EGYPTIAN ENGINEERING COMPANY

COMPANY PROFILE - 2024

MESSAGE FROM THE CEO

At EEC, we are passionate about raising the bar and setting new standards for our industry. With cutting-edge technologies and unrivaled expertise, we pave the way for excellence. Our dedicated team is constantly perfecting their expertise and pushing boundaries to deliver nothing short of perfection. Together, we are shaping a future where excellence is the norm and quality knows no bounds.

CONTENT

CONTENT

01

ABOUT US

EGYPTIAN ENGINEERING COMPANY

Founded as the manufacturing division of AEO, EEC (Egyptian Engineering Company) has emerged as a ***prominent market leader*** in the Middle East, renowned for delivering cutting-edge solutions in the following sectors energy, infrastructure, enviromental and fabrication.

Following its separation from AEO, EEC started to expand the business and serve external companies beside AEO. This expansion helped EEC swiftly emerge as Egypt's premier steel fabrication facility, ascending to enter the KSA and UAE market, and eventually becoming accredited by their highest authorities. Renowned for the unrivaled expertise, EEC managed to specialize in ***designing and manufacturing top-quality tanks*** and pressure vessels specifically tailored for water, oil & gas, and petrochemical treatment applications.

S

U & U2

02

BUSINESS PERFORMANCE

GROWTH & DEVELOPMENT

EEC takes pride in its remarkable technical prowess, supported by a comprehensive and seamlessly integrated production capacity. This ***robust infrastructure*** empowers us to provide tailored solutions that effectively tackle the diverse challenges inherent in this exclusive and tightly regulated domain of business.

Furthermore, the diligent work ethic and adept crisis management skills have been instrumental in cultivating ***long-lasting client relationships*** over the years.

ACHIEVEMENTS

2000

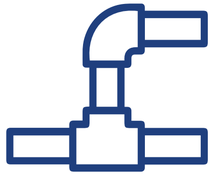
Successfully completing an impressive portfolio of ***2000 projects.***

Successfully completed

500

Successfully completing an impressive portfolio of ***500 Clients.***

Successfully completed



3200

Successfully completing impressive portfolio of ***3200 Vessel Fabricated***
25 to 35 vessel per month

Successfully completed

03

VALUE PROPOSITION

1

QUALITY

Operating in a critical field that places utmost importance on quality, we diligently acquire the necessary business ethics and products to sustain a standard of excellence.

2

Customer Satisfaction

Our primary objective is client satisfaction and we're fully committed to impeccable service.

3

Sustainability

Driven by our unwavering commitment to sustainable development, we actively engage in resource conservation to ensure a prosperous future for generations to come.

4

Agility

Our organization has the capacity to rapidly modify or adjust our products in direct response to market changes.

04

MISSION & VISION

MISSION

At our core, we strive to continuously elevate the level of fabrication and manufacturing in our industry. Through relentless pursuit of ***technical advancements*** and ***obtaining the highest quality certificates*** and ***assurance systems***, we aim to transform our region into a hub of specialized industries.

VISION

Our vision is clear to establish ourselves as the leaders in the region. With unwavering dedication and relentless pursuit of excellence, we are committed to ***serving customers across across the area*** with unmatched speed, efficiency, and mastery.

05

OUR WORKSHOP

OUR WORKSHOP

Our workshop is equipped with state of the art machines. ***As we grow and expand according to the needs of our market we tend to upgrade and add to our machinery and their capacity.***

1. Progressive Dishing Machine

1. Capacity: 600 ton
2. Maximum diameter handled: 7 meter

2. Flanging Machine

1. Capacity: 32 mm
2. Maximum diameter handled: 4000 mm semi-eleptical / 5000 mm tori-spherical

3. Four Sheet Rolling Machines

1. Maximum capacity: 120mm thickness
2. Maximum width 3000 mm

4. Two Submerged Arc-Welding Machines Column And Boom

1. Capacity 1000 amp.
2. Range 4x4 m

5. In House Furnace

06

PORTFOLIO ANALYSIS

SOLUTIONS

01

Environmental

Water and Waste Water Treatment

02

Infrastruture

Water Hammer Protection Systems and Steel Welded Pipelines

03

Fabrication

Heavy Steel Fabrication Solutions

04

Energy

Oil & Gas and Petrochemicals Process Equipment

Improving Water Quality

01 ENVIRONMENTAL

WATER AND WASTE WATER TREATMENT

Ensuring a safe and sustainable environment is vital for the well-being of our planet and future generations. An essential component of environmental protection is water treatment, which plays a critical role in maintaining a ***clean and sustainable water supply.*** Water treatment encompasses various processes aimed at improving ***water quality*** to make it suitable for specific purposes.

These purposes can include drinking water, industrial water supply, irrigation, storm water, river flow maintenance, water recreation, and other applications. Additionally, ***water treatment*** ensures that water can be safely returned to the environment after use.

01 ENVIRONMENTAL

WATER AND WASTE WATER TREATMENT

Arrangment	*Solutions*
1.1	***Multimedia Filters***
1.2	***Activated Carbon Filter***
1.3	***Extended Aeration Treatment Plants***
1.4	***Moving Bed Biofilm Reactor “MBBR” Plants***
1.5	***Membrane Bioreactor “MBR” Plants***

01 ENVIRONMENTAL

WATER AND WASTE WATER TREATMENT

Arrangment	*Solutions*
1.6	***Sequential Batch Reactor “SBR”***
1.7	***River Water Purification Plants***
1.8	***Reverse Osmosis “RO” Plants***
1.9	***Iron and Manganese Removal Plants***

Water Treatment

1.1 MULTIMEDIA SAND FILTERS

Multimedia sand filters are widely used for ***water treatment, removing suspended solids and particulate matter.*** They consist of media layers with different sizes, allowing effective filtration. Physical and biological mechanisms work together to trap and remove contaminants as water flows through the filter bed.

Media Types

1. Sand
2. Gravel
3. Activated carbon
4. Anthracite

FEATURES

The filters primarily target the removal of particulate matter and suspended solid, they may NOT effectively eliminate dissolved contaminants or certain types of microorganisms.

To achieve desired water quality standards depends on specific water quality concerns, additional treatment steps such as disinfection or activated carbon filtration may be necessary in conjunction with multimedia filters.

Multimedia filters play a crucial role in water treatment by providing efficient and reliable filtration, contributing to the production of clean and safe water for various purposes.

FEATURES

01

Effective Filtration

The use of different media with varying particle sizes enhances filtration efficiency, effectively removing a wide range of suspended solids and particulate matter.

02

Extended Filter Run

The layered structure of multimedia filters helps prevent clogging, resulting in longer operating times between backwashing cycles.

03

Versatility

Multimedia filters can handle diverse water qualities and flow rates, making them suitable for various applications and water sources.

04

Low Maintenance

Compared to other filtration systems, multimedia filters generally have lower maintenance needs, with periodic backwashing being the primary requirement for media cleaning and regeneration.

Water Treatment

1.2 ACTIVATED CARBON FILTERS

Activated carbon filters play a vital role in water treatment by purifying and enhancing water quality. These filters utilize activated carbon, a highly porous material with a large surface area, absorb odors and impurities from water. Here's a concise breakdown of how activated carbon filters work in water treatment.

FEATURES

01

Adsorption

As water flows through the activated carbon filter, contaminants such as organic compounds, odors from potable water, chlorine, and certain heavy metals are attracted to the surface of the carbon particles through absorption. The activated carbon acts like a sponge, capturing and preventing impurities from passing through the filter.

02

Removal of Organic Compounds

Activated carbon is exceptionally effective at eliminating organic compounds like pesticides, herbicides, industrial chemicals, and volatile organic compounds (VOCs) that can cause odor and taste issues in water. Its porous structure provides a large surface area for adsorption, enabling it to capture a wide range.

03

Chlorine Removal

Activated carbon filters also excel at removing chlorine and its byproducts from water. While chlorine is commonly used as a disinfectant in water treatment, it can impart an unpleasant taste and odor. Activated carbon adsorbs chlorine, chlorine dioxide, and chloramines, thereby enhancing the taste and smell of the water.

04

Reduction of Heavy Metals

Some activated carbon filters are capable of eliminating heavy metals such as lead, mercury, cadmium, and copper. These metals may be present in water due to industrial discharges, plumbing system corrosion, or natural sources. Through adsorption, activated carbon helps reduce the concentration of these heavy metals, ensuring safer water consumption.

OPERATION

Activated carbon filters have a limited capacity and need periodic replacement or regeneration to remain effective. The frequency of replacement varies depending on ***filter design, water quality, and usage patterns.***

Function

Enhancing Water Quality

by removing organic compounds, chlorine, and heavy metals, resulting in cleaner and better-tasting water.

Water Traeatment

1.3 EXTENDED AERATION TREATMENT PLANTS

Extended aeration plants are commonly used for wastewater treatment. They employ an extended aeration process to break down organic matter and remove pollutants.

OPERATION METHOD

01

Influent Screening

Wastewater undergoes preliminary screening to remove large objects and debris.

02

Equalization

Wastewater is mixed and held in an equalization tank to balance flow rate and load variations.

03

Aeration Basin

Wastewater is transferred to an aeration basin containing aerobic microorganisms.

04

Aeration

Air or oxygen is continuously supplied to the basin, allowing microorganisms to break down organic matter.

05

Sludge Settling

Microorganisms and suspended solids settle at the bottom as sludge in a secondary clarifier.

06

Sludge Recirculation

Some settled sludge is recycled back to the aeration basin to maintain microorganism populations.

OPERATION METHOD

07

Effluent Discharge

Clarified effluent is discharged or further treated, while excess sludge is removed.

08

Note That

Extended aeration plants provide stable treatment performance and are suitable for small to medium-sized communities. They operate at longer times, ensuring comprehensive wastewater treatment and higher removal efficiencies. Designs may vary based on specific factors and requirements

FEATURES

Extended aeration plants provide ***stable treatment performance*** and are suitable for small to medium-sized communities. They operate at longer times, ensuring ***comprehensive wastewater treatment*** and higher removal efficiencies.

