The story of Delta Corporation dates back to 1977, when it was established in Texas, USA. In the late eighties, Delta began to supply equipment to South America serving Colombia and Trinidad and Tobago, in addition to its business locally. In the early nineties, Delta succeeded in acquiring accreditations including API 6A, 16A, 6D & ISO 9001:2008. In 1995, Delta started expanding to ME starting from Qatar, Oman, Kuwait, and KSA due to the high potential demands foreseen in the region. The ravish success Delta enjoyed encouraged it to broaden its expansion reaching MENA countries including UAE, Bahrain, Iraq, Syria, Yemen, Egypt, Libya, and Morocco. In 2006, Delta felt the need to expand further in both Asia, and Africa encompassing Nigeria, India, Kazakhstan and Turkmenistan. The scope of expansion continues to broaden; as Delta eagers to offer the best possible products and services to its global clients.
Delta Corporation is an ambitious, highly qualified company.

It designs, manufactures and services wellhead equipment, valves, actuators and flow control products.

Delta Corporation is a worldwide power house with a successful track record of quality production and reliable service support to the local, regional and international oil operators.

One of Delta’s integral features is its commitment to quality. Our facility is approved by the American Petroleum Institute to apply the API monogram on all products, while adhering to material standards such as API, NACE, ASTM, and ASME.

We are merely the only global company that offers innovative designs, state of the art manufacturing, workshop and field support services for wellhead equipment, valves, actuators and flow control products. DC’s manufacturing facility is certified to API 6A, 16A, 5CT, 16C, 6D and 7-1 products, in addition to ISO 9001, ISO/TS29001, and Q1. Our products meet all the relevant standards for material supply such as NACE, ASTM and ASME requirements. We offer all kinds of wellhead services from field installation, testing and servicing, right up to shop testing, servicing, refurbishment and modification.
To be a global leader in the manufacturing and servicing of wellhead equipment and valves. Recognized for competence in tailoring the most meticulous designs, expertise in producing immaculate products, servicing all stages of maintenance and commitment to overall quality.
Delta Mission

To develop mutually beneficial relationships with our stakeholders, aiming toward preserving sustainable growth.

We are committed to delivering the most innovative and cost-effective engineering designs and solutions.

To deliver value through creative problem-solving and constant innovation.

To move beyond existing ideas and procedures, to discover new and interesting ways to change the playing fields.
Delta Corporation has an unrivalled quality control system in place to ensure that all our products meet the highest international standards. Qualified auditors monitor the company’s practices on an annual basis to verify the application of exceptional standards.

Our commitment to quality is one of the main reasons for our success in the industry and our accreditations are the ultimate scorecards.
QMS

HSE
Wellheads & Valves
Delta offers a full range of wellhead systems for both onshore and offshore services, and for high and low pressures. All Delta systems are manufactured to comply with the latest edition of API 6A specifications.

DC manufactures wellhead systems using various types of materials, i.e. carbon steel, stainless steel and inconel materials with temperatures ranging from -60 up to 121°C and pressure from 2,000 to 15,000 PSI. In addition, Delta offers product specification levels and performance requirements to suit all customers’ needs.

The interchangeability of this product line allows Delta to supply wellhead equipments to customers that may have used products from other vendors or manufacturers.

<table>
<thead>
<tr>
<th>Material Class</th>
<th>AA, BB, CC, DD, EE, FF, HH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Rating</td>
<td>K, l, N, P, S, T, U, V</td>
</tr>
<tr>
<td>Pressure Rating (PSI)</td>
<td>2000, 3000, 5000, 10,000, 15,000</td>
</tr>
<tr>
<td>PSL Level</td>
<td>1, 2, 3, 3G, 4</td>
</tr>
<tr>
<td>PR Level</td>
<td>1, 2</td>
</tr>
</tbody>
</table>
Casing Head Housing

The Casing Head Housing is provided with a straight bore bowl design, which avoids damage to sealing areas by drilling tools and prevents test plug and bowl protector wedging problems when pressure is applied. It also allows accepting various slip and seal casing hanger types such as manual, automatic, or mandrel casing hangers. This straight bore design also reduces maintenance costs and permits suspension of heavy casing loads.

<table>
<thead>
<tr>
<th>Types</th>
<th>C21, C22, C29</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size Range</td>
<td>9” – 30”</td>
</tr>
<tr>
<td>Bottom Connection</td>
<td>Slip on Weld, BTC, Slip Lock</td>
</tr>
<tr>
<td>Outlet Preparation</td>
<td>Studded Face, Line Pipe Threaded</td>
</tr>
</tbody>
</table>

Combination tools are available for test plug, bowl protection, retrieving tools, applications for use in the C21, C22 and C29 Casing Heads. The Bowl Protector minimizes wear in the casing head bore caused by the rotating drill pipe. Combination tool allows testing of the BOP and connections above the casing head and for running and retrieving.
Casing Head Spool

The Casing Head Spool has a top bowl to accommodate the casing hanger. The spool also has a bottom bowl with a packoff seal to accommodate various types of secondary seals, and a bottom flange or clamp hub for mounting it on top of a casing head or previous spool. Outlets are provided for annular access. Multiple casing spools may be stacked to hang intermediate and production casing strings.

Casing Head Spools provide interchangeability of casing hanger types. If a bowl protector is required, a hold down flange with lock screws can be used.

<table>
<thead>
<tr>
<th>Types</th>
<th>C21, C22, C29</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Flange Size Range</td>
<td>7”-30”</td>
</tr>
<tr>
<td>Bottom Flange Size Range</td>
<td>9”-30”</td>
</tr>
<tr>
<td>Secondary Seal Types</td>
<td>P-Seals, FS-Seals, and X-bushings</td>
</tr>
<tr>
<td>Outlet Preparation</td>
<td>Studded Face (Including VR Plug Prep.)</td>
</tr>
</tbody>
</table>
Casing Hangers

Slip-Type Casing Hangers provide a method to transfer the weight or tension load of a casing string to a casing head or spool. Slip-type hangers are available in automatic-sealing and manual-sealing varieties. Automatic hangers have seals that are energized by casing weight, while non-automatic hangers have seals that require means other than casing weight to be energized. Non-automatic hangers are typically used when insufficient load is available or when cementing back to the surface.

The slip and seal assembly suspends and seals casing strings simultaneously. Compression-type annulus seal is automatically energized by casing load before blowout preventers are removed. Hangers can be lowered through blowout preventers and landed either before or after cement has set. Spring-loaded latch on the C22 hangers locks automatically and securely when hanger is installed around casing – no separate screws or latches are necessary sealing element, slip bowel, and slips are preassembled in an easy-to-handle unit. Only 50,000 to 60,000 pounds are normally needed to energize the annulus seal. API ratings for specific weight and grade of pipe are available on request.

<table>
<thead>
<tr>
<th>Types</th>
<th>C21, C22, C29</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size Range</td>
<td>26”Nom.X20”Csg. – 7”Nom.X2 3/8”Tbg.</td>
</tr>
</tbody>
</table>
C22 Casing Hanger

Combined in a single unit, the C22 wrap around casing hanger incorporates packoff, slip bowl and slips. When the casing load is suspended, the packoff automatically seals the casing annulus below the slips, thus providing annulus packoff before the removal of the blowout preventer.

The C22 hanger’s controlled friction reduces casing deflection, can be easily installed and is economical.

C29 Casing Hangers

The C29 Casing Hanger provides high hanging capacity with minimum casing deflection. When the upper slips move down and energize the packoff, the C29’s non-tapered lower slips engage automatically and apply controlled compression. The lower slips do not move down the pipe and do not create the high compression forces, as conventional tapered slips.

