last longer and resist chipping and corrosion. They also provide additional strength and make each corner more stable.



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IRONWARE & PLATES - U-channel



Steel channel has been classified into "C" and "U" types depending on its outlook. Hence there are two standards to show the channel dimensions - UPE & UPN. UPE is for the C channel steel with parallel flanges while UPN for the U channel steel with tapered flanges. You can find the size details in the specific type of channel steel like A36 steel channel. Bespoke channel dimensions are available.

Where will the channel steel be used?

Steel channel are one of the most popular parts in construction and manufacturing. Apart from this, C channel & u channel are also used in our everyday life if you have so much attention to them like stair stringer. However, owing to its bending axis is not centered on the width of flanges, structural channel steel is not so strong as I beam or wide flange beam.

Tracks & sliders for machines, doorways, etc..



Posts and supports for building corners, walls & railings.

Protective edges for walls.

Decorative elements for constructions like ceiling channel system.

Frames or framing material for construction, machines.



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IRONWARE & PLATES - Girder



iron beam is a steel product obtained through the hot rolling process that has a certain cross section and is the most important construction product used in structures.

iron Beam have a great variety that depending on the application, the type of product should be selected.

As you know, its main task is to withstand stress and flexural pressures.

European standard: The production method of this beam is in accordance with European standards. Also, the wings of this type have a constant thickness.

In other words, the thickness of the initial and final wings of this type of beam is the same.

Sino-Russian standard: INP is the same as IPE and is produced according to Russian and Chinese standards. The only difference between this type and IPE is the thickness of the wing.

Wide wing IPB: It is called wide beam or H beam. In this type, the wingspan is longer than the IPE beam.

Note: The abbreviation V in this area means heavy arrow and the L symbol indicates light arrow. So we have:

IPBV: Heavy Duty Beam and IPBL Light Wide Beam.



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IRONWARE & PLATES - Rod



It is a steel rebar used in concrete to compensate for its low tensile strength. The steel used for this purpose in structures is in the form of wire or rebar and is called rebar steel.

Abbreviation signs

E_s = elastic modulus of steel rebars, in Mpa

f_{su}, f_{obs} = tensile strength of steel rebars, ie the tensile strength obtained in the tensile test on the rebars used, in Mpa

f_y = yield stress of steel rebars, in MPa; This stress in s240 rebars is obtained from its apparent yield stress. In other rebars, the contractile yield stress is defined (stress such as permanent relative deformation of 2.0%, or stress such as relative relative deformation of 35.0%).

f_{yk} = characteristic strength of steel rebars; The stress that is the basis of the design as a property of steel, in megapascals

$f_{y, obs}$ = yield stress actually obtained in the tensile test on the desired rebar in terms of Mpa

S = effective or nominal cross-section of the rebar; In terms of square millimeters

L = length of a piece of rebar; In millimeters

d_b = nominal diameter of plain or ribbed rebars; In millimeters

\emptyset = Nominal diameter of simple rebars, commonly used in drawings and other technical documentation.

\square = Nominal diameter of ribbed rebars, commonly used in drawings and other technical documents.

d_1 = field diameter of ribbed rebars; In millimeters



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IRONWARE & PLATES -Profile

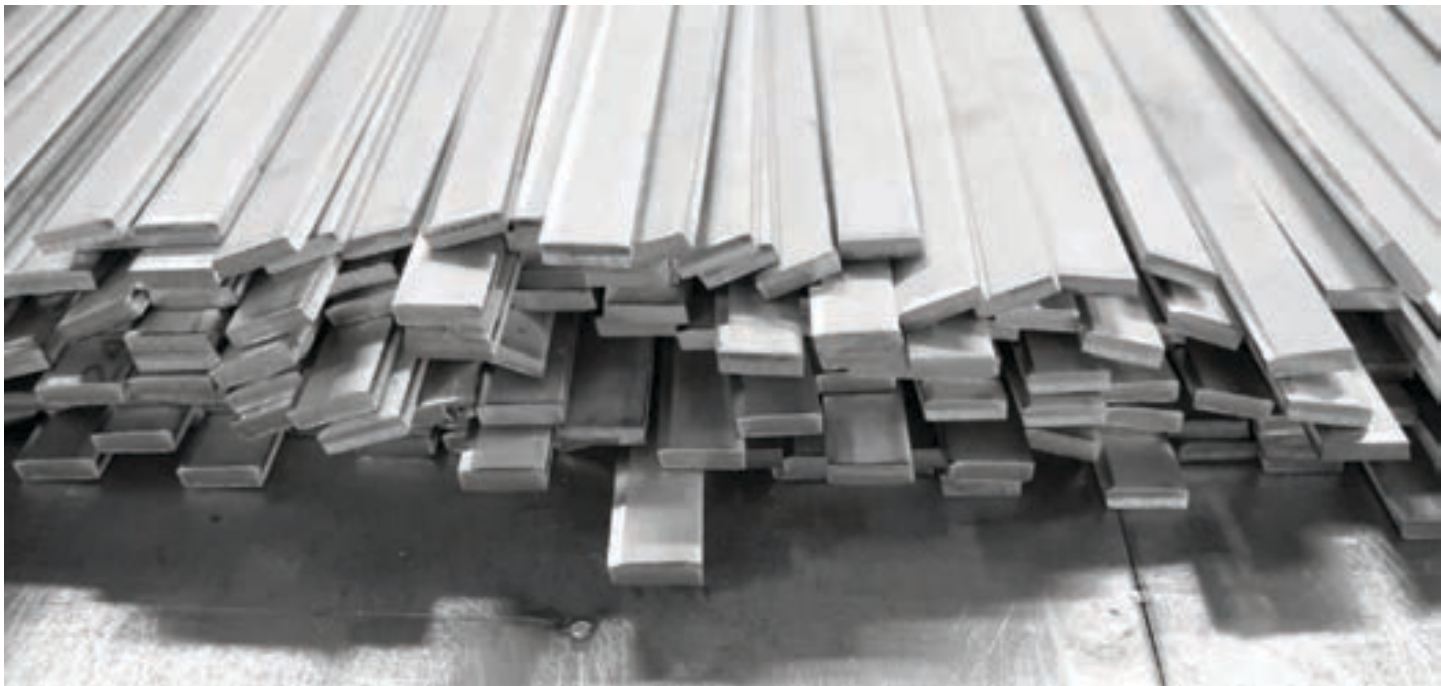


Iron profile cans are one of the longest steel sections that are commonly produced by the cold forming process. The variety in this product is in two ways: first, the profiles have four main cross-sectional shapes, including circle, oval, rectangle and square, and second, each of these shapes includes a wide range of diameters and sides. This diversity has made the applications of building profiles extremely wide. The standard reference used to produce iron profiles is BS EN 10219. This standard has been prepared and compiled in two parts. The first part is called the technical conditions of non-alloy hollow building profiles, in which the production section and tests and tests related to the production line, etc. are dealt with more. The second part, which we will discuss in this article, is entitled tolerances, dimensions and specifications of sections of construction profiles. All the requirements related to the dimensions and permissible deviations from these specifications have been discussed.



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IRONWARE & PLATES - Stack of Flat Bar



Steel belts are sections that have a very large difference in width and thickness. These parts are very diverse and can be used in various projects and in all industries. The belt is produced in two types of fabric and machined. Machined belts are more expensive than fabric belts due to their production process. This belt is made in both hot and cold rolling and its surface is smooth and rectangular. Hot rolled steel belts are used in construction and general repairs and industrial repairs, transportation equipment. Cold rolled belt is used where critical strength and less tolerance are required. Types of steel belts include galvanized belts, hot and cold rolled, stainless steel and aluminum. They are most used among steel belts, galvanized belts and stainless steel. In steel belts, we can mention 300 series, the most important of which are 304 and 316 stainless steel belts. Features of steel belts include excellent high temperature strength and non-magnetic properties.

Steel straps are easy to cut, the drilling and welding of these parts is very simple. Because iron belts are durable and can support the weight of the structure, they are often used for this purpose. Iron strap is one of the supporting supports of the building. They are used for stair railings, guards and door locks.





Filters
Blocks
Valves
Fittings
Manifolds
Connectors
Tube Series
Checking Industrial

INSTRUMENTS



Process measurement and control employs a wide array of gauges and instruments that may be permanently or temporarily connected to a piping system. Providing controlled isolation and connection of these instruments is the function of what are generically referred to as "instrument valves" or "gauge valves". These valves are generally small, with connection sizes ranging from 1/8" to 1", though there are specialty variants outside this range. The predominant valve type is a needle valve, but ball valves and some other types are also used. Certain attributes of particular applications may weight a selection decision toward a valve type. Widely used throughout the process industries, instrument valves are often designed to accommodate pressures as high as 6000 PSI and are intended for service with gaseous or liquid service.

When selecting an instrument valve, consider construction materials that are compatible with the process media. Additionally, operating temperature and pressure of the process must be well within the limits of the valve.

Instrument needle valves provide reliable function to throttle, regulate and isolate gaseous and aggressive non-viscous liquid services. Product offerings range from simple two-way isolation valves to multiport gauge root valves providing multifunction capability to isolate, calibrate and vent gauge, pressure switches and static instrument applications. Ball valves in this class do not provide the throttling accuracy of a needle valve, but may provide some advantage with the use of certain media. The ball valve design, with its full size port, enables easier cleaning and a lessened potential for clogging.

There are three basic configurations of instrument valves. The simplest is the isolation valve with a single inlet and outlet. It provides for selection of exposure or isolation of a connected gauge or other device to the operating process piping or vessel. Maintenance or replacement of the connected device can be effected without opening the contained process to the surrounding environment.





Buttweld
Socket
Threaded
Flanged

FITTINGS - butt weld



Special Piping Materials offers a range of precision finished butt weld fittings to our customers, which ensure a continuous flow in both seamless and welded pipes systems.

Long radius elbows, straight tees, equal tees as well as concentric and eccentric reducers are all available in a number of different sizes to match our clients' requirements.

Pipe fittings such as butt weld fittings, threaded fittings and socket weld fitting are essential parts of pipelines as they



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FITTINGS - Socket Joint



A socket weld fittings is a pipe attachment detail. In this case, the pipe will be inserted into a recessed area of a pipe, fitting, valve, or flange. In order to join the pipes or valves to the other sections of the pipe, seal welds of fillet type will be applied. So in some cases socket weld fittings is a good choice. This is because the benefits of great structural strength and high leakage integrity would be quite important factors that have to be taken into consideration when designing your pipeline project.



FITTINGS - threaded



Threaded joints probably represent the oldest method of joining piping systems. Like Socket Weld fittings, threaded fittings are mainly used for small pipe diameters (Small Bore Piping); generally for piping whose nominal diameter is NPS 2 or smaller.

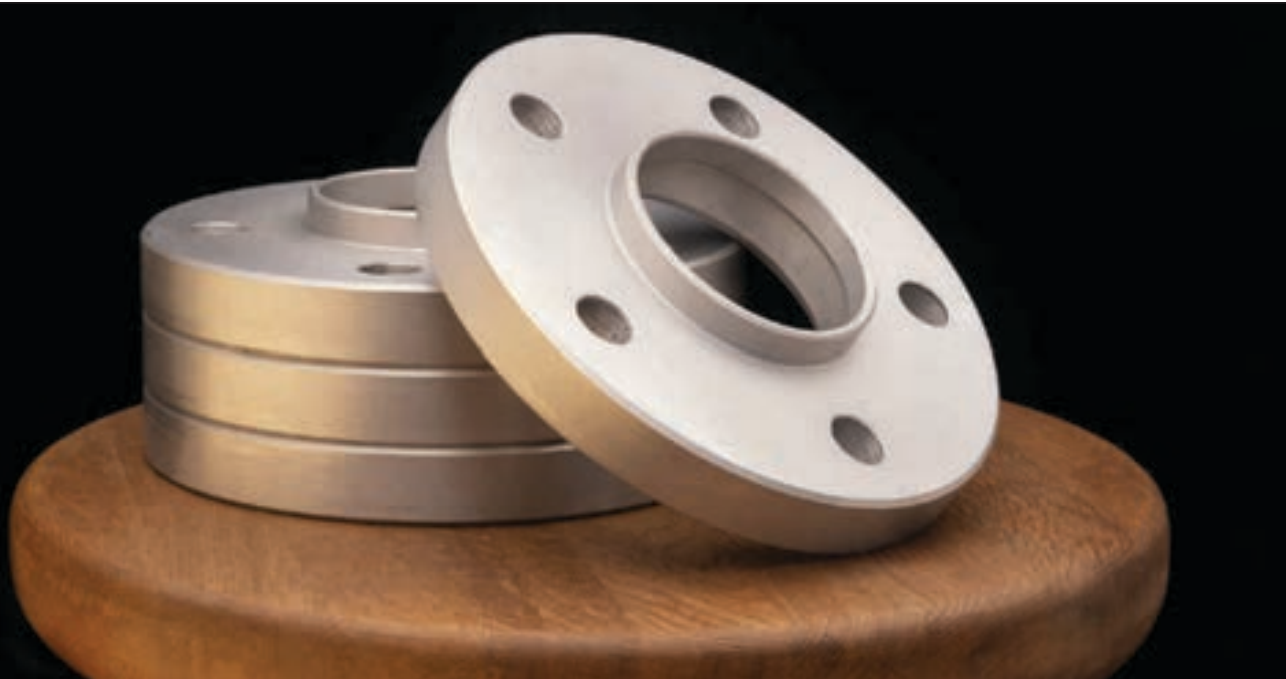
The dimensional standards for taper pipe threads are given in ASME B1.20.1. That document gives all required dimensions including number of threads per inch, pitch diameter, and normal engagement lengths for all pipe diameters.

Threaded piping is commonly used in low-cost, noncritical applications such as domestic water, fire protection, and industrial cooling water systems. Threaded fittings are normally made of cast gray or malleable iron, cast brass or bronze, or forged alloy and carbon steel.

They are available in three pressure ratings: Class 2000, 3000 and 6000.



FITTINGS - flanged



flange is an external or internal ridge between two pipes that provides a method of connecting pipes, valves, pumps and other equipment to form an overall piping system.

In many applications, engineers need to find a way to close off a chamber or cylinder in a very secure fashion, usually because the substance inside must differ from the substance outside in composition or pressure. They do this by fastening two pieces of metal or other material together with a circle of bolts on a lip. This "lip" is a flange.

Flanges can also provide easy access for cleaning, inspection or modification and pipes with flanges can be assembled and disassembled easily. Flanges tend to be either welded or screwed into place.



GASKETS



Metallic
Semi-Metallic
Non-Metallic

GASKETS - Non - Metallic



Soft Gaskets are used with flat-face and raised-face flanges in low and medium Pressure Class applications. Based on the inertness of the materials used, they can fill many chemical requirements, and be used up to very high service temperature.

Their fabrication is by either die-cutting or CAM cutting from several types of sealing sheet materials, such as: Compressed Fibre, Flexible Graphite, PTFE, Thermiculite®, Beater Addition, Solid or Cellular Rubber, Mineral Fibre Felt, Mica, Cork, etc.

For high temperature and pressure, thermo - mechanical cycles and shock, and in situations where the assembly procedures can not be adequately controlled, non-metallic gaskets can be reinforced



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GASKETS - Metallic



METALLIC GASKETS are fabricated from one or a combination of metals to the desired shape and size. Often used metallic gaskets are ring-type-joint gaskets (RTJ). They are always applied to special, accompanying flanges which ensure good, reliable sealing with the correct choice of profiles and material.

Ring Type Joint gaskets are designed to seal by "initial line contact" or wedging action between the mating flange and the gasket. By applying pressure on the seal interface through bolt force, the "softer" metal of the gasket flows into the micro fine structure of the harder flange material, and creating a very tight and efficient seal.

ASME B16.20 covers materials, dimensions, dimensional tolerances, and markings for metallic and semi-metallic gaskets.



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GASKETS - Semi - Metallic



SEMI-METALLIC GASKETS are composites of metal and non-metallic materials. The metal is intended to offer strength and resiliency, while the non-metallic portion provides conform ability and scalability. Often used semi metallic gaskets are spiral wound and camprofile, and a variety of metal-reinforced graphite gaskets.

Semi-metallic are designed for almost all operating conditions and high-temperature and pressure applications, and are used on raised face, male-and-female, and tongue-and-groove flanges.

ASME B16.20 covers materials, dimensions, dimensional tolerances, and markings for metallic and semi-metallic gaskets.



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FACILITIES



Boiler
Compressor
Blower
Pump
Tank
Torch
Water Softener
Temperature
Pool Purifier



One of the biggest differences between the two is their respective levels of power. Fans move air by slightly increasing pressure, while blowers move air moderately to strongly increasing pressure. Blowers are appropriate for industrial and commercial settings, while fans are appropriate mainly for the home. Another difference between blowers and fans is the fact that blowers work using mechanical power, while fans work using electric power. To work, blowers use an impeller (rotor) and blades. The impeller creates centrifugal force, which in turn moves air in just one direction. That direction is determined by the way the blades are pointed. Fans also use an impeller and blades. However, in contrast, fan blades circulate the air in all directions via continuous airflow.

So, while we do make some references to fans in this article, note that the companies associated with this post make industrial blowers, not residential fans.



FACILITIES - Pomp



The seal of the shaft housing is one of the most important parts of a rotary pump. Most malfunctions are caused by poor seals and bearings. The ATK MP pumps are permanently magnetically driven by means of a synchronous coupling. A magnetic external rotor, driven by a regular electric motor, efficiently sends rotational momentum to a magnetic internal rotor. Between the external and internal rotor is a distributor plate or distributor head, which closes the inner tube from the environment. The internal rotor and rotor blades share a common axis here. Rotary pumps with magnetic drive have the advantage over regular pumps that they do not heat up and therefore do not give off heat to the environment. Because the distributor plate or distributor head in the ATK MP pumps is made of plastic, corrosion is excluded. The permanent magnets are made of sintered material and do not require extra protection against corrosion due to their high corrosion resistance.





Most maintenance and engineering managers know if they want reliable operation of their building's heating system, they must pay close attention to boiler maintenance. But the importance of boiler maintenance goes far beyond reliability. Proper maintenance reduces operating and energy costs, improves safety, and prolongs boiler life.

Manufacturers have helped managers in achieving better performance, reliability, and safety by improving the designs of boilers and control systems. If managers and their facilities are to reap the benefits of these improvements, they must commit to strict, timely maintenance activities

.Without that commitment, boiler performance and efficiency will deteriorate rapidly. Even worse, managers will place the facility and its occupants at risk of boiler failure. It is estimated that inadequate or improper maintenance practices lead to more than 70 percent of all boiler failures.

A comprehensive boiler-maintenance program begins with an understanding of common causes of boiler problems and provides actions to combat them.



FACILITIES - Compressor



Usually locked away in a plant room it is easily forgotten that the Air Compressor in your premises is critical to the comfort, safety and access to the building.

Typically used for the pneumatic control of ventilation systems, fire suppression systems and door controls your Compressed Air System holds significant control over the operation of the building.

Reliability, Air Quality and Full Redundancy are the key factors GTEC consider when supplying a Compressed Air Solution. We take time to consider your entire system and utilise the right compressor technology, air treatment equipment and control systems to ensure consistent air supply to your building.

We offer comprehensive maintenance packages for existing systems and full installation services should you need to amend or extend your existing system.



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The source of the double-walled engine room buildingThe double-walled source is a kind of engine house source and one of the oldest and most modern power plants that is used in the house engine to increase productivity. The structure of this source is made of two inner and outer layers and this is the reason for naming. In the inner wall of the device, there is hot water consumption and in the outer wall, hot water flows from the engine room (boiler) system. Due to the higher pressure in the first wall where the city water flows, the interior should be considered thicker than the new exterior where the water heating system flows. Two numbers are used to express the thickness of the galvanized sheet to be made separately from the double-walled galvanized tank. For example, for a double-walled engine room tank with a thickness of 3-5, this indicator is made if you have an internal thickness of 5 mm and a new exterior thickness of 3 mm.



FACILITIES - Torch



In general, the main task of the burner is to create heating, which is selected according to the need, the desired burner. Burners are used to convert water to steam, heat heat transfer fluids, direct heating in cooking and oxidizing, provide heat to dry products, and other special uses. One of the biggest uses of the burner in the heating industry is as a combustion engine for boilers. Different types of boilers use burners with different working capacities.

The way the burner works is that by injecting fuel through the inlet and creating a spark, it directs the required heat in the form of a flame into the furnace. There are a number of controllers in the burner and boiler that control the amount and timing of each burner process. For example, the boiler thermostat and smoke control, which are sometimes replaced by photoelectric cells, automatically cause the burner to work and fail.

Burners are divided into two categories in terms of combustion air supply:

- Natural or atmospheric air supply
- Forced or forced air supply

Most burners have a forced displacement, which means that the oxidizer air is supplied by a fan or blower. In natural or atmospheric burners, the air inside the furnace is burned at atmospheric pressure and therefore they are atmospheric. The difference in how the air is supplied to the burner makes changes and distinguishes the use of the two systems.



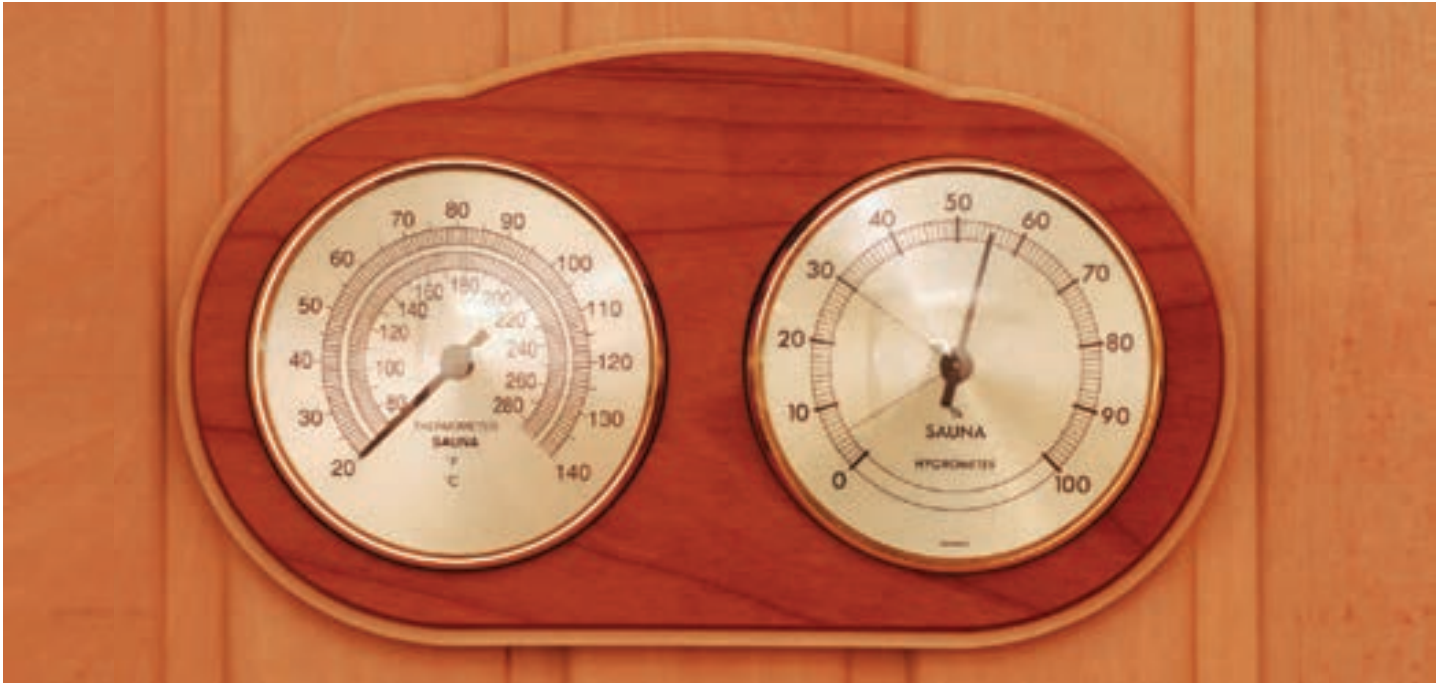
FACILITIES - Water Softener



Water softener is one of the most practical water treatment equipments, especially in building inlet water treatment systems, which removes water hardening agents such as calcium and magnesium through the ion exchange process. The purpose of using hardening systems is to eliminate the common problems caused by hard water (read more: Advantages and disadvantages of hard water). Hardness of water causes sediment in the home plumbing system, which results in clogged pipes and reduced water pressure. Water hardness also significantly reduces the life of appliances such as washing machines, dishwashers, coffee machines and ice makers. Problems caused by water hardness become more frequent with increasing water temperature. The higher the water temperature, the more calcium and magnesium deposits in the water. There are so many problems with hard water that it takes a lot of time and money to solve them; But the best way to deal with it is to use water-tightening systems. The hardener removes calcium and magnesium ions from the water by the ion exchange process. When water enters a tank containing minerals, it passes through a bed of spherical grains called resins. Resins are generally made of a polymeric material called polystyrene, which is charged with sodium ions. The resin grains are negatively charged and the calcium and magnesium ions are positively charged. Because they absorb opposite charges, the negative part of the minerals in the water is absorbed into the positive part of the resin. As hard water passes through the resin bed, water hardness agents are absorbed into the resin and thus removed from the water. By absorbing these ions, the sodium ions on the surface of the resin are released into the water. Therefore, with this process, the water is completely hardened and soft water flows in the pipes.



FACILITIES - Temperature



In most industrial environments, temperature is one of the quantities that we have to control or measure. Temperature can be a measure of the progress of a reaction in a reactor or a measure of the percentage composition of components in distillation towers. An increase in temperature may deactivate the catalysts. On the other hand, lower or higher temperatures than usual may cause chemical reactions to fail. Therefore, it is critical to have tools that can measure the temperature and send the result to the control system.

Thermometers or gauges are precision instruments used to measure and display temperature. This group is widely used in industry and is one of the most widely used items in heating and cooling systems - power plants - factories and large buildings, etc. Thermometer or temperature gauge can be graded based on different units of measurement such as degrees Celsius or degrees Fahrenheit, which are usually graded and supplied according to the criteria of the consuming country or the country of production of the temperature gauge. There are different thermometers. Mercury thermometers, alcohol thermometers, bimetallic thermometers, gas temperature gauges, gas thermometers, etc. are examples of this. A good temperature gauge should have a sturdy body on the outside and a precise and quality mechanism on the inside and be properly calibrated. Demonstrate temperature changes in the range indicated on the screen correctly and with regular rhythm and uniformity, as well as in terms of how to move the hand without jumping and smoothly move back and forth in the path.



FACILITIES - Pool Purifier



Swimming pool facilities vary depending on their application and location, but most pools use an engine room for their facility system. If the pools are indoor or military, the way they are installed and equipped is different. Soldier pools do not require space heating and cooling, and only water purification and heating systems are required. However, in indoor pools and indoor water parks, suitable heating and cooling systems should be selected for the pool and placed in the pool engine room.

A public swimming pool has the following sections:

Pool hall / Swimming pool / Jacuzzi

Steam sauna / Dry Sauna / Cold water pool

Entrance / locker room

For the optimal performance of these sections, an integrated installation system is needed to be able to provide a suitable environment for swimmers. To meet this need, integrated facilities are installed in a space called the pool engine room.

Conventional pool motor homes have the following equipment:

Spa cauldron / Boiler

Stiff / Sand filter

Heat exchanger / Coiled source

Mogir / Pump valves and fittings

The design of the pool engine room consists of 3 general parts:

The first part of the heating unit

The second part of water purification

The third part of pumping

STUD BOLT



The quantity of bolts for a flange connection will be given by the number of bolt holes in a flange, diameter and length of bolts is dependent of flange type and Pressure Class of flange.

Stud Bolt length are defined in ASME B16.5 standard. The length in inches is equal to the effective thread length measured parallel to the axis, from the first to the first thread without the chamfers (points). First thread is defined as the intersection of the major diameter of the thread with the base of the point.



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The firefighting facilities of each building are designed and built according to the conditions of that building. These facilities and services include all measures taken to combat fire. These measures include extinguishing fires, extinguishing fires, or directing fires through firefighting facilities.

If there are no proper firefighting facilities in the buildings, residents and firefighters will have problems in the event of a fire and irreparable damage will occur. Proper and quality implementation of firefighting facilities has a great impact on speeding up fire control operations.

What are the types of firefighting facilities?

- 1- Dry fire system: It is used by firefighters in large fires. This system is actually installed for the time when firefighters need to intervene due to the extent of the fire.
- 2- Wet fire system: Firefighting is installed by the residents of the building.
- 3- Combined fire system: a combination of dry system and wet system



Polished surfaces



Surfaces tangent to the product must be thoroughly polished and have an acceptable roughness index without cavities and seams. For large surfaces in contact with the product, a roughness index of 0.8 $\mu\text{m Ra}$ is recommended. A roughness index greater than 0.8 micrometers can be used if the test results indicate proper cleaning capability. It should be noted that cold formed steel has a roughness index of 0.5-2.2 μm which usually does not require polishing. Provided that the surface tangent to the product is free of cavities, creases and seams. Steel DIN Werkstoff No. 1.4404 and AISI-316L or DIN Werkstoff No. 1.4404 Often recommended for equipment and pipes in contact with chlorinated liquids with an operating temperature of approximately 60 °C. Corrosion cracking in AISI-316 steel due to contact with chlorinated compounds at temperatures below 60 °C does not occur. However, temperatures of 150-60 °C are harmful. However, AISI-316 steel is recommended for equipment such as valves, pump covers, rotors and shafts, and AISI-316L steel is recommended for pipes and foundations. In the meantime, the weldability properties of steel will also be considered. Steel AISI-410 or DIN Werkstoff No.1.4006 and AISI -409 (or DIN1.4512) Combined steel AISI-329 (or DIN1.4460) and anti-corrosion alloy 825 (reference 5) can not provide good corrosion resistance However, this combination may be used for special purposes.



EXPANSION JOINT



Rubber expansion joints are engineered rubber products that are inserted in rigid piping systems to absorb movements, improve thermal stability and compensate for misalignment. Their performance is crucial for the safety and reliability of the entire system.

Rotating equipment in pipelines such as pumps, compressors, fans, turbines, etc., due to their performance, create vibrations and apply them to the pipeline / duct, which cause noise, fatigue, premature wear of the pipeline. / Ducts, structures and other equipment that can sometimes have very serious and irreversible consequences.

The use of rubber shock absorbers is one of the ways to prevent the transmission of vibrations to other parts of the pipeline. One of the most common applications of rubber vibrators in the inlet and outlet section (Suction & Discharge) are pumps / compressors and turbines, which in addition to absorbing the existing vibrations, have the ability to neutralize rams and shocks. Considerable applications of rubber shock absorbers include their use in environments where the fluid / environment contains corrosive substances such as seawater and a variety of acids and bases. This is one of the distinguishing features of such fittings from metal fittings. However, their pressure tolerance and temperature range are lower than metal joints.

In some cases, rubber shock absorbers are used to prevent electrical conductivity and galvanic corrosion.



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SAFETY VALVE



Pressure relief valve - A spring-loaded pressure relief valve which is designed to open to relieve excess pressure and to recluse and prevent the further flow of fluid after normal conditions have been restored. It is characterized by a rapid-opening 'pop' action or by opening in a manner generally proportional to the increase in pressure over the opening pressure. It may be used for either compressible or incompressible fluids, depending on design, adjustment, or application.

Safety valve - A pressure relief valve actuated by inlet static pressure and characterized by rapid opening or pop action. Safety valves are primarily used with compressible gases and in particular for steam and air services. However, they can also be used for process type applications where they may be needed to protect the plant or to prevent spoilage of the product being processed.

Relief valve - A pressure relief device actuated by inlet static pressure having a gradual lift generally proportional to the increase in pressure over opening pressure. Relief valves are commonly used in liquid systems, especially for lower capacities and thermal expansion duty. They can also be used on pumped systems as pressure overspill devices.

Safety relief valve - A pressure relief valve characterized by rapid opening or pop action, or by opening in proportion to the increase in pressure over the opening pressure, depending on the application, and which may be used either for liquid or compressible fluid.