Designs may vary based on specific factors and requirements.

Water Treatment

1.4 MOVING BED BIOFILM REACTOR “MBBR”

MBBR constitutes a good replacement for compact extended aeration treatment plants. Moving Bed Biofilm Reactor (MBBR) plants are commonly used in water treatment to treat wastewater. They utilize a biofilm process to break down organic matter and remove pollutants. Here's how they work

OPERATION METHOD

01

Wastewater Influent

Wastewater enters the MBBR tank with floating plastic media carriers providing a large surface area for biofilm growth.

02

Biofilm Formation

Microorganisms attach to the media carriers as wastewater flows through, forming a biofilm that breaks down organic matter.

03

Aeration

The MBBR tank is aerated to maintain an aerobic environment, facilitating biological reactions with supplied oxygen.

04

Biomass Retention

Biomass circulates within the tank, allowing continuous growth and replenishment of microorganisms.

05

Settling and Clarification

Treated water separates from biomass in a settling tank or clarifier for discharge or further treatment.

06

Sludge Management

Excess biomass (waste activated sludge) is periodically removed to maintain sludge balance.

FEATURES

MBBR systems are highly efficient, compact, and adaptable. They can be seamlessly incorporated into existing wastewater treatment plants or used independently. ***MBBR technology*** finds extensive use in municipal and industrial wastewater treatment, effectively addressing organic matter, ammonia, and diverse contaminants.

It's design and setup of MBBR plants may vary based on factors like ***wastewater characteristics, treatment objectives, and regulatory guidelines.*** Adjustments in media carrier size, type, aeration rates, and hydraulic retention times allow for optimal performance across different applications.

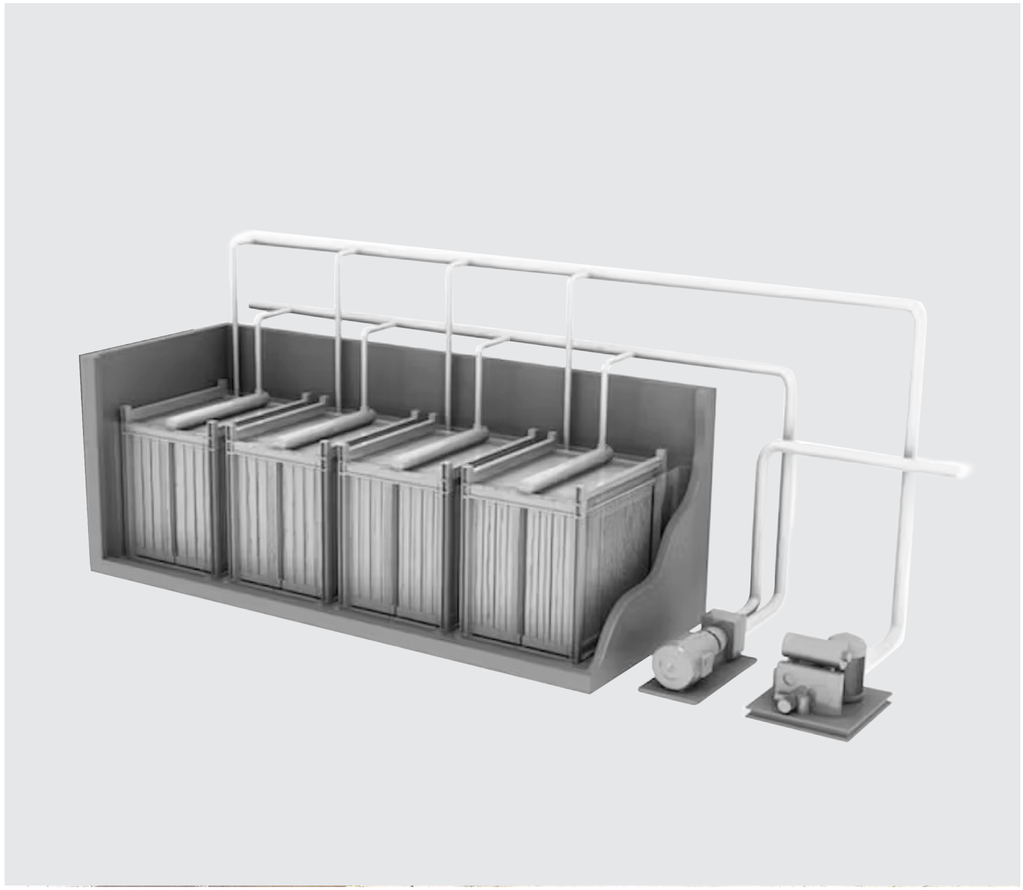
Water Treatment

1.5 MEMBRANE BIOREACTOR “MBR”

A membrane bioreactor (MBR) is an ***advanced wastewater treatment syste***m that combines biological and membrane filtration processes. It effectively removes suspended solids, bacteria, and contaminants from both municipal and industrial wastewater.

In an MBR system, a membrane acts as a physical barrier to separate treated water from solids and microorganisms. The process involves a biological reactor for organic matter breakdown and nutrient removal, membrane modules for solid-liquid separation, and a solids-liquid separation system for efficient operation.

MBR systems offer several advantages over conventional methods. They produce ***high-quality effluent*** that meets strict standards, have a smaller footprint, and can be easily integrated into existing treatment plants or used as standalone units.



Water Treatment

1.6 SEQUENTIAL BATCH REACTOR “SBR”

Sequencing Batch Reactor (SBR) is a wastewater treatment process commonly employed for ***municipal and industrial wastewater treatment***. In an SBR system, the treatment occurs in discrete batches. The process involves several sequential steps:

OPERATION METHOD

01

Filling

Wastewater is added to the reactor until a predetermined level is reached.

02

React

Biological and chemical reactions take place, removing contaminants through the action of microorganisms.

03

Settle

The wastewater is allowed to settle, and solids including suspended particles and microorganisms form a sludge layer.

04

Decant

Clarified effluent is withdrawn from the top of the reactor, free of suspended solids and contaminants.

05

Idle

The reactor enters a period without influent, allowing further settling of solids and separation of treated effluent from sludge.

BENEFICIAL ASPECTS

01

Operational Flexibility

02

Efficient Nutrient Removal

03

Ability to Handle Diverse Influent Characteristics

Water Treatment

1.7 RIVER WATER PURIFICATION PLANTS

River water purification plants, also known as ***river water treatment plants***, are facilities that treat water from rivers to make it suitable for ***various purposes***, including drinking water supply, irrigation, industrial processes, and environmental protection. The purification process in these plants involves ***multiple stages*** to remove impurities and contaminants. Here is a general overview of the process:

OPERATION

01

Intake

Water is extracted from the river using intake structures that prevent large debris from entering the treatment plant.

02

Screening

The water passes through screens or grates to remove large objects like twigs, leaves, and debris.

03

Coagulation and Flocculation

Chemical coagulants are added to destabilize suspended particles, promoting the formation of larger particles called flocs, which are easier to remove in subsequent steps.

04

Sedimentation

The water settles in basins or tanks, allowing the flocs to settle to the bottom, removing suspended solids and some organic matter.

05

Filtration

The clarified water passes through filters like sand or multimedia filters, removing smaller particles and impurities through physical and chemical mechanisms.

06

Disinfection

Chlorine or other disinfectants are added to kill or inactivate bacteria, viruses, and pathogens present in the water.

OPERATION

07

PH Adjustment

If necessary, chemicals are added to adjust the water's pH to the desired range.

08

Advanced Treatment

Additional treatment processes like membrane filtration, activated carbon adsorption, or advanced oxidation may be used depending on water quality and specific requirements.

09

Filtration

The clarified water passes through filters like sand or multimedia filters, removing smaller particles and impurities through physical and chemical mechanisms.

NOTE THAT

The design and processes can vary based on factors such as source water quality, treatment objectives, and regulations. The mentioned steps provide a general overview of the typical processes involved in purifying river water for various applications.

Water Treatment

1.8 REVERSE OSMOSIS “RO” PLANTS

Reverse osmosis (RO) is a widely used water treatment technology that employs a ***semi-permeable membrane*** to eliminate dissolved salts, minerals, particles, and other contaminants from water. It is highly effective for producing high-quality drinking water and serves numerous industrial and commercial applications.

OPERATION

01

Pre-Treatment

Prior to entering the RO system, pre-treatment is performed to eliminate larger particles, sediment, and substances that may damage or foul the membrane. This may involve sediment and activated carbon filtration, as well as chemical dosing to adjust pH levels and remove chlorine.

02

Pressure Application

Reverse osmosis operates by applying pressure to the feed water, propelling it through the semi-permeable membrane. Typically, a pump is employed to generate the necessary pressure.

03

Membrane Separation

The semi-permeable membrane is the core component of the reverse osmosis system. It possesses tiny pores that allow water molecules to pass through while rejecting contaminants. The membrane effectively eliminates dissolved salts, minerals, bacteria, viruses, organic compounds, and other impurities, resulting in purified water.

04

Concentrate Disposal

As water traverses the membrane, a portion becomes purified product water, while the remaining water containing concentrated impurities, called concentrate or brine, is discharged. The concentrate is disposed of or further treated according to local regulations and environmental considerations.

OPERATION

05

Post-Treatment

Following the reverse osmosis process, the purified water may undergo post-treatment to further enhance its quality. This can involve disinfection, pH adjustment, remineralization, and the addition of chemicals in small quantities to improve taste and prevent corrosion in distribution systems.

NOTE THAT

Reverse osmosis effectively removes dissolved salts and many contaminants, it may not eliminate certain volatile organic compounds (VOCs), gases, and some dissolved organic compounds. Additional treatment processes may be required in such cases.

Proper maintenance and periodic membrane replacement are vital to ensure optimal system performance.

FEATURES

01

High Removal Efficiency

RO can effectively eliminate a wide range of contaminants, including dissolved salts, minerals, heavy metals, bacteria, viruses, and organic compounds, ensuring the production of purified water.

02

Versatility

RO systems can be customized to meet specific water quality requirements, making them suitable for diverse applications such as drinking water treatment, desalination, industrial processes, and wastewater treatment.

03

Compact and Modular Design

RO can effectively eliminate a wide range of contaminants, including dissolved salts, minerals, heavy metals, bacteria, viruses, and organic compounds, ensuring the production of purified water.

04

Energy Efficiency

RO systems can be customized to meet specific water quality requirements, making them suitable for diverse applications such as drinking water treatment, desalination, industrial processes, and wastewater treatment.

Water Treatment

1.9 IRON AND MANGANESE REMOVAL PLANTS

Iron and manganese removal plants, play a important role in addressing the presence of these elements in water sources. Iron and manganese, naturally present in groundwater and surface water, can lead to aesthetic problems like discolored water, unpleasant taste,and odor when present in high concentrations. Additionally, they contribute to the formation of deposits and scaling in pipes and fixtures.

KEY POINTS

01

Treatment Process

Iron and manganese removal plants employ diverse treatment processes efficiently eliminating these contaminants from water sources. Common methods include:

A. Oxidation and Filtration: This process entails oxidizing iron and manganese to convert them from dissolved forms into solid particles. Subsequently, filtration is employed to eliminate the precipitated solids.

B. Aeration and Filtration: Aeration introduces oxygen into the water, facilitating the oxidation of iron and manganese. The oxidized particles are then removed through filtration.

C. Biological Filtration: Specially designed filters contain naturally occurring bacteria that oxidize iron and manganese. These bacteria create an environment conducive to oxidation, and the resulting particles are filtered out.

D. Aeration and Filtration: Chemical Treatment:Utilization of chemicals like chlorine, potassium permanganate, or ozone is employed for the oxidation of iron and manganese, followed by filtration or sedimentation to eliminate the precipitates.

KEY POINTS

02

Filtration Media

Media used in filtration play a pivotal role in iron and manganese removal plants, including sand, anthracite, manganese dioxide-coated media, and greensand. These media possess specific properties that facilitate the trapping of iron and manganese particles within the filter bed.

03

System Design

Designing iron and manganese removal plants depends upon water quality characteristics, flow rates, and treatment objectives. Consideration of factors such as iron and manganese concentration, pH levels, and the presence of other contaminants is imperative during the design phase. Efficient removal requires adequate contact time, residence time, and appropriate media selection.

04

Maintenance and Monitoring

Regular maintenance and monitoring are vital for the optimal performance of iron and manganese removal plants. Backwashing or periodic media replacement is necessary to eliminate accumulated solids and maintain filtration efficiency. Continuous monitoring of influent and effluent water quality, as well as parameters likepressure differentials and flow rates, ensures the effetiveness of the plant.

CONCLUSION

Through the incorporation of iron and manganese removal plants in water treatment, water utilities, municipalities, and industries can produce high-quality water that complies to national and international standards and mitigates problems linked to iron and manganese contamination. These treatment facilities contribute to the enhancement of water's appearance, taste, and odor, prolong the lifespan of distribution systems, and elevate overall water quality, catering to diverse applications.

OTHER SERVICES

1

Heat Treatment and Post Welding Heat Treatment

In accordance to ASME Code Section VIII or as per client request, we preform both:

1. Heat treatment for dished heads (up to 650 °C) in our in house furnace.
2. Post welding heat treatment cycles for the welds or the entire vessel.

2

Repair

As R Stamp holder, we offer repair services for all types of pressure vessels according to ASME Code Section VIII.

02 INFRASTRUCTURE

WATER HAMMER PROTECTION SYSTEMS AND STEEL WELDED PIPELINES

Two of the main solutions we participate in the infrastructure sector are:

1) Water hammer protection refers to the measures taken to mitigate or prevent the occurrence of water hammer in a fluid distribution system. Water hammer, also known as hydraulic shock, is a pressure surge that can occur when there are sudden changes in the velocity or flow rate of fluid within a pipeline. It is caused by the rapid acceleration or deceleration of the fluid, resulting in pressure fluctuations that can pose serious risks to the system.

2) Steel welded pipelines are a common type of pipeline used for transporting various fluids, including oil, gas, water, and other liquids or gases. These pipelines are constructed by welding together individual steel pipes to create a continuous and robust pipeline system.

We provide a complete solution that includes:

1. Hydraulic Study

2. Surge Vessel System Design

3. Control Philosophy
PV, mass, or volume

4. Surge Vessel Design

5. Surge Vessel Fabrication

6. Supply Vessel
In addition to its instruments, valves, and accessories needed

7. Installation of the Entire System

8. Give the Customer System Operation Manual

9. Commissioning and Start-up

02 INFRASTRUCTURE

WATER HAMMER PROTECTION SYSTEMS AND STEEL WELDED PIPELINES

Arrangment	*Solutions*
2.1	***Bladder Type Surge Vessel***
2.2	***Air Compressor Type Surge Vessel***
2.3	***Dipping Tube-Hybrid Type Surge Vessel***
2.4	***Steel Welded Pipelines***
2.5	***Heat Treatment and Post Welding Heat Treatment***

Bladder Expansion Tank

2.1 BLADDER TYPE SURGE VESSEL

A bladder type surge vessel, is a pressure vessel that effectively regulates and controls fluid distribution in pipeline systems.The surge vessel consists of a cylindrical metal vessel with a flexible bladder inside.

This bladder separates the fluid inside the tank from the compressed gas (Air/Nitrogen) that fills the space between the bladder and the body of the vessel. The bladders prevents the contact between the gas and liquid, so that the elastic energy (compressed gas) remains constant.

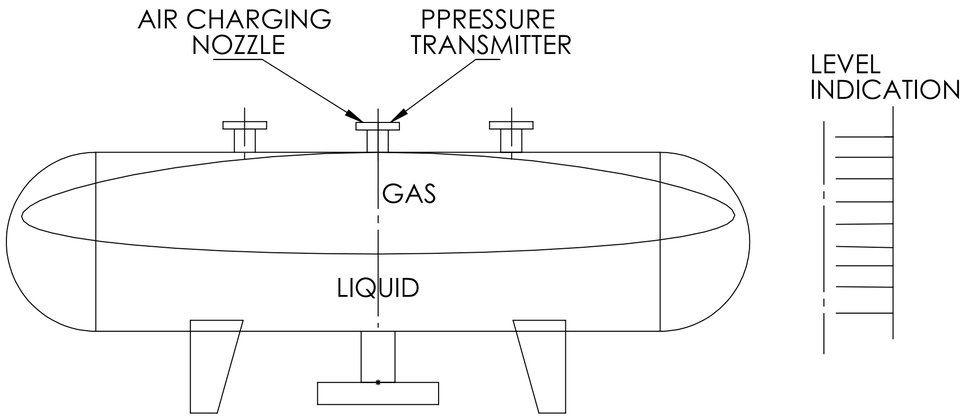
During normal operation, as fluid enters the surge vessel, the gas gets compressed, and the bladder isolates the compressed gas and the fluid. This confirms the readiness of the surge vessel for protecting the pipeline systems against any of the transient events, due to sudden changes in flow velocity. The presence of bladder prevents the gas to get dissolved into the liquid, to keep the constant mass of the gas.

The bladder type surge vessel can absorb excess fluid volume during periods of high demand and release it back into the system when demand decreases. This provides a buffer to accommodate fluctuations in flow rate and pressure, ensuring a stable and controlled system operation.
Common applications of bladder type surge vessels include water supply systems, heating and cooling systems, firefighting systems, industrial process piping, and oil and gas pipelines.

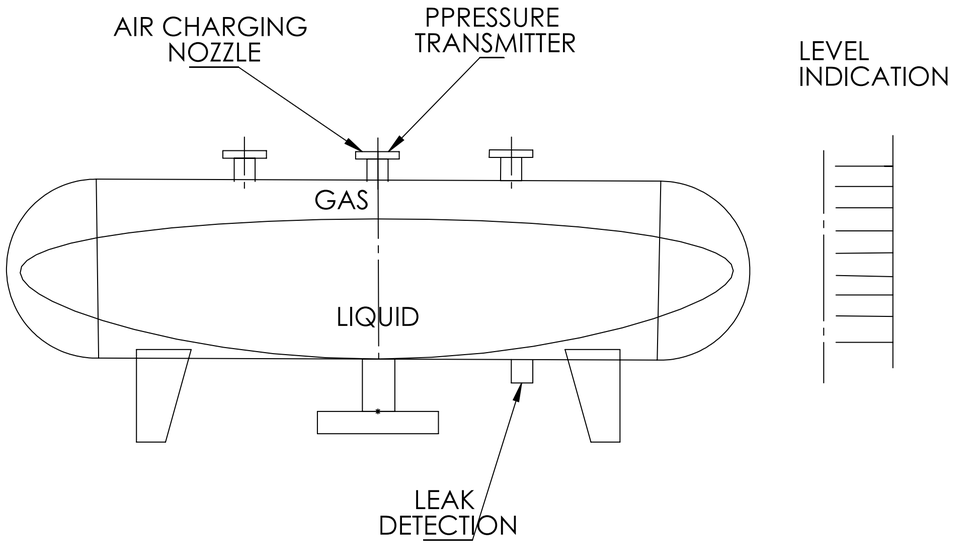
Bladder Expansion Tank

2.1 BLADDER TYPE SURGE VESSEL

Gas in Bladder



Liquid in Bladder



FEATURES

01

Tank Design

The vessel body or shell, usually cylindrical in shape and made of steel material.

02

Normal Operation

Inside the vessel body, there is a flexible bladder (Butyl/TPU/...) or diaphragm made of elastomeric material (Butyl, TPU, ...) separates the interior of the vessel into two chambers; the upper and low

03

Pressure Surge Event

The lower chamber is connected to the pipeline or system undergoing pressure fluctuations or surges. When a surge or pressure fluctuation occurs in the system, during down-surge and upsurge, the water or fluid flows out/into the lower chamber of the surge vessel.

The source of the elastic energy represented in the compressed gas absorbs and attenuates the excessive pressures. The flexibility of the bladder allows it to expand or contract depending on the volume of fluid entering the lower chamber.

The bladder type surge vessel acts as a cushion or shock absorber, minimizing the impact of pressure surges on the system and preventing damage to pipes, valves, or equipment.

FEATURES

04

Surge vessel Accessories

Pressure relief valves, pressure gauges, level gauges, to monitor the gas pressures/levels within the system.

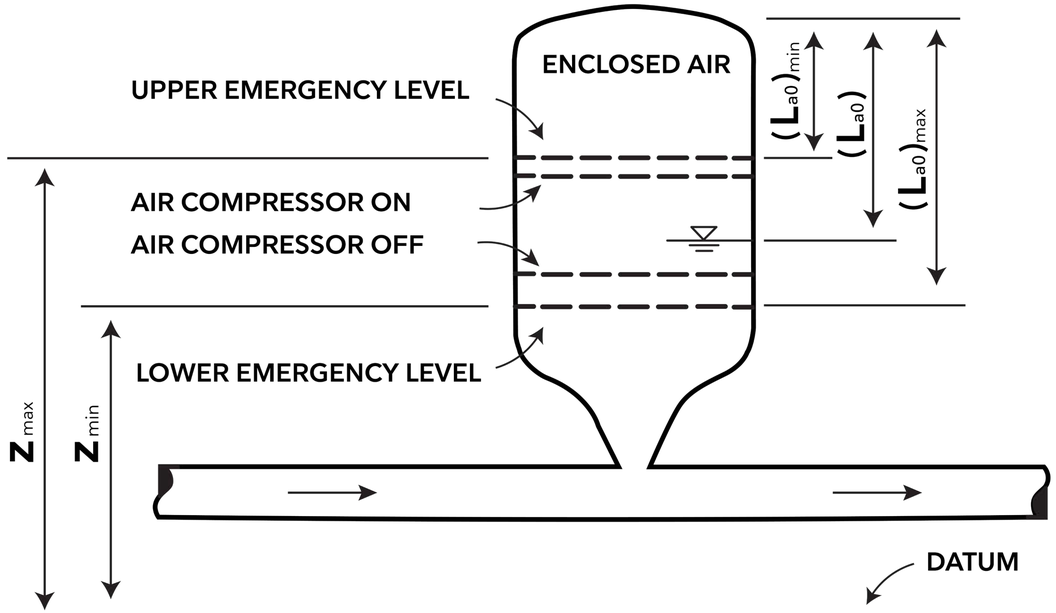
No permanent regulations are required for this vessel type, with flexible selection of location. A portable compressor will be sufficient to maintain pre-charge pressure in case of necessity.

Surface Protection System

2.1 COMPRESSED AIR TYPE SURGE VESSEL

A compressed air type surge protection system, also known as an air cushion surge tank (ACST), is used in piping systems to ***mitigate pressure surges or water hammer events***. It works by using compressed air to absorb and cushion the shockwaves caused by sudden flow changes.

Function
Effective Pressure Surge Mitigation



FEATURES

01

Tank Design

The system consists of a specially designed tank that is installed in the piping system. The tank is typically cylindrical or spherical, it has two chambers. The upper chamber is a compressed air, and lower chamber is filled with liquid. Gas and liquid are in direct contact without separation. As the gas and liquid are in contacting, air compressor uses to compensate the dissolved air into the liquid to maintain the pressure x volume at the same value.

02

Normal Operation

Under normal operating conditions, the compressed air is contained in the upper part, and the liquid level is maintained at a predetermined level in the lower part.

03

Pressure Surge Event

When a sudden flow change occurs, the pressure surge or water hammer travels through the piping system and reaches the surge protection tank.

04

Air Compression and Water Displacement

As the pressure surge enters the surge protection tank, the compressed air in the upper compartment compresses further, absorbing the excess pressure and cushioning the shockwave. Simultaneously, the water in the lower compartment is displaced upward, compressing the air.

FEATURES

05

Surge Dissipation

The compressed air acts as a spring, gradually releasing the stored energy and dissipating the pressure surge over time, until the pressure in the system gets stabilized. The water level in the lower compartment returns to its original position, upon the normal operation of the system.

BENEFICIAL ASPECTS

01

Effective Pressure Surge Mitigation

By utilizing compressed air, the system effectively absorbs and dissipates pressure surges, preventing or reducing the damaging effects of water hammer.

02

Quick Response

The air compression and water displacement process occur rapidly, allowing for a quick response to pressure surge events.

03

Low Maintenance

The system requires minimal maintenance, primarily involving periodic checks of the air pressure and the condition of the air compressor.

04

Flexibility

The surge protection system can be designed and sized by transient analysis for the piping systems, and according to specific requirements of the piping system, taking into consideration factors such as pipe diameter, material, flow rate, pressure, etc.

NOTE THAT

The design and implementation of a compressed air type surge protection system should be carried out by experienced professionals or engineers familiar with water hammer mitigation techniques. They can assess the system requirements, determine the appropriate tank size and location, and ensure proper installation and operation for effective surge protection.

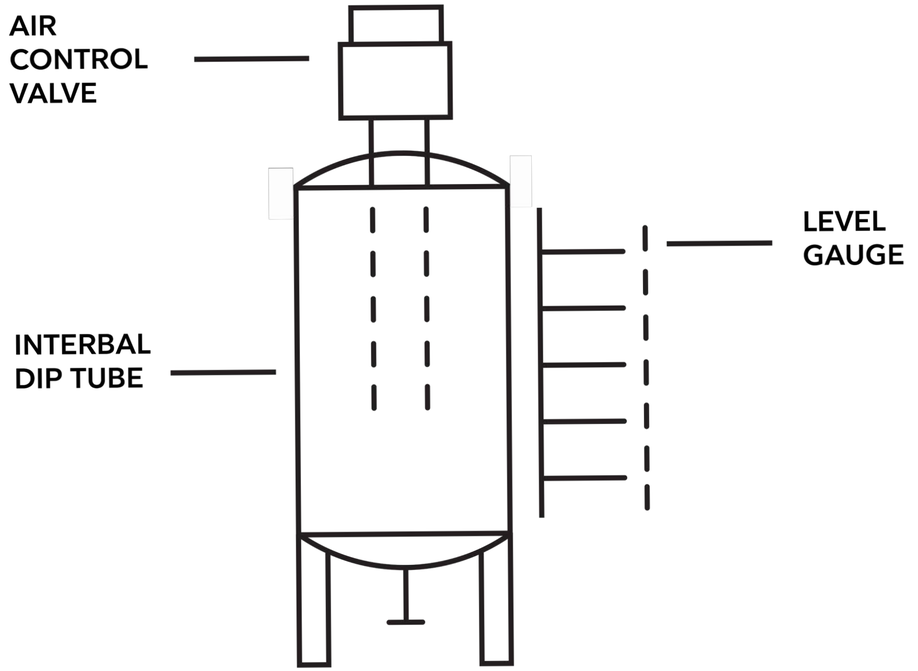
Surge Protection System

2.3 DIPPING TUBE SURGE VESSEL/HYBRID TANK

The dipping tube surge vessel operates without an air compressor or internal bladder, instead it uses an air admittance valve on top of the vessel to control the air charge.

This vertical vessel is connected to the pipework through a large connection pipe at the bottom, featuring a compression chamber at the top, delimited by the dipping tube or ventilation tube with a shut-off float valve.
Functioning on the principles of air compression and expansion, the dipping tube surge vessel aims to mitigate pressure surges within a water distribution system.

The following step-by-step explanation outlines its operation:



01

Standard Operation

Under regular circumstances, the dipping tube surge vessel is partially filled with water, and the air inside the tank is compressed.

02

Pressure Surge Event

Instances of sudden changes in water flow rate, such as pump starts or stops, can lead to pressure surges or water hammer within the system, potentially causing damage or disruptions.

03

Compression of Air

When the pressure surge reaches the dipping tube surge vessel, the excess pressure gets absorbed by the trapped air inside the tank. The air compresses, acting as a cushion to absorb the sudden pressure increase and thereby reducing the magnitude and duration of the pressure surge.

04

Energy Storage

The compression of air results in the storage of potential energy within the compressed air, converted from the kinetic energy of the pressure surge. This stored energy helps prevent damage to the system by effectively storing and releasing excess energy.

05

Pressure Stabilization

After the pressure surge passes, the compressed air inside the dipping tube surge vessel gradually expands. This expansion helps to regulate the pressure in the system, preventing abrupt pressure drops or fluctuations. The stored energy is released back into the system, maintaining a more stable pressure profile.

06

System Protection

By absorbing and attenuating pressure surges, the dipping tube surge vessel plays a crucial role in safeguarding the water distribution system from water hammer and potential damage. It reduces stress on pipes, valves, and other system components, extending their lifespan and minimizing the risk of failures.

NOTE THAT

It is essential to recognize that the efficiency and effectiveness of a dipping tube surge vessel hinge on factors such as size, design, location, and the characteristics of the water distribution system. Proper sizing, installation, and regular maintenance are imperative for optimal performance.

Pipeline System

2.4 STEEL WELDED PIPELINES

Steel welded pipelines are commonly used for transporting fluids like oil, gas, water, and other liquids or gases. They are constructed by welding together steel pipes to create ***a strong and continuous*** pipeline system.

Function

Transporting Fluids like Oil, Gas and Water

Construction

Steel welded pipelines are built by joining steel pipes through welding techniques. The pipes come in different diameters and wall thicknesses based on the specific application and fluid requirements. Welding ensures a robust and leak-resistant connection between the pipes.

Welding Methods

Various welding methods are used to join steel pipes in pipeline construction. The most common methods include Manual Metal Arc Welding (MMAW), Gas Metal Arc Welding (GMAW), and Submerged Arc Welding (SAW).

FEATURES

01

Strength and Durability

Steel pipes offer excellent strength and durability, making them suitable for high-pressure and high- temperature applications. The welded joints provide structural integrity and can withstand operational stresses.

02

Cost- Effectiveness

Steel is a cost-effective material for pipeline construction, especially for long-distance pipelines. It provides a good balance between cost, performance, and longevity.

03

Versatility

Steel welded pipelines can transport a wide range of fluids, including corrosive substances, hydrocarbons, and water. They are used in industries such as oil and gas, water supply, petrochemicals, and infrastructure.

04

Corrosion Resistance

Steel pipes can be coated or lined to enhance their resistance to corrosion. External coatings like fusion-bonded epoxy or polyethylene protect against corrosion caused by soil or environmental factors. Internal linings can prevent corrosion from the transported fluid.

OTHER SERVICES

1

Heat Treatment and Post Welding Heat Treatment

In accordance to ASME Code Section VIII or as per client request, we preform both:

1. Heat treatment for dished heads (up to 650Co) in our in house furnace.
2. Post welding heat treatment cycles for the welds or the entire vessel.

2

Repair

As R Stamp holder, we offer repair services for all types of pressure vessels according to ASME Code Section VIII.

03 FABRICATION

HEAVY STEEL FABRICATION SOLUTIONS

Using its state of art workshop equipped with cutting edge machines and experienced staff of Engineers and technicians, Egyptian Engineering Company provides all in house fabrication solutions for all types of steel dish heads and steel containerized units.

03 FABRICATION

HEAVY STEEL FABRICATION SOLUTIONS

Arrangment	*Solutions*
3.1	***Hemispherical Dish Heads***
3.2	***Tori-spherical Dish Heads***
3.3	***Ellipsoidal Dish Head***
3.4	***Conical Dish Heads***

03 FABRICATION

HEAVY STEEL FABRICATION SOLUTIONS

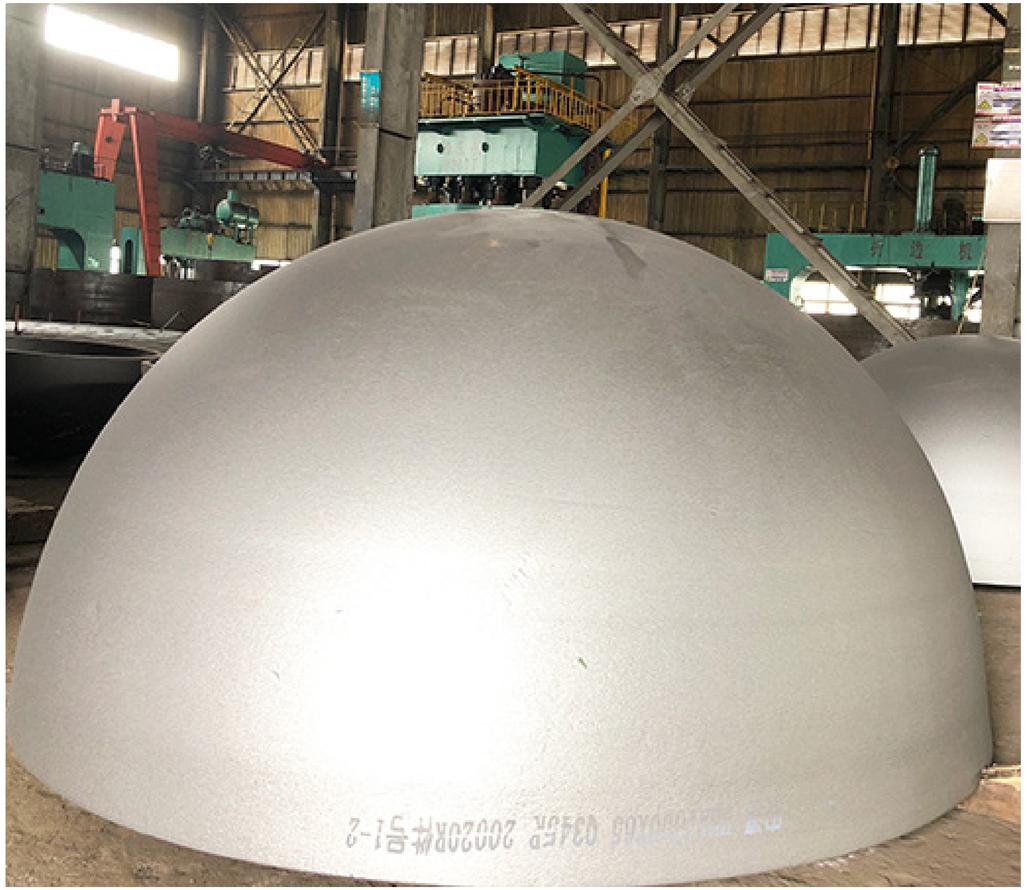
Arrangment	*Solutions*
3.5	***Flat Dish Head***
3.6	***Steel Containerized Units***

Pressure Vessel and Tanks

3.1 HEMISPHERICAL DISH HEADS

A hemispherical dish head, also referred to as a hemispherical head or hemispherical end, serves as a curved component utilized in ***pressure vessels and tanks.*** Its shape resembles that of a half-sphere and it is commonly employed as the closure or end cap at either the top or bottom of a ***cylindrical or spherical vessel.*** The hemispherical design provides both structural strength and uniform distribution of stresses.

The fabrication process of a hemispherical dish head typically entails the following steps:



Pressure Vessels and Tanks

3.2 TORI-SPHERICAL DISH HEADS

Tori spherical dish heads, also known as ASME F&D heads, are commonly used in pressure vessels and tanks. They combine toroidal and spherical geometry to create a unique shape. The fabrication process for tori spherical dish heads involves several steps.

Pressure Vessels

3.3 ELLIPSOIDAL DISH HEAD

An ellipsoidal dish head, also called an elliptical head or ellipsoidal end, is a commonly used type of dished end for ***pressure vessels and tanks***. It has an elliptical shape that provides a smooth transition between the cylindrical or spherical body and the end closure. Ellipsoidal dish heads offer good ***structural strength and are relatively easy to fabricate.***

Here's an overview of the fabrication process:

Pressure Vessels and Tanks

3.4 CONICAL DISH HEADS

A conical dish head, also known as a conical head or cone-shaped end, is a specialized component used in ***pressure vessels and tanks.*** It is designed with a conical shape that tapers to a point. This type of dish head is commonly used when there is a need for a **smooth transition from the cylindrical body of the vessel to a smaller diameter or outlet.**

The fabrication process for conical dish heads involves several key steps. The first step is material selection, where factors such as pressure rating, temperature, corrosion resistance, and compatibility with the stored fluid or gas are considered. Common materials used for conical dish heads include carbon steel, stainless steel, and various alloys.

Pressure Vessels and Tanks

3.5 FLAT DISH HEAD

Flat dish heads, also known as flat ends or flat heads, are a type of dished end commonly used in pressure vessels and tanks. These heads have a flat or nearly flat shape, making them suitable for applications where a flat end is required, such as small pressure vessels or tanks with ***specific design requirements.***

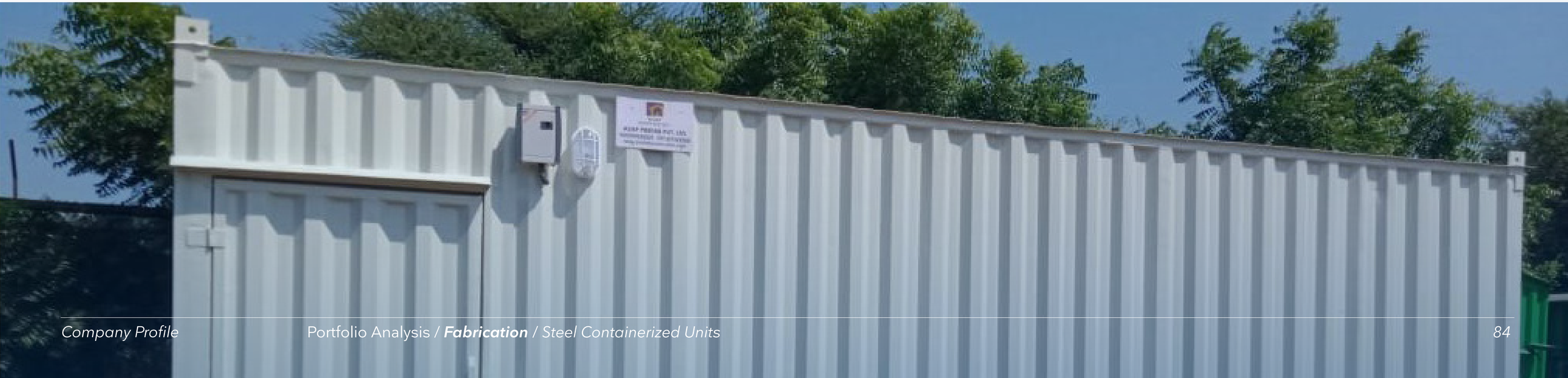
The fabrication process for flat dish heads typically involves several steps. First, the material for the flat dish head is carefully selected based on factors like pressure rating, temperature, corrosion resistance, and compatibility with the stored fluid or gas. Common materials include ***carbon steel, stainless steel, or other alloys.***

Water Treatment

3.6 STEEL CONTAINERIZED UNITS

Fabricating steel containerized units involves constructing modular structures using standard shipping containers as a base. These versatile units can serve multiple purposes, including mobile offices, housing, storage, laboratories, or specialized equipment enclosures.

Here's an overview of the fabrication process for steel containerized units:



01

Design and Planning

Determine the specific requirements and design of the containerized unit, considering dimensions, layout, features, and modifications.

02

Container Selection

Choose suitable standard shipping containers made of steel as the base structure, considering size and type.

03

Container Preparation

Thoroughly clean the selected containers and assess their structural integrity, removing any existing interior components.

04

Structural Modifications

Modify the containers to meet the desired design and functionality, which may involve cutting openings for doors, windows, vents, and utility connections, as well as adding structural reinforcements.

05

Insulation and Interior Finishing

Install insulation materials for thermal and acoustic insulation, along with interior finishes like drywall, paneling, or cladding. Install electrical wiring, plumbing, and HVAC systems.

06

Exterior Modifications

Modify the exterior for desired aesthetics or functional requirements, such as painting, installing external cladding, or adding features like awnings, stairs, or balconies.

07

Quality Assurance and Testing

Implement quality assurance measures, including inspections and testing of installed systems, to ensure compliance with standards and regulations

08

Transport and Installation

Prepare the fabricated unit for transportation using suitable methods. On-site, position, level, and secure the unit in place, make connections to utilities, and complete any final adjustments or finishing touches.

OTHER SERVICES

1

Heat Treatment and Post Welding Heat Treatment

In accordance to ASME Code Section VIII or as per client request, we preform both:

1. Heat treatment for dished heads (up to 650Co) in our in house furnace.
2. Post welding heat treatment cycles for the welds or the entire vessel.

2

Repair

As R Stamp holder, we offer repair services for all types of pressure vessels according to ASME Code Section VIII.

04 ENERGY

OIL & GAS AND PETROCHEMICALS PROCESS EQUIPMENT

Oil and gas process equipment encompasses a wide range of specialized equipment used throughout the lifecycle of oil and gas, including exploration, production, refining, and transportation. These essential components play a vital role in extracting, processing, and distributing hydrocarbon resources efficiently and safely.

04 ENERGY

OIL & GAS AND PETROCHEMICALS PROCESS EQUIPMENT

Arrangment	*Solutions*	*Function*
4.1	***Phase Separator***	Separates Well Streams into Gaseous and Liquid Components
4.2	***KnockOut Drum***	Safe Removal Of Gaseous Waste
4.3	***Heat Exchanger***	Transfers Heat between Two Fluids at Different Temperatures
4.4	***Petrochemical Reactors***	Producing Various Petrochemical Products
4.5	***Heater Treater***	Separating and Treating Produced Crude Oil

04 ENERGY

OIL & GAS AND PETROCHEMICALS PROCESS EQUIPMENT

Arrangment	*Solutions*	*Function*
4.6	***Dehydration Column***	Remove Water or Moisture From a Liquid Stream
4.7	***Storage Tanks***	Fluids Or Gases Under High Pressure
4.8	***Fractionation Columns***	Separate Mixtures Based on Boiling Points
4.9	***Metering and Measurement Tanks***	Verify Fluid Quantities
4.10	***LNG Tanks***	Transport Natural Gas in Its Liquefied Form

04 ENERGY

OIL & GAS AND PETROCHEMICALS PROCESS EQUIPMENT

Arrangment	*Solutions*	*Function*
4.11	***Bulk LPG Tanks***	Supply large quantities of liquefied petroleum gas
4.12	***Air Receivers***	Transport Natural Gas in Its Liquefied Form

Oil & Gas

4.1 PHASE SEPARATOR

Our oil/gas separator efficiently separates well streams into gaseous and liquid components. We offer a ***range of separators:*** Depending on the fluids to be separated. These separators ensure the efficient and safe processing and treatment of hydrocarbon fluids.

01

Function

Oil and gas phase separators separate oil, gas, and water phases encountered in production streams, removing liquid droplets, gas bubbles, and solids to obtain clean, separated streams.

02

Separation Principles

Separation relies on gravity-based settling, centrifugal force, and coalescence. Design and internal components facilitate efficient separation by maximizing contact and residence time.

03

Types of Separators

Vertical and horizontal separators are common. Vertical separators are suitable for high-pressure gas and low-to- medium liquid loadings, while horizontal separators are ideal for low- pressure gas and high liquid loadings. Two-phase separators separate gas and liquid, while three-phase separators separate oil, gas, and water.

04

Design Considerations

Factors such as flow rates, pressure, temperature, fluid properties, and desired separation efficiency influence separator design. Vessel size, internals (e.g., mist extractors, coalescers), and outlet configurations are chosen for optimal performance.

05

Operating Parameters

Oil and gas phase separators operate under specific pressure and temperature conditions. Pressure drops, retention time, and appropriate control devices, measuring level of liquid and pressure, are critical for efficient operation..

Oil & Gas

4.2 KNOCKOUT DRUMS

Usually used before flare, A knockout drum, also known as a demister drum, is a vital vessel in the oil and gas industry for removing liquid droplets and solid particles from gas streams. Here are key points about knockout drums:

Function

Safe Removal Of Gaseous Waste

From petroleum and natural gas refineries

01

Function

Knockout drums separate and remove liquid droplets and solid particles from gas streams, eliminating contaminants like water or hydrocarbon liquids. To ensure the continuous flaring.

02

Separation Mechanism

Gravity causes heavier droplets and particles to settle at the bottom of the drum as the high-velocity gas stream changes direction and slows down.

03

Design

Knockout drums are cylindrical vessels with gas inlets and outlets. They feature an inlet diverter or baffles to guide gas flow and enhance separation. A liquid sump or drain collects separated liquid.

04

Internal Components

Additional components like mist extractors or demister pads improve separation by capturing and coalescing small liquid droplets.

05

Liquid Removal

Separated liquid is periodically drained or removed manually or through automated systems.

06

Sizing and Capacity

Knockout drums are sized based on gas flow rate, droplet size, and separation efficiency requirements to handle the expected load effectively.

07

Safety Considerations

Knockout drums incorporate safety features such as pressure relief devices and level indicators to prevent hazardous conditions like overpressure or overfilling.

Oil & Gas

4.3 HEAT EXCHANGER

A heat exchanger is a device that transfers heat between two fluids at different temperatures without direct contact.

01

Function

Heat exchangers transfer thermal energy from a hot fluid to a cold fluid while keeping them physically separated, serving purposes like heating, cooling, condensing, or evaporating. To improve the quality and efficiency of separation.

02

Design

Compact units with metal plates, tubes, or fins provide a large surface area for efficient heat transfer. Material choice considers factors such as temperature, pressure, corrosion resistance, and thermal conductivity.

03

Types

Common types include shell and tube, plate, finned tube, and air cooled heat exchangers, each suited for specific applications.

04

Heat Transfer Mechanisms

Heat transfer occurs through conduction, convection, and radiation.

05

Performance and Efficiency

Factors like surface area, temperature difference, flow rates, and overall design impact heat exchanger efficiency.

06

Applications

Heat exchangers find use in industrial processes, power generation, HVAC systems, refrigeration, waste heat recovery, oil and gas processing, and more.

Oil & Gas

4.4 PETROCHEMICAL REACTORS

A petrochemical reactor is a vessel used in the petrochemical industry to carry out chemical reactions involving hydrocarbons, producing various petrochemical products.

01

Purpose

Petrochemical reactors create the conditions necessary for chemical reactions involving hydrocarbon feedstocks, enabling processes like cracking, polymerization, alkylation, and hydrogenation.

02

Design and Construction

Petrochemical reactors are cylindrical vessels made of corrosion-resistant materials suitable for the chemicals and operating conditions. They vary in size, from small- scale pilot plants to large industrial units.

03

Operating Conditions

Temperature, pressure, reactant concentration, and catalyst presence are controlled for desired reaction rates, selectivity, and yield.

04

Safety Considerations

Petrochemical reactors operate under high pressures and temperatures, dealing with hazardous chemicals. Safety features like relief systems, sensors, and emergency shutdown systems are implemented for operator safety.

05

Maintenance and Cleaning

Regular maintenance, inspections, and cleaning are necessary for safe and efficient operation. Activities include catalyst replacement, cleaning heat transfer surfaces, and inspecting internals to address fouling, corrosion, and catalyst deactivation.

TYPES OF PETROCHEMICAL REACTORS

01

Fixed Bed Reactors

Solid catalyst particles reside in a stationary bed, with reactants passing through. Common in catalytic cracking and hydrocracking.

02

Fluidized Bed Reactors

Reactants and gases fluidize a bed of solid particles, improving heat and mass transfer. Used in fluid catalytic cracking and polyethylene production.

03

Stirred Tank Reactors

Equipped with agitators for mixing, ensuring uniform reaction conditions. Suitable for reactions requiring precise control.

04

Tubular Reactors

Long cylindrical tubes where reactants flow through, allowing for continuous processes with high conversion and better control.

Oil & Gas

4.5 HEATER TREATER

A heater treater, also known as a crude oil heater treater, is an equipment used in the oil and gas industry for improving the separation in heavy and crude oil.

01

Separation Process

Heater treaters use heat, retention time, and gravity separation to separate crude oil into oil, water, and gas, involving heating, settling, and skimming and to calibrate the flowmeter due to gas babbles inside the liquid.

02

Heating

Crude oil is heated in the treater using a fire tube or electric heater, reducing viscosity and aiding in separation.

03

Settling

Heated crude oil is held in the treater, allowing water and gas to separate and migrate to the top and bottom due to density differences.

04

Skimming

Separated water is drained from the bottom, gas is vented or routed elsewhere, and the oil layer is skimmed from the top of water level and get out from the oil outlet opening.

05

Emulsion Breaking

Heater treaters help destabilize and separate oil and water emulsions present in crude oil.

06

Controls and Safety

Heater treaters have temperature, pressure, and level sensors, along with emergency shutdown systems, for monitoring and safety.

07

Maintenance and Cleaning

Regular maintenance includes inspections, cleaning heat transfer surfaces, and replacing damaged components for optimal performance.

Oil & Gas

4.6 DEHYDRATION COLUMN

A dehydration column, also known as a dehydrator or stripping column, is separation equipment used to remove water or moisture from a liquid stream.

01

Purpose

Dehydration columns are used to separate water from liquid mixtures, improving product quality, process efficiency, and preventing corrosion or degradation.

02

Operation Principle

Based on distillation and mass transfer, the liquid mixture enters at the top and flows downward, while heated vapor is introduced at the bottom, allowing water molecules to transfer from the liquid to the vapor phase.

03

Tray or Packing

Dehydration columns can have trays or packing materials to enhance mass transfer between liquid and vapor phases, providing surfaces or interfacial areas for efficient separation.

04

Temperature and Pressure

Temperature and pressure are controlled to optimize water separation, maintaining a level where water vaporizes while other components remain in the liquid phase.

05

Condensation and Collection

Vapor condenses in a cooler section or condenser at the top of the column, and the collected water is removed. The remaining vapor, partially depleted of water, can be recycled or further processed.

06

Control and Monitoring

Dehydration columns have instrumentation and control systems to monitor and control parameters like temperature, pressure, liquid level, and flow rates, ensuring efficient separation.

07

Maintenance and Cleaning

Regular maintenance includes inspection, cleaning or replacement of trays or packing materials, and removal of accumulated solids or impurities for optimal performance.

Oil & Gas

4.7 STORAGE TANKS

Pressure vessels are commonly used as storage tanks for fluids or gases under high pressure, ensuring safe containment.

Here's an overview of their usage:

01

Types

Pressure vessels used as storage tanks include cylindrical tanks for liquids or gases, spherical tanks for high-pressure gases, bullet tanks for liquefied gases, and multilayered tanks with insulation or corrosion protection.

02

Design and Construction

Pressure vessels meet codes and standards, considering factors like maximum working pressure, volume capacity, material selection, thickness calculations, and reinforcement. Welding, fabrication, and inspections ensure structural integrity and safety.

03

Materials

Vessel materials depend on the stored substance, pressure, temperature, and corrosion resistance needed. Common materials are carbon steel, stainless steel, aluminum, and alloys. Inner linings or coatings may be applied for protection.

04

Safety Features

Pressure vessels have safety features like pressure relief devices, level indicators, gauges, temperature sensors, and emergency shutdown systems. Adequate venting capacity prevents overpressure situations.

05

Maintenance and Inspection

Regular maintenance includes inspections for corrosion, damage, or wear, testing and certification of pressure relief devices, cleaning, and component repair or replacement to maintain tank integrity.

Oil & Gas

4.8 FRACTIONATION COLUMNS

Fractionation columns, also known as distillation columns or fractionators, are crucial equipment used in various industries to separate mixtures based on boiling points.

01

Purpose

Fractionation columns separate mixtures into individual fractions based on boiling points. By controlling temperature and pressure, components vaporize and condense, achieving desired separation.

02

Operation Principle

Fractionation columns operate based on mass transfer and vapor-liquid equilibrium. Heat is applied to vaporize the mixture, and rising vapor contacts descending liquid reflux. Components condense at different heights, while lighter components exit as vapor.

03

Trays or Packing

Trays or packing materials enhance vapor-liquid contact. Trays are horizontal platforms promoting mixing, while packing provides interfacial area for efficient mass transfer.

04

Distillation Sections

Columns have rectification (bottom) and stripping (top) sections, separating components with different boiling points. Intermediate sections handle components with intermediate boiling points.

05

Control and Optimization

Precise control of temperature, pressure, reflux ratio, and tray/packing design optimizes separation efficiency, product purity, and energy consumption.

06

Maintenance and Cleaning

Regular maintenance includes inspection, cleaning or replacement of trays/packing, and removal of accumulated solids or fouling substances to ensure optimal performance.

Oil & Gas

4.9 METERING AND MEASUREMENT TANKS

Metering and measurement tanks, also known as metering skids or prover tanks, accurately measure and verify fluid quantities in industrial processes.

01

Purpose

They measure and verify fluid quantities in industries like oil and gas, petrochemicals, and water treatment for commercial transactions, process optimization, or regulatory compliance and to calibrate the flowmeter due to gas bubbles inside the liquid.

02

Design and Construction

They are cylindrical vessels made of compatible materials and equipped with inlet/outlet connections and instruments for measuring temperature, pressure, and level. Additional features may include mixing devices, sampling ports, and calibration systems.

03

Volume Calibration

Tanks undergo calibration to establish accurate volume capacity, using a known quantity of fluid and calibrated reference systems to determine calibration factors.

04

Level Measurement

Accurate level measurement is crucial, achieved through technologies like float and tape systems, guided wave radar, ultrasonic sensors, or pressure transmitters.

05

Temperature and Pressure Compensation

Tanks incorporate compensation systems to account for temperature and pressure variations, using sensors and correction factors to ensure accurate measurements.

06

Flow Meter Integration

Tanks are commonly integrated with flow meters, such as turbine meters, positive displacement meters, or Coriolis meters, to measure real-time flow rates in conjunction with volume measurements.

07

Maintenance and Verification

Regular maintenance, calibration checks, sensor calibration, and inspections are crucial to maintain accuracy and reliability of metering and measurement tanks.

Oil & Gas

4.10 LNG TANKS

LNG tanks, or liquefied natural gas tanks, store and transport natural gas in its liquefied form.

01

Purpose

LNG tanks enable efficient storage and transportation of natural gas in its liquefied form, providing flexibility in supply and utilization.

02

Tank Types

There are single containment tanks and double containment tanks, offering varying levels of insulation and protection.

03

Construction Materials

LNG tanks are constructed using materials with low-temperature resistance and structural integrity, such as high- nickel steel or aluminum.

04

Insulation

Perlite or foam insulation is used to minimize heat transfer and maintain the required low temperature for LNG.

05

Safety Systems

LNG tanks incorporate pressure relief, leak detection, and fire protection systems to ensure safe operation and prevent accidents.

06

Tanker Design

LNG tanks in carriers or tankers are designed to withstand dynamic loads and stresses, with specialized containment systems for safe long-distance transportation.

Oil & Gas

4.11 BULK LPG TANKS

Bulk LPG tanks store and supply large quantities of liquefied petroleum gas (LPG) for industrial, commercial, and agricultural applications.

01

Purpose

Bulk LPG tanks provide continuous and centralized storage of LPG for industrial, commercial, or agricultural processes, enabling efficient delivery and distribution.

02

Large Storage Capacity

These tanks have significantly larger storage capacity than residential LPG cylinders, ranging from thousands to tens of thousands of gallons.

03

Above-Ground/Underground

Bulk LPG tanks can be installed above ground or underground based on site conditions, space availability, and regulations.

04

Design and Construction

Tanks are designed with materials like carbon steel or stainless steel, ensuring structural integrity, pressure regulation, and safety with features like relief valves and emergency shut-off systems.

05

Safety Considerations

Safety measures, inspections, maintenance, and compliance with regulations are essential due to the larger volumes of stored gas.

06

Delivery and Distribution

Tanks are refilled through bulk deliveries by LPG suppliers using specialized tankers, and LPG is distributed via a piping system to various points of use while following safety protocols and procedures.

Oil & Gas

4.12 AIR RECEIVERS

Air receivers, or air storage tanks, store compressed air for industrial applications.

01

Purpose

Air receivers store compressed air as a buffer, ensuring a stable supply for pneumatic equipment and regulating system pressure.

02

Pressure Regulation

They absorb demand variations and control pressure drops, providing consistent air pressure to the system.

03

Volume and Size

Air receivers vary in size, measured in gallons or cubic feet, based on application and system requirements.

04

Construction and Design

Tanks are built with materials like carbon or stainless steel, meeting pressure ratings and safety standards. They may have welded seams, internal coatings, and external insulation.

05

Safety Features

Air receivers include safety features like pressure relief valves, pressure gauges, drain valves, and inspection openings for safe operation and maintenance.

06

Maintenance and Testing

Regular maintenance, inspections, and testing ensure safe and efficient operation, including corrosion checks, pressure relief valve function verification, and moisture/contaminant removal. Periodic pressure testing may be necessary.

OTHER SERVICES

1

Heat Treatment and Post Welding Heat Treatment

In accordance to ASME Code Section VIII or as per client request, we preform both:

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2. Post welding heat treatment cycles for the welds or the entire vessel.

2

Repair

As R Stamp holder, we offer repair services for all types of pressure vessels according to ASME Code Section VIII.

07

CERTIFICATES

CERTIFICATES

The National Board of Boiler and Pressure Vessel Inspectors

U & U2

08

ACCREDITIATION

ACCREDITIATION

09

KEY PROJECTS

KEY PROJECTS

We derive immense pride from our portfolio of previous projects, each one a testament to our continuouzment to excellence.

Through the successful execution of numerous ventures, we have fostered strong client relationships and earned a stellar reputation in the industry.

CHEMICAL REACTOR / EGYPT

Owner: ELAB

Main Contractor: PETROMAINT

Partner: Triple-P

Sector: Energy – process equipment

Description: Fabrication of 22 m3 – 44 bar trans alkylation reactor

Year: 2023

JABAL HAFEET / PS - UAE

Owner: TRANSCO

Partner: HYDROPOWER

Sector: Infrastructure – Water Hammer Protection

Description: 6 Surge vessels with thickness 100/80 mm and design pressure 150 Bar

Year: 2022

Test Pressure: 230 bar

GAUGE TANKS / EGYPT

Partner: Pico Egypt

Sector: Energy – metering tanks

Description: U stamped 4 gauge tanks – 2 compartments – 50 BBL

Year: 2022

PIPELINE & PS PACKAGE / UAE

Owner: TRANSCO

Partner: TECTON engineering & construction

Sector: Infrastructure – Urge Protection System

Description: 10 SV with capacity 100m3 & 2 SV with capacity 30 m3 and 60 m3

Year: 2022

60 m3

CPI SEPERATOR
In Process / EGYPT

Owner: AGIBA petroleum

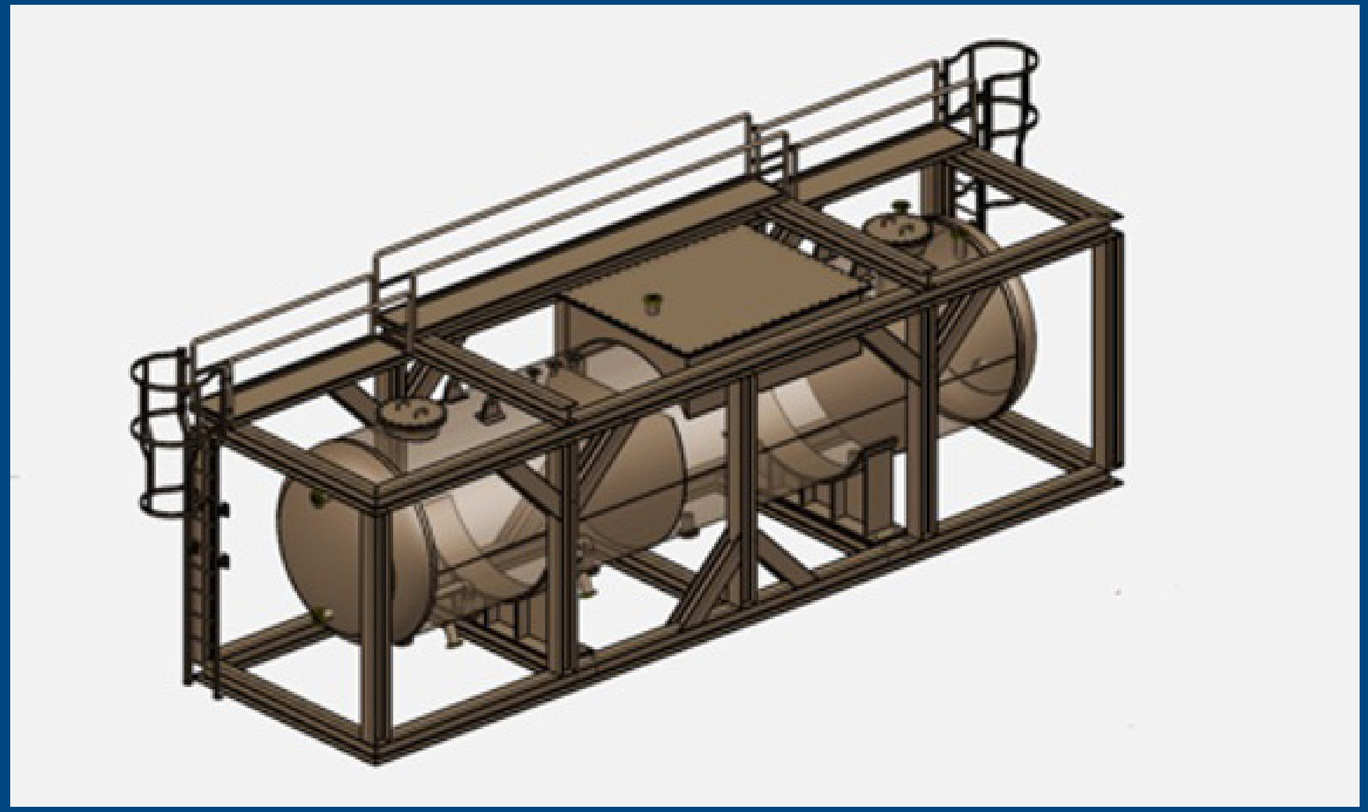
Main Contractor: EMC

Partner: Envirotech LLC.

Sector: Energy – process equipment

Description: Fabrication and supply of U stamped CPI separator

Year: 2023/2024



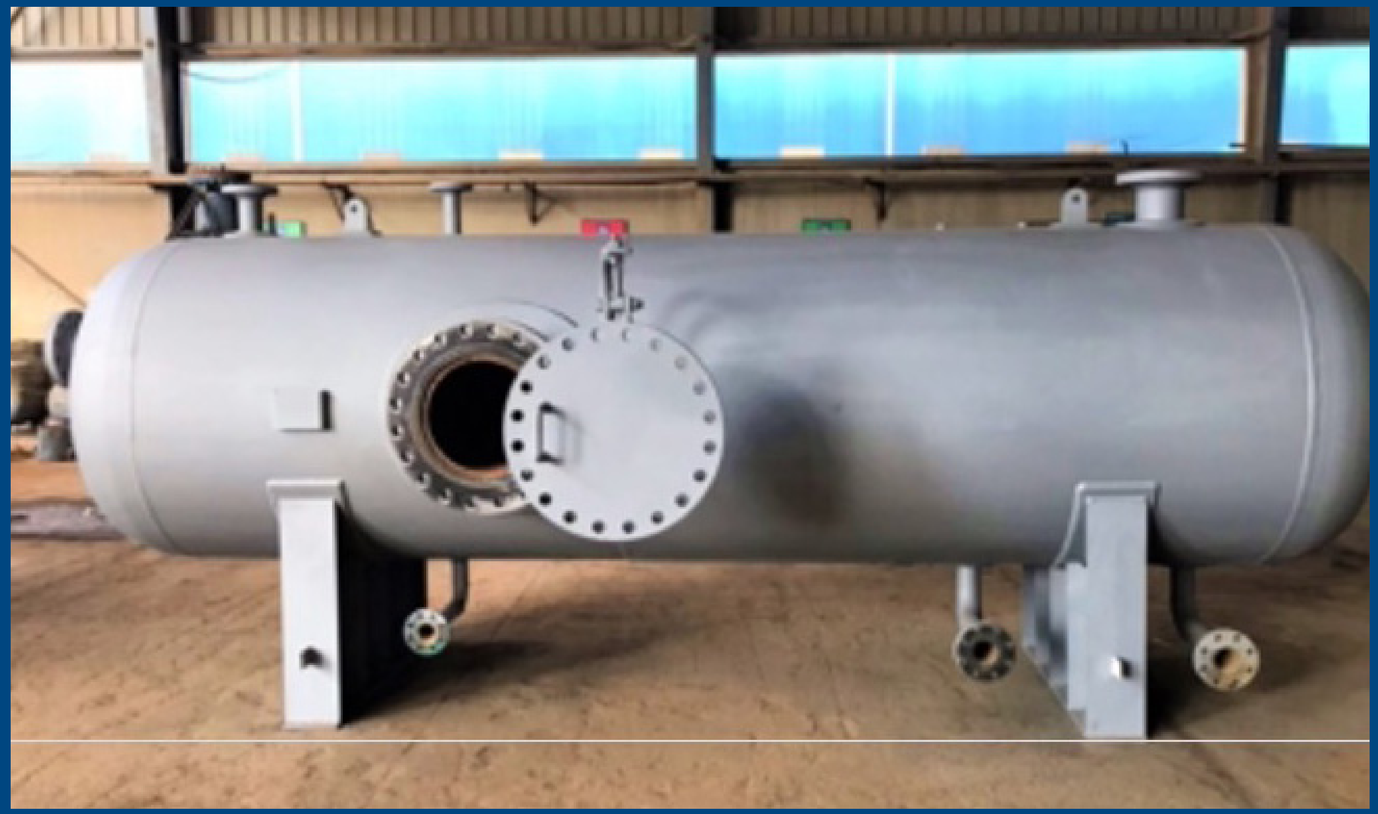
3 PHASE SEPERATOR / EGYPT

Partner: ELTAREK petroleum services

Sector: Energy – process equipment

Description: Fabrication and supply of 2 (3 phase separator) 42" * 10ft with 750 psi

Year: 2020



SEWAGE TREATEMENT PLANT / KSA

Owner: National Water Company NWC

Partner: Abdullah Nasser El Mousa for contracting

Sector: Environmental – MBBR

Description: 42 MBBR unit with treatment capacities between 100, 200 & 300 m3/d

Year: 2021

AL-HOMAIMA - HAEL
Treatement Plant / KSA

Owner: MEWA

Partner: Saudi TEMPANE

Sector: Infrastructure – Surge protection systems

Description: 70 m3 hemispherical surge vessel

Year: 2022

MUSTAQBAL MASR / EGYPT

Owner: Air Forces

Partner: Oman Hills

Sector: Infrastructure – Pipelines

Description: 250 pipe with diameter 1600 mm

Year: 2022

MMF / EGYPT

Partner: METITO

Partner: Environmental - MMF

Sector: Infrastructure – Pipelines

Description: 3 multimedia filters - 3 compartments with capacity of 1000m3/hr

الشركة المصرية الرائدة للصناعات المعدنية
Egyptian Engineering Company

EGYPTIAN ENGINEERING COMPANY / KSA

Welcome to EEC, a distinguished Egyptian brand deeply rooted in serving Egypt and the Middle East. With a vast robust portfolio encompassing pivotal projects across Egypt, extending, with excellence, all the way to our active involvement in Saudi Arabia's dynamic technological landscape, where we actively contribute to the technological evolution, constantly supplying, and enriching the market with innovative technologies not previously explored in the region. EEC stands as a beacon of knowledge, experience, and profound expertise, crafting deliverables that surpass all expectations.

10 BUSINESS PARTNERS

EGYPT PARTNERS

EMC
EGYPTIAN MAINTENANCE COMPANY

Total Solutions LTD

AGIBA

MADKOUR

GIZA SYSTEMS
we integrate

المقاولون العرب
عثمان أحمد عثمان وشركاه

EGYPT PARTNERS

EGYPT PARTNERS

INTERNATIONAL PARTNERS

INTERNATIONAL PARTNERS

COMPANY PROFILE - 2024

EEC KSA

RIYADH , SAUDI ARABIA
CALL +966540216979
EMAIL EEC-KSA@I-ADELGROUP.COM
CR NO. 1010867270

EEC EGYPT

EXPANSION OF INDUSTRIAL ZONEA
OCTOBER CITY, CAIRO, EGYPT
CALL +201001809998 / +201030670006