C21 Casing Hanger

Slip, slip bowl and a type H packoff seal rings are all combined in the C21. The type “H” packoff provides a positive annulus packoff after the casing has been suspended and cut off.
Tubing Spools

The Tubing Head is the top spool on a surface wellhead assembly. It is installed after the last hanger or production casing/tubing annulus seal. When the well is completed, the tree is installed on top of the tubing head with a tubing head adapter.

Tubing heads are provided with a straight bore bowl design to accommodate the outer profile of a tubing hanger. Tubing hangers come in single or dual forms for single and multiple completions in working through various pressure ratings and sizes to meet all single or multiple completion requirements.

If conversion from existing single completion to multiple completions should be required, a TC attachment can be installed on top of any existing head.
Type TCM tubing head is identical with TC tubing head, but it has no aligning pin.

<table>
<thead>
<tr>
<th>Types</th>
<th>TC &amp; TCM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Flange Size Range</td>
<td>7.1/16” to 13.5/8”</td>
</tr>
<tr>
<td>Bottom Flange Size Range</td>
<td>9” to 20.3/4”</td>
</tr>
<tr>
<td>Secondary Seal Types</td>
<td>P-Seals, FS-Seals, X-Bushing, &amp;</td>
</tr>
<tr>
<td></td>
<td>Rough Casing Meta Seal</td>
</tr>
<tr>
<td>Outlet Preparation</td>
<td>2.1/16” Outlets</td>
</tr>
</tbody>
</table>

with the same size and pressure-rating flange.
Tubing Hangers

Tubing Hangers are installed in the top bowl of a tubing head. Tubing hangers suspend the tubing and provide a primary annulus seal between the tubing and production casing. Hangers are run through the blowout preventers and land in the top bowl of the tubing head. Tubing hangers are available for any type of tubing completion. Tubing hangers also act as a means to access and manipulate additional smaller tubing lines that are utilized down hole and extended to the surface on the outside of the tubing string or strings. Packoffs allow tubing string manipulation for setting packers or displacing fluid while sealing the annulus between the tubing and the production casing. As well as self energized GSE seals that are installed on the extended neck to automatically seal when positioned in the assembly. GSE seals will isolate production/injection fluids from other pressure chambers throughout the tubing head assemblies.

Manual Tubing Hanger

Manual Tubing Hanger is supplied with back-pressure valve threads and body seals that will activate manually by the lockdown screws.

Self Energized Tubing Hanger

The Self-Energized Extended Neck-Tubing Hanger is supplied with back-pressure valve threads and annular dovetail body seals or GSE seals that will self energize and seal without the aid of a lockdown screw.
EFT Tubing Hanger

EFT Tubing Hanger and related equipment offers a simplified but highly efficient method of running a high voltage electrical conduit into a wellhead assembly when completion demands an electric driven submersible pump.

Threaded or split-type hangers and adapters can be used with the Delta EFT system. This design can be accommodated up to 2500-volt systems. The entire EFT tubing hanger assembly can be run or retrieved through the stack.

Dual Tubing Hanger

The Dual Tubing Hanger systems comes in two different forms, Single Body & Split Body types. Both are compatible with the “TC Tubing Head Spool” that require perfect alignment using the alignment pin mechanism.

The main feature of the dual hanging system is to allow isolating & suspending two different strings that are either producing or injecting from or into two different formation zones.
Delta Straight Bore Metal Seal (DSBMS)

These are interference fit seals with pressure intensified sealing. Seal at low pressure as well as high pressure up to 15,000 psi. Easy for installation and replacement. Seal ID will allow free passage for the BPV or TWC. Applicable for single and dual tubing hangers.

Available sizes are 2 1/16” to 7 1/16” Nom. bore sizes.
Delta Rough Casing Metal Seal (DRCMS)

The Delta Rough Casing Metal Seal (DRCMS) is a primary seal that provides a gas-tight metal seal against non-machined casing surfaces. Seal at low pressure as well as high pressure up to 15,000 psi. Nibs on ID seals against the casing & tapered OD seals against tapered ID of the spool. The metal seal is energized by easily making up the flange, spacer rings are available with different thickness for adjustment. Seal rings are available with different ID to match the casing tolerance of API 5 CT standard.

Available for casing sizes 5” to 13 5/8”
Tubing Adapter

The Tubing Head Adapter provides a transition between the tubing head and the christmas tree. The bottom adapter connection matches the tubing head, and the top adapter connection matches the tree. Tubing head adapters are available for all types of single and multi-string completions, including those using electric submersible pumps, packers, down hole control valves and gas lift valves. These adapters come with threaded, flanged or studded-flange top connections.

Most tubing head adapters are available with hydraulic supply inlets for down hole control lines. If the customer requires, Delta also supplies various types of adapters that will accommodate continuous control-line capabilities and test ports for testing seals between the casing and the tubing.

The most commonly used tubing adapters. (Available with or without control line)
EFT/ESP Adapters

Adapter Flange
Simple transition piece between the tubing head and the tree, and is available with flanged or studded top connection.

EFT Adapter Flange
ESP Adapters have seal bores to accommodate both a tubing hanger neck seal and an electrical power feed-thru device. Standard ESP adapters are made from single piece body. Positive alignment can be obtained through the use of optional features in the mating ESP Hanger and Spool. ESP adapters can be supplied to match standard tubing heads, rated with working pressure up to 10,000 psi.

EFT Rotating Type Adapter Flange
Rotating EFT Adapters are equipped with rotating flanges to mate to the tubing head, minimizing concerns over alignment issues. EFT adapters can be supplied to match standard tubing heads rated to 2,000 and 10,000 psi working pressure. Control line preparation and ESP preparation is optional and is available upon customers’ request.
X-mas Trees
**X-mas Trees**

**Composite Tree**

Composite Trees generally consist of the following:

Studded adaptors, tree caps, specific number of gate valves & Surface Safety Valve (Wireline & Pneumatic), chokes and studded tees or crosses upon customer request. The tree cap can have different threads such as VAM, LTC, EUE, etc. We can also provide actuated valves for safety purposes. Chokes can be positive or adjustable depending on the customer requirements. All these configurations can be provided with different sizes ranging from 2-1/16” to 7-1/16” with also different pressure ratings and PSL requirements.

<table>
<thead>
<tr>
<th>Types</th>
<th>Cross Type, Tee Type, &amp; Y-Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Size Range</td>
<td>2.1/16” to 7.1/16”</td>
</tr>
</tbody>
</table>
Single Block Tree

Delta has manufactured several sizes of Solid Block X-Mas Trees with manually operated valves and actuator operated valves. The range manufactured covers single bores and dual bores.

The advantages of going for a solid block tree are reduced overall height, reduced potential leak paths and easier installation.

Delta valves can be integrated into tree blocks using API end connections and outlet connections as covered by API 6A. The associated tubing hanger sealing systems are designed accordingly to provide an overall integrated design installation. With the most modern CAD design facilities (Solidworks/FEA), Delta can quickly produce a design for a desired integral tree block configuration.

The single block tree is manufactured to the same high standards and generally from the same materials as Delta valves and can incorporate Delta’s hydraulically operated, wireline-cutting-and-sealing valves. These valves are designed to be fail-safe in an emergency and to cut braided and slickline wires. A variety of proprietary actuators can be offered for this duty.

For services where higher corrosion levels may be experienced and/or H25 embrittlement may be expected, integral tree blocks provide an economic solution by means of inconel cladding of bores, sealing areas and valve cavities.

| Nominal Size Range | 2.1/16” to 7.1/16” |
Dual Block Tree

Delta can provide customers with several sizes of Dual Block X-Mas Trees having manual operated valves and actuator operated valves.

The purposes of using Dual Bores is producing oil from different levels inside the same well and using it for multi-lateral drillings.

Delta valves can be integrated into tree blocks using API 6A standards.

The associated tubing hanger sealing systems are designed accordingly to provide an overall integrated design installation.

With the most modern CAD design facilities (Solidworks/FEA), Delta can quickly produce a design for a desired integral tree block configuration. This is manufactured to the same high standards and generally from the same materials as Delta valves and can incorporate. Delta’s hydraulically operated, wireline-cutting-and-sealing valves as indicated opposite. These valves are designed to fail-safe in an emergency and to cut braided a slickline wire. A variety of proprietary actuators can be offered for this duty.

For services where higher corrosion levels may be experienced and/or H2S embrittlement may be expected, integral tree blocks provide an economic solution by means of Inconel cladding of bores, sealing areas and valves cavities. To the left is a typical assembly drawing for a Delta dual block tree with the following specifications:

| Nominal Size Range | 2.1/16” to 3.1/8” |
Tree Caps are installed on the top of X-mas Trees for quick access to the tubing bore via a tester or lubricator adapter for bottom hole testing, installing back-pressure valves, etc. The bottom hole test adapter allows a flexible means of entry into the tubing bore. Bottom hole test adapters are used where an integral flanged unit is preferred. These adapters are furnished within the size range 2.1/16” to 7.1/16” and working pressures up to 15,000 psi. OTIS type tree caps are most commonly used.
Gate Valves

Delta’s Gate Valve has been proven in critical oil field services throughout the world. Its low cost, rugged dependability and ease of operation should make it your choice when you need reliability in the field. Delta offers gate valves in various sizes from 1\ 13/16” to 7 1/16” and 2,000 psi through 15,000 psi pressure ratings, and in various trims and body materials to meet your specifications.

<table>
<thead>
<tr>
<th>Types</th>
<th>TC, STC Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Size Range</td>
<td>2.1/16” to 7.1/16”</td>
</tr>
</tbody>
</table>

Model ‘TC’ Gate Valve

Delta also offers the ‘TC’ Model Gate Valve, built and tested to comply with appendix F - performance verification procedure level PR2. The ‘TC’ model has a thick solid gate attached to the valve stem with a T-shaped nut, that allows the gate to float, reducing deflection and bending. The float mechanism eliminates the pressure lock and requires minimal torque to operate.
Delta Model ‘STC’ Gate Valve

Delta Model ‘STC’ Gate Valves are API 6A slab gate for 2000 to 15,000 psi service. Delta STC gate valves are available for API 6A sizes 1 13/16” through 9” for temperature ratings K through V in PSL 2, 3, 3G and 4. Various body and trim materials are available to suit customer requirements. STC gate valves are API 6A Annex F (PR-2) certified and come with the highest quality standards.

Major operational features of the Delta model ‘STC’ gate valves are:

• Full bore through conduit API 6A flanged slab gate valve
• Metal to metal sealing on backseat, body-seat, seat, gate and body-bonnet interfaces ensuring sealing under all operating conditions.
• Excellent low pressure, low temperature sealing by the use of self-energized PTFE seals.
• Seat and gate faces are coated with tungsten carbide, which is highly corrosion resistant.
• Non-rising stem design.
• Forged body and bonnet for all material classes.
• Low operating torque by the use of thrust bearings.
• Simple maintenance and service without the use of special tools.
• Self-energized stem packing.
DLS-R Model Gate Valve

The DLS-R gate valve is a full-bore through valve designed to meet the requirements of API 6A and NACE MR-01-75. Its design makes it ideally suited for Fracturing applications.

- The proven ball screw mechanism and lower stem are incorporated into the DLS-R gate valve to minimize the actuating torque.
- Sealing at the gate-to-seat and the seat-to-body is metal-to-metal.
- The simplified gate and seat design has a minimum number of parts. One-piece seats and a slab gate ensure dependable sealing and simplified field service. The gate and seat combination seals in both directions.
- In addition to the metal-to-metal seal between the seat and valve body, two spring loaded, non-elastomeric seals provide maximum protection against intrusion of particle contaminