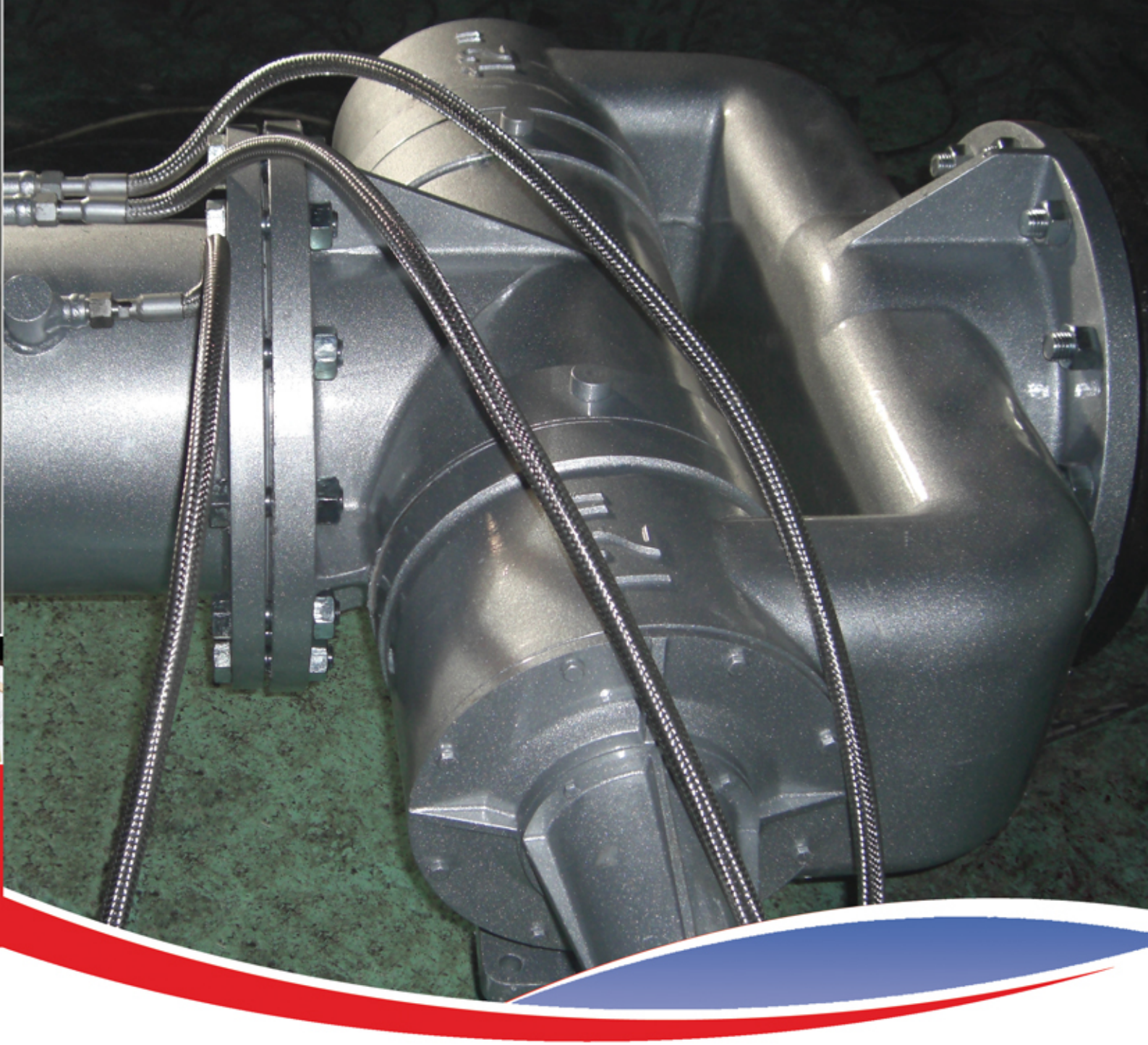


# ATS HEAVY SWING X5

## CENTRAL TYPE SWING JOINT FOR FLOATING SUCTION LINES

ATS TANK

www.atstank.com

# ATS SWING JOINT FLOATING SUCTION SYSTEMS FOR PETROLEUM AND PETROCHEMICAL STORAGE TANKS

*ATS-SWING X5 Series, designed for use on storage tanks where there is a need to draw off product from just below the surface of liquids stored in bulk.*

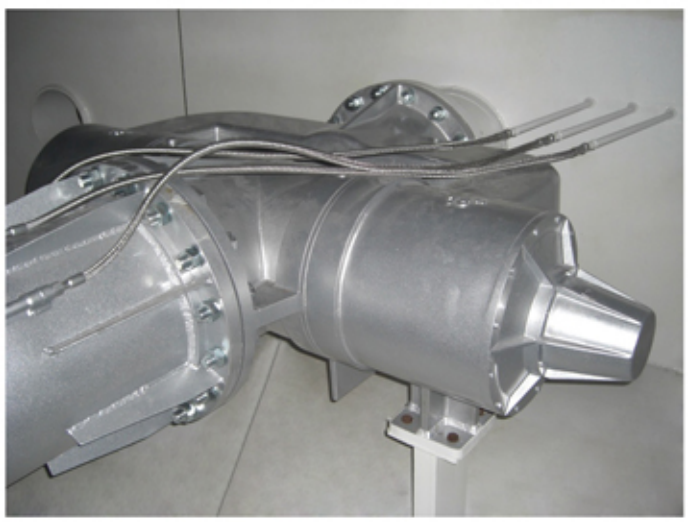
## INTRODUCTION

This unit safeguards the quality of product drawn off from the tank and substantially reduces settling times. Although the **ATS SWING** Series Floating Suction Unit was originally designed specifically for use in tanks storing aviation fuel where a water and sediment free product is essential, their application has gradually extended throughout other industries. Jet fuel quality is maintained by regular filtration and checks at all points and stages in its transfer to the airfield. The floating suction unit is one of a large number of safeguards to ensure fuel quality and safety in air transport. Not only is water contaminated fuel a hazard to jet engine operation, but its presence also promotes the growth of bacteria and fungi which in turn can contaminate and block filters, and cause the fuel to be hazy and out of specification.

Sediment in finished fuel can suspend on the hydrocarbon/water interface and be sucked into the fuel upon transfer. By minimizing water, sediment and bacteria, the **ATS SWING** Series Floating Suction Unit can help provide a consistent high quality fuel and reduce the time required for filtering, hydrotreating or increased settling time between shipments. It can also help jet, diesel and aviation fuel meet color, filterability and haze specifications.

The **ATS SWING X5** Series Floating Suction Unit is ideal for use in crude storage applications where water is present. Bacteria are becoming more prevalent in crude oil due to down-hole water injection and water reuse practices in separation facilities. More water to the crude unit backs out crude from the refinery. Increased sediment and bacteria can upset downstream equipment. These conditions may result in a loss in refinery production. The floating suction unit can help provide a consistent high quality fuel by minimizing water, sediment and bacteria which results in an increase in refinery production.

*Size Range 3"-36"*
*Use of High Quality Swing Joints*
*Choice of Available Material*
*Single / Double / Triple Arm*
*Configurations make it suitable for Vertical and Horizontal Tanks*
*Top Center of Bottom Outlet*
*Configurations are Available*
*For Superior Corrosion Resistance*
*Durable Construction*
*Effectively Bufflet to Avoid Vortex Formation*



# ATS SWING JOINT FLOATING SUCTION SYSTEMS FOR PETROLEUM AND PETROCHEMICAL STORAGE TANKS

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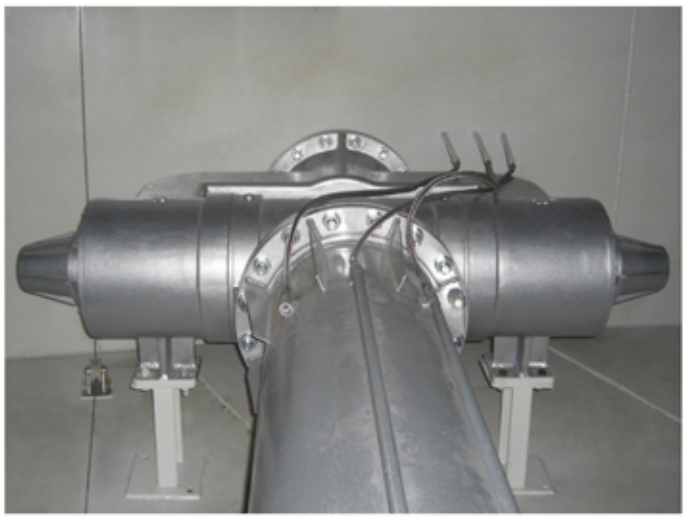
## FEATURES

There are six configurations available for vertical and horizontal tanks with fixed or floating roofs and outlets at the top, center or bottom, in sizes 3" to 36", 80 mm to 900 mm. The fuel intake of the floating suction unit is positioned just below the free surface of the liquid level. The area available for drawing fuel into the suction unit is arranged so that it faces substantially downwards, away from the free fuel surface to prevent a vortex from forming which could cause air or vapor entrainment into the liquid stream.



At the heart of the Floating Suction Unit are the swivel joints which are triple-sealed units, specifically designed for floating suction applications. Being fully sealed units, contaminated fuel can not enter the pipework via the swivel joint, and an internal reservoir allows the joint to be grease packed for life with an aviation approved grease. This eliminates the need for tanks to be drained and taken out of service in order to grease the bearings.

Another benefit of these swivel joints is that they can only rotate in one plane and as such, the movements of the entire system are predictable, unlike systems which use short lengths of flexible hose which can become twisted in several planes.

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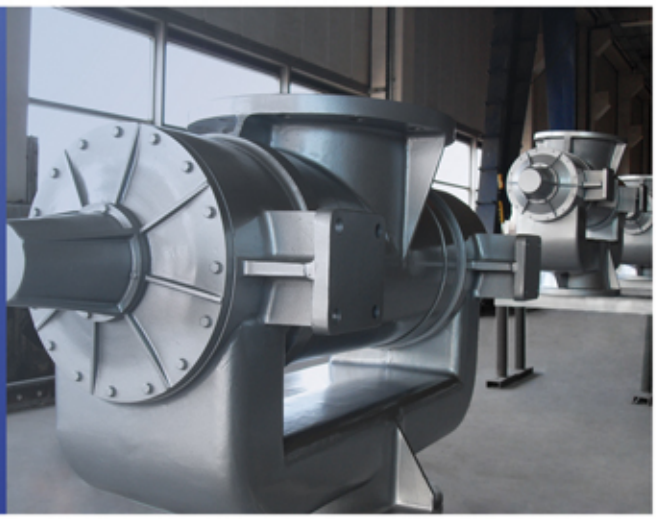

# ATS SWING JOINT FLOATING SUCTION SYSTEMS FOR PETROLEUM AND PETROCHEMICAL STORAGE TANKS

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## ADVANTAGES

* To ease installation, all component parts of the Floating Suction Unit can pass through a standard tank shell manhole.

* The arm can not lock in a vertical position, this can be important if the tank diameter is less than the height a stainless steel restraining chain is attached to the upper end of the pipe.

* The Floating Suction Unit is installed in a fixed position, air is not trapped in the arms during tank filling at the highest point a hole is drilled in the pipe to allow air to escape.

* Long life and trouble free operation is maintained due to the use of swivel joints specifically designed for submerged service.

* At low level, the Floating Suction Unit is located on supports - this avoids the pipe work resting in any sediment on the bottom of the tank.

* The floatation chambers are designed such that if one is punctured the remaining one can keep the unit floating.

* The Floating Suction Unit can be installed and operated in a fixed roof, external floating roof and an internal floating roof tank.

* Because the product is always taken from the top surface and is less likely to be contaminated, this decreases the maintenance of filters in the draw-off lines.

* The Floating Suction Unit is custom designed, taking into consideration the specification of the stored product and operational requirements of the tank.

# ATS SWING JOINT FLOATING SUCTION SYSTEMS FOR PETROLEUM AND PETROCHEMICAL STORAGE TANKS

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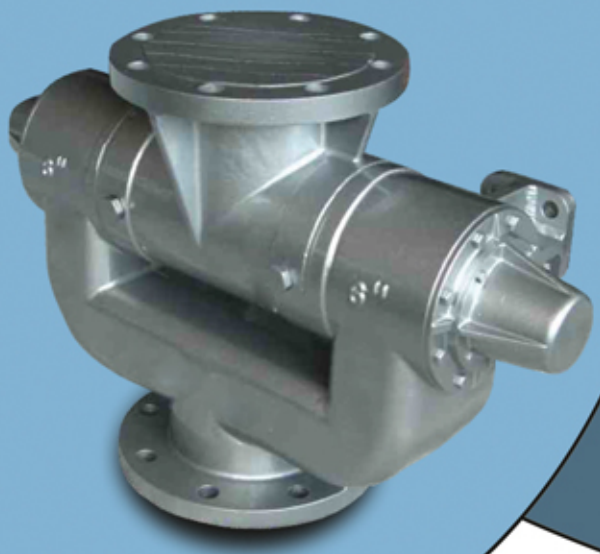


**ATS SWING** Central Type Swing Joints are the ideal choice for floating suction lines. Constructed in rugged Aluminium with Stainless Steel bearings. **ATS SWING** Aluminium swing joints are Internally & Externally epoxy painted for Jet-A1 service
**ATS SWING** Joints are available in 8" through 36" size. Larger sizes are available on application. All flanges are ANSI 150# Flat Face or Raised Face.

The flanged tee is precision aligned and rotates on large stationary, bronze or Stainless Steel bushings which are manually pressed into the yoke. Bushings are mechanically locked inside the yoke to allow bi-directional flow.

The bearing area is larger than other swing joints to assure reliability and ease of operation.

The heavy, Aluminium "U" shaped yoke bolts, to the tank nozzle to form a rigid, compact and tight connection at the tank shell.

The passage through the joint is larger than a standard pipe, and there are no interior obstructions to the heavy Aluminium "U" shaped yoke bolts to the tank nozzle to block to flow of liquid.

ATS Swing Joints are constructed of only four major parts. An Aluminium swing joints have propen the superiority of their "central-type" design and rugged construction. Long life and trouble-free service make them the most cost effective swing joint on the market. "U" shaped yoke, a specially manufactured tee, and two bronze or Stainless Steel bushing with nitrile O-Ring seals. The ATS Swing Joints is balanced, leaktight and will not tilt or pull apart.

Fluid thrust is balanced, compared to "elbow style" joints, eliminating lock-up of the swing joint and bending of the tank nozzle.

# ATS SWING JOINT FLOATING SUCTION SYSTEMS FOR PETROLEUM AND PETROCHEMICAL STORAGE TANKS

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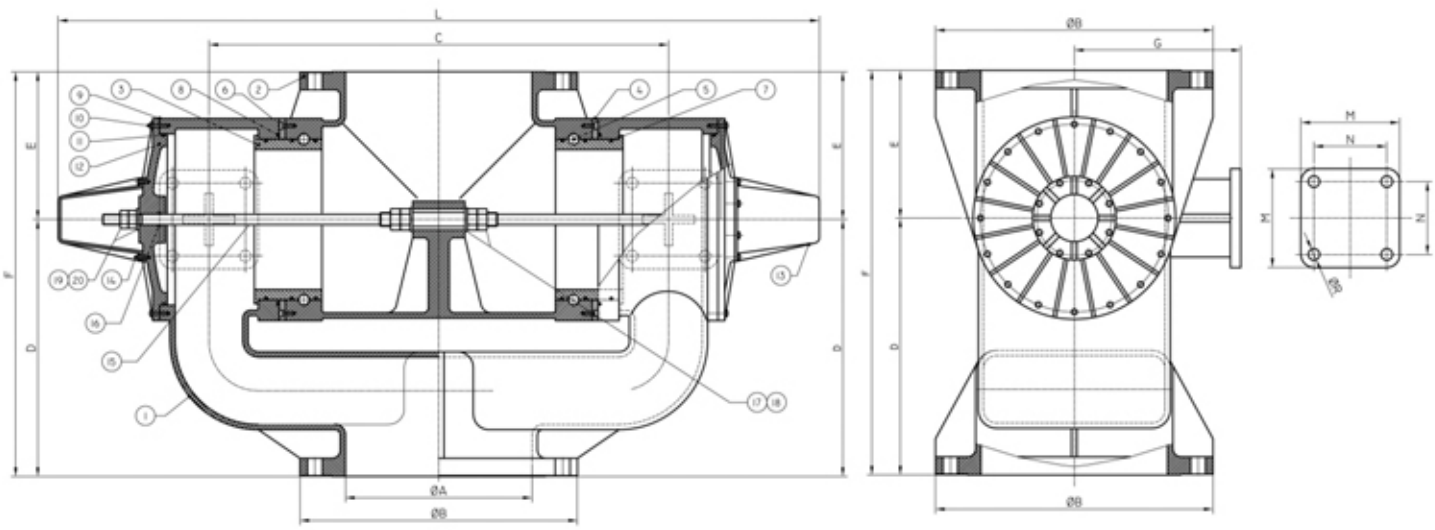


| SİZE | Dimensions in mm | | | | | | | | | | | | | Connection | | Strip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | K | L | M | N | P | R | Bolt | Size | Weight ( kg ) |
| 4" | 116 | 228 | 325 | 234 | 127 | 361 | 144 | 190,5 | 562 | 70 | 42 | 19 | 13 | 8 | M16 | 87,5 |
| 6" | 156 | 285 | 410 | 286 | 150 | 436 | 175 | 241 | 724 | 100 | 60 | 22 | 18 | 8 | M20 | 150 |
| 8" | 208 | 343 | 548 | 336 | 180 | 515 | 200 | 298 | 917 | 120 | 80 | 22 | 17 | 8 | M20 | 175 |
| 10" | 260 | 406 | 648 | 407 | 208 | 615 | 200 | 362 | 1192 | 150 | 110 | 25 | 17 | 12 | M22 | 550 |
| 12" | 308 | 483 | 775 | 443 | 234 | 677 | 242 | 432 | 1340 | 150 | 110 | 25 | 17 | 12 | M22 | 600 |
| 14" | 359 | 533 | 884 | 495 | 285 | 779 | 300 | 476 | 1464 | 150 | 110 | 28 | 18 | 12 | M24 | 700 |
| 16" | 376 | 597 | 1018 | 605 | 345 | 950 | 300 | 540 | 1842 | 170 | 100 | 28 | 20 | 16 | M24 | 900 |
| 18" | 421 | 635 | 1158 | 686 | 376 | 1062 | 344 | 578 | 2044 | 200 | 130 | 32 | 20 | 16 | M30 | 1125 |
| 20" | 489 | 698 | 1250 | 754 | 414 | 1168 | 369 | 635 | 2116 | 200 | 130 | 32 | 20 | 16 | M30 | 1350 |

NOTES:
1. Flanges faced and drilled 150 lbs. ASA for connection to 150 lbs. ASA raised face flanges.
2. Holes straddle bushing center lines on all sizes except 10" and 12" which are on center lines.
3. Specify bronze or Stainless Steel bushings.

| Minimum Tank Hole Size Required for Swing Joint Passage | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Swing Joint Size | 4" | 6" | 8" | 10" | 12" | 14" | 16" | 18" | 20" |
| Min.Tank Hole* | 20" Dia | 24" Dia | 26" Dia | 30" Dia | 36" Dia | 40" Dia | 46" Dia | 52" Dia | 56" Dia |

*Based on tee being set 90 degrees from yoke.

# ATS SWING JOINT FLOATING SUCTION SYSTEMS FOR PETROLEUM AND PETROCHEMICAL STORAGE TANKS

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## GENERAL SPECIFICATIONS

**SWING JOINTS :** Aluminium , Steel, or special alloys for chemical and other applications; Flanged dual ball bearings type with O-Ring seals or central type with bronze or Ni-Resist bushings.

**PIPE OR TUBING :** Aluminium, steel or special alloys for chemical and fuels, treatment plant decant applications ; lenghts and sizes are dependent on particular installation requirement; available in 2" throught 36" pipe or tubing

**BELLMOUTH :** Low velocity conical configuration with baffle plate and anti-vortex plate.

**BASIC STYLES :** Model X5-A with 90° bell-mouth elbow; Model X5-C with 45° bellmouth elbow and inverted bellmouth for skimming units.

**FLOATS :** Stainless Steel, Carbon Steel or Aluminium and all are pressure tested.

**BAFFLES AND STOP LEG :** Aluminium , steel, iron or special alloys for chemical and other applications; designed to break suction 9" above tank bottom ( or as specified )

**INSPECTION CABLE :** 3/16" uncoated Stainless Steel ( Ground to Arm )

# ATS SWING JOINT FLOATING SUCTION SYSTEMS FOR PETROLEUM AND PETROCHEMICAL STORAGE TANKS

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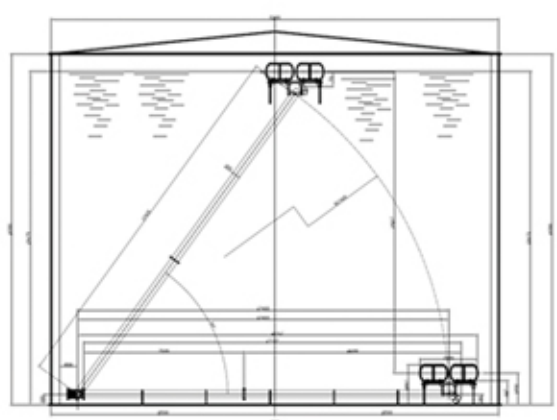

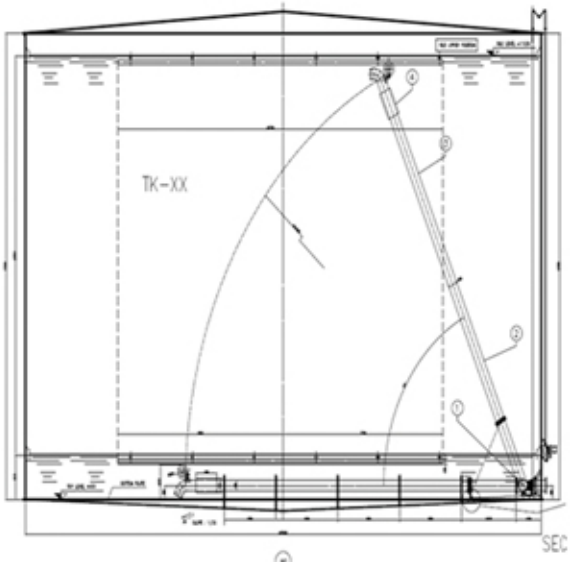


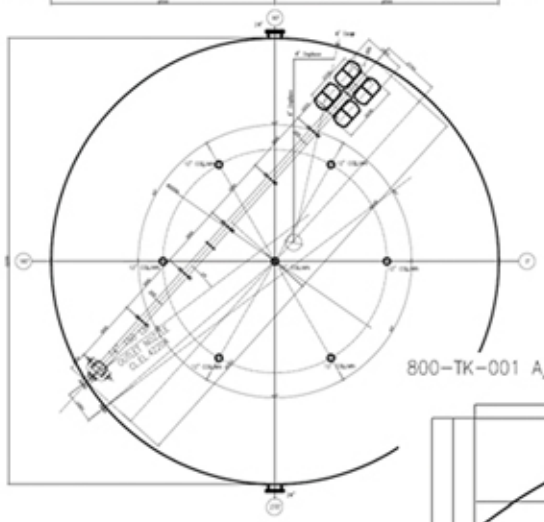


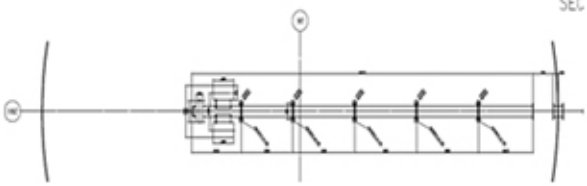

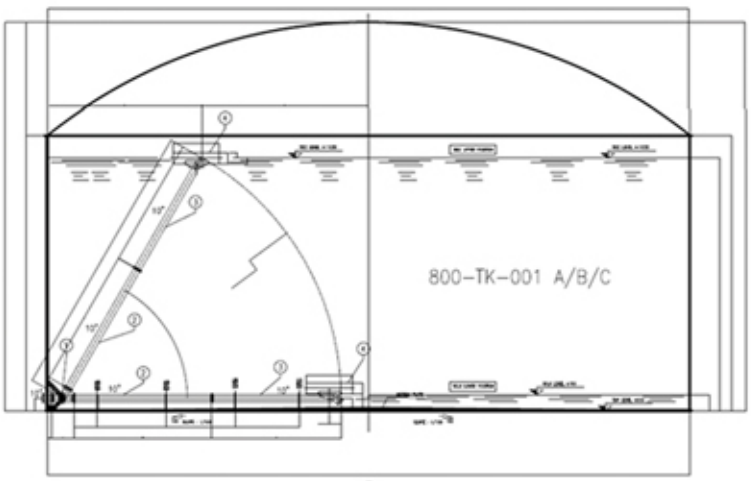


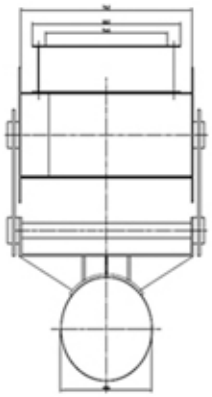

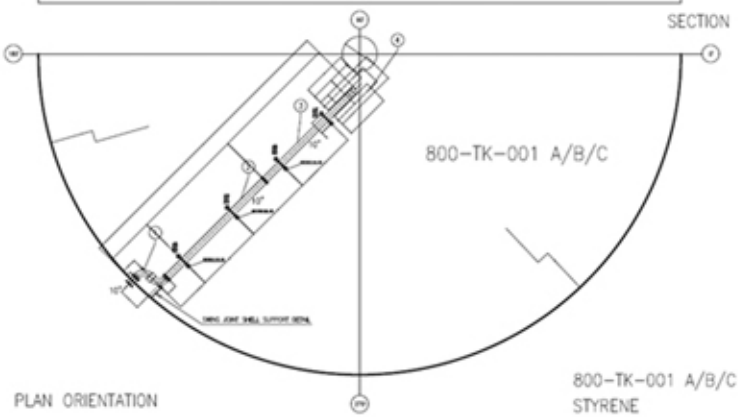


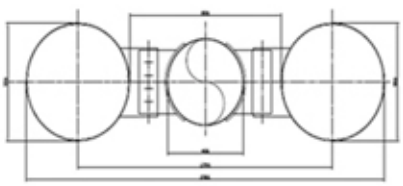

FLOAT FRONT

# ATS SWING JOINT FLOATING SUCTION SYSTEMS FOR PETROLEUM AND PETROCHEMICAL STORAGE TANKS

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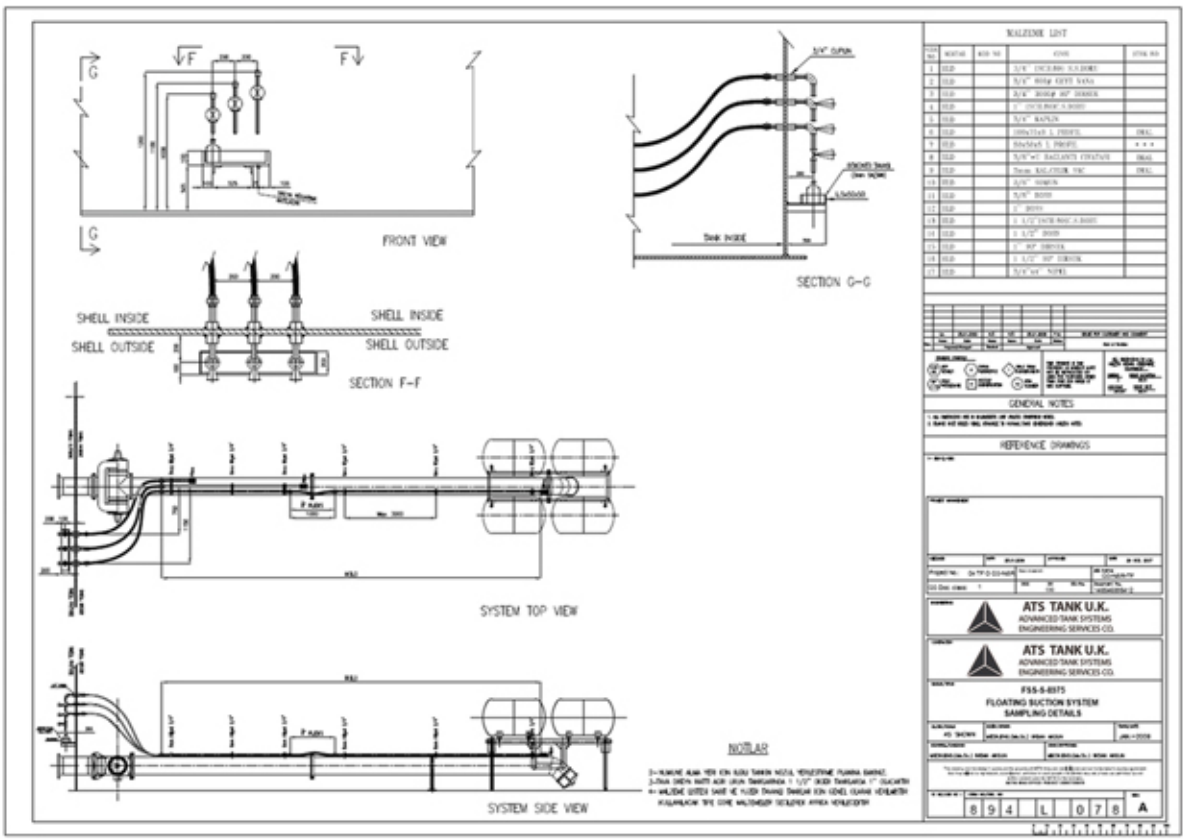


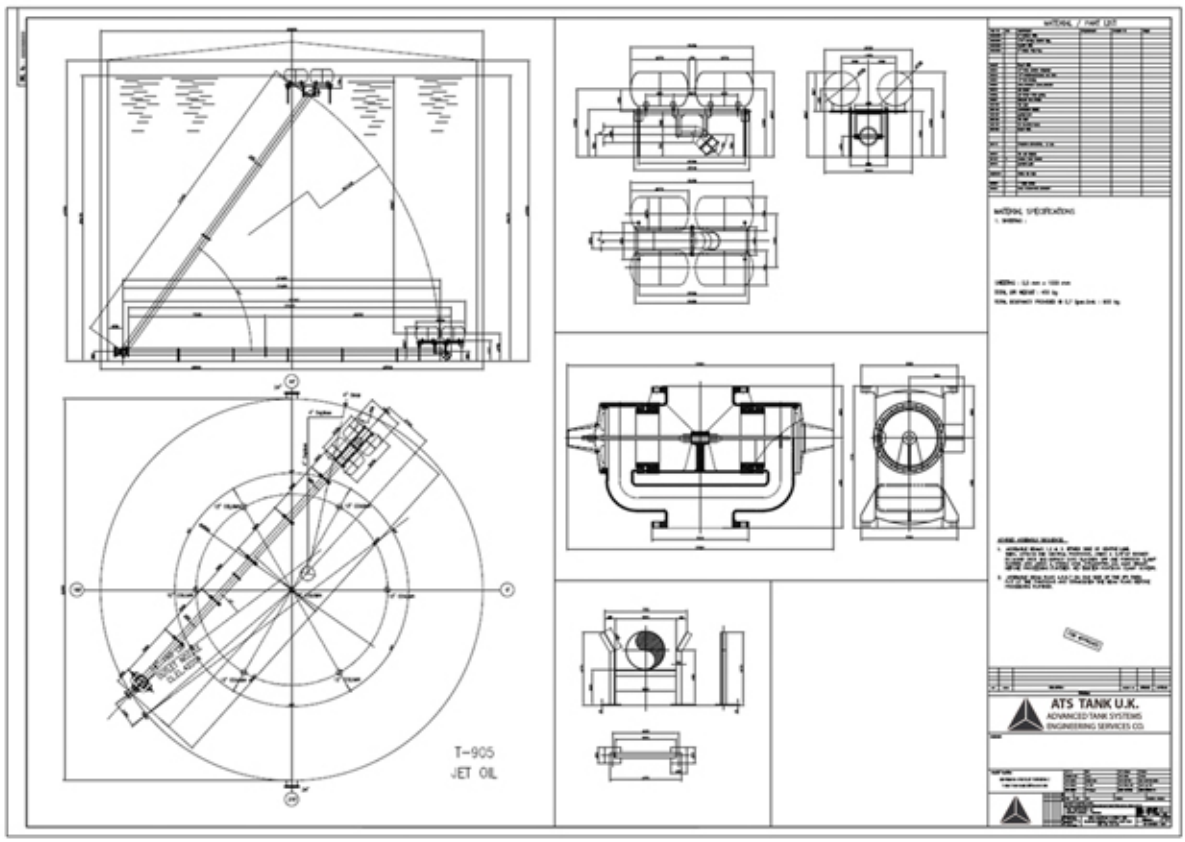

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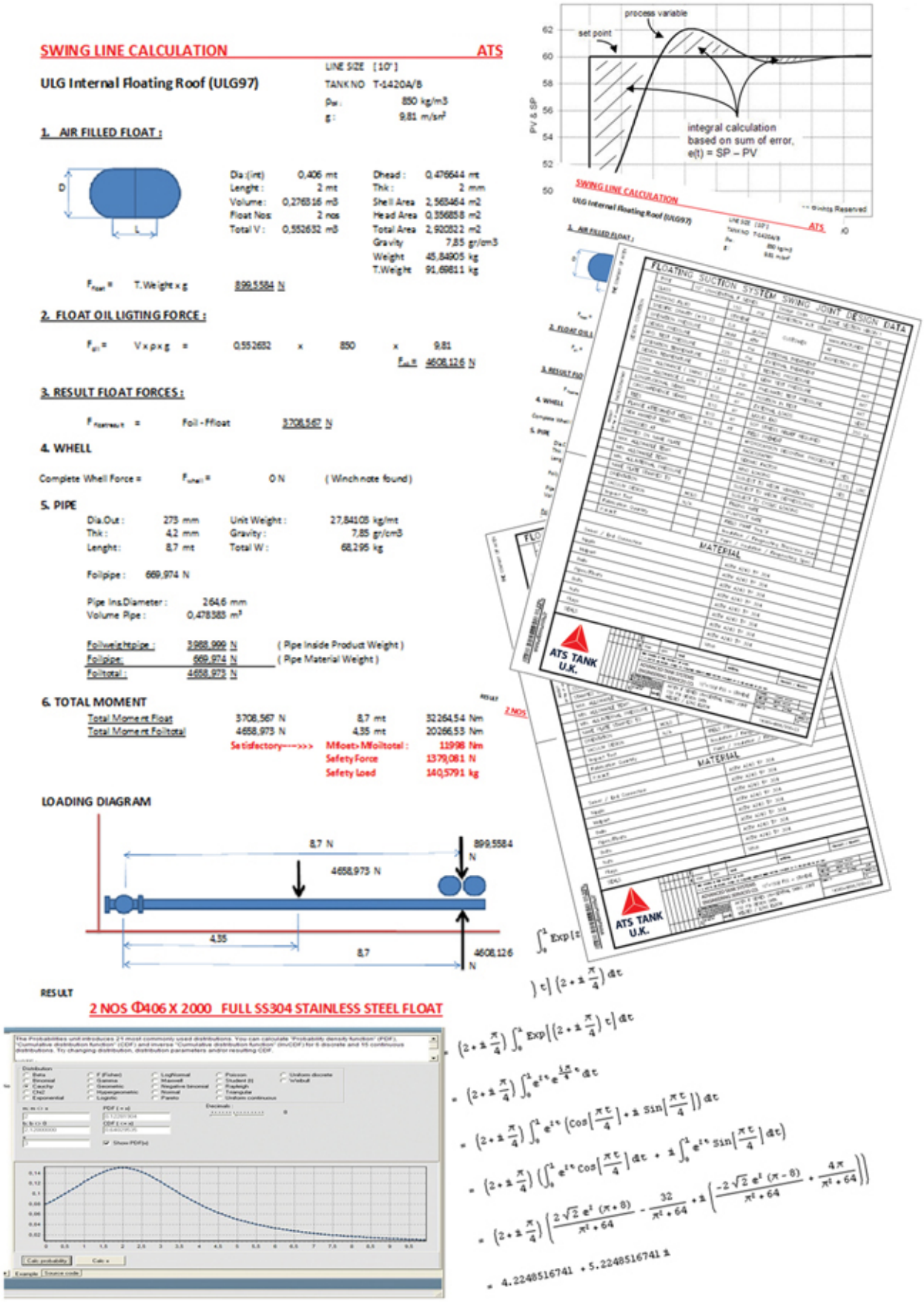


$$= \left(2+\imath\frac{\pi}{4}\right)\int_0^2 \mathrm{Exp}\left[\left(2+\imath\frac{\pi}{4}\right)t\right]dt$$

$$= \left(2+\imath\frac{\pi}{4}\right)\int_0^2 e^{2t}e^{\imath\frac{\pi}{4}t}\,dt$$

$$= \left(2+\imath\frac{\pi}{4}\right)\int_0^2 e^{2t}\left(\cos\left[\frac{\pi t}{4}\right]+\imath\sin\left[\frac{\pi t}{4}\right]\right)dt$$

$$= \left(2+\imath\frac{\pi}{4}\right)\left(\int_0^2 e^{2t}\cos\left[\frac{\pi t}{4}\right]dt+\imath\int_0^2 e^{2t}\sin\left[\frac{\pi t}{4}\right]dt\right)$$

$$= \left(2+\imath\frac{\pi}{4}\right)\left(\frac{2\sqrt{2}\,e^2(\pi+8)}{\pi^2+64}-\frac{32}{\pi^2+64}+\imath\left(\frac{-2\sqrt{2}\,e^2(\pi-8)}{\pi^2+64}+\frac{4\pi}{\pi^2+64}\right)\right)$$

$$= 4.2248516741 + 5.2248516741\,\imath$$

# ATS SWING JOINT FLOATING SUCTION SYSTEMS FOR PETROLEUM AND PETROCHEMICAL STORAGE TANKS

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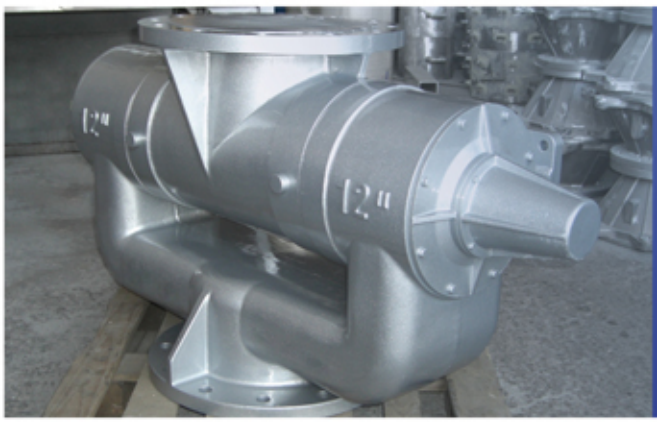
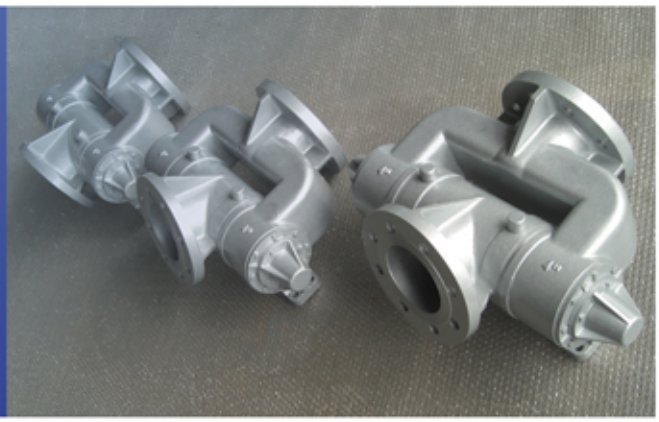
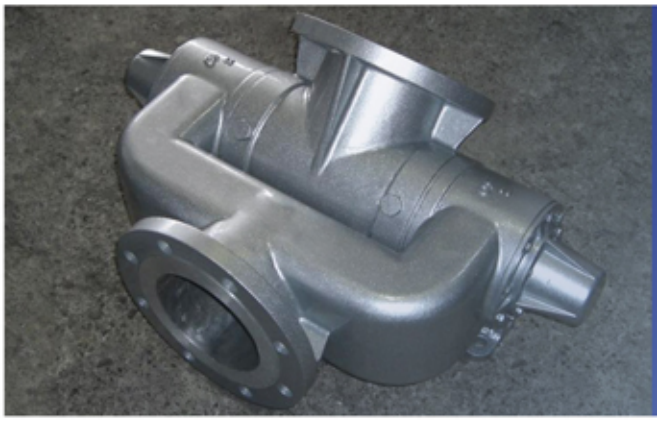
*ATS SWING JOINT FLOATING SUCTION UNIT FOR PETROLEUM AND PETROCHEMICAL STORAGE TANKS*



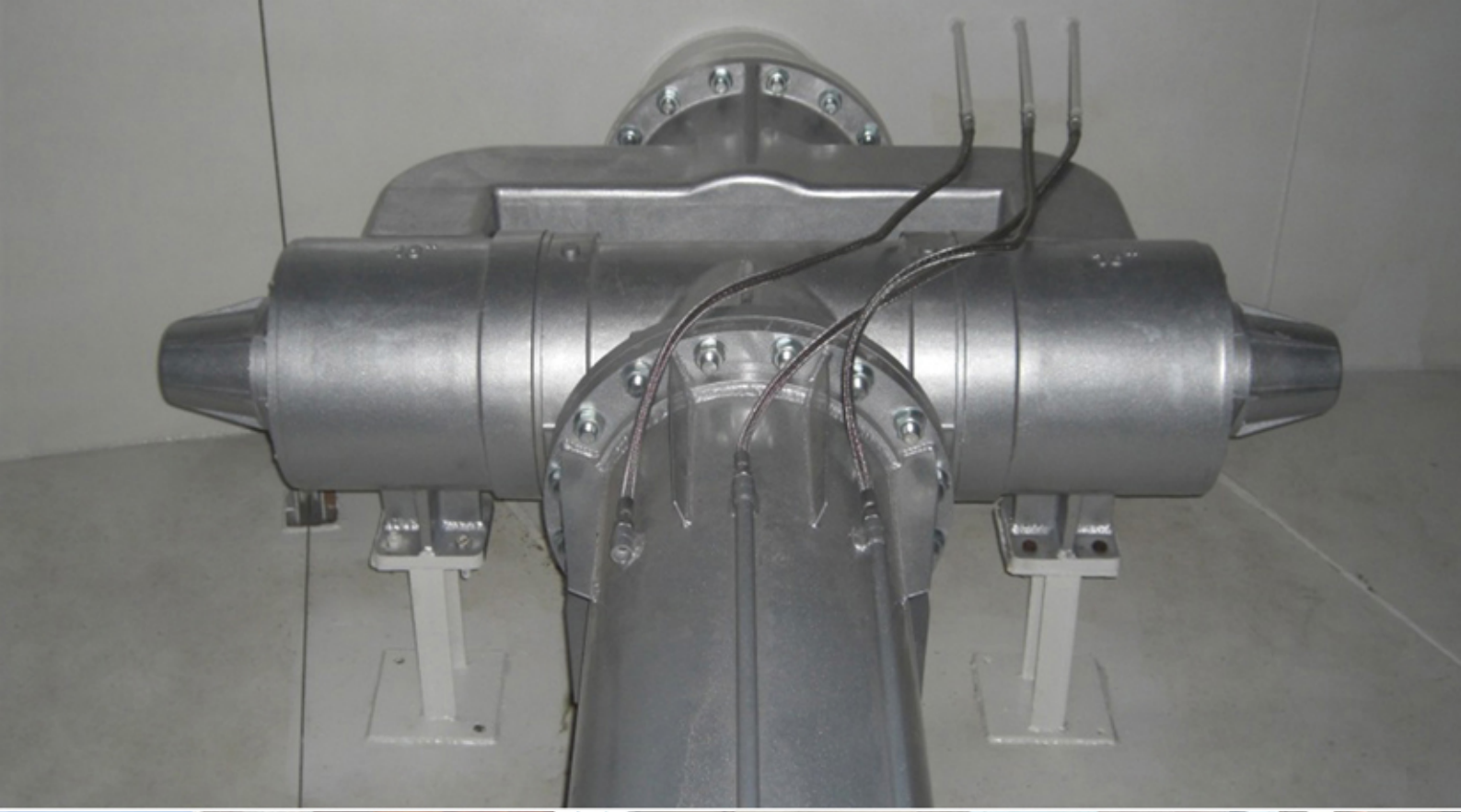
*HYBRID MATERIAL OPTIONS*
*QUATRO - MULTIPLE SEALING*
*DUPLEX MATERIAL OPTIONS*
*ALTERNATIVE DESIGNS*

*3" - 36"*
*ALUMINIUM - STAINLESS STEEL*
*CENTRAL TYPE-DOUBLE SWING JOINT*





*ADVANCED ENGINEERING PRACTICES*
*PRODUCTION SOLUTIONS TECHNOLOGIES*



Geodesic Dome Roof

Internal Floating Roof

Floating Roof Seal

Floating Suction System

Roof Drain System

Emission Control Systems

Special Products

Engineering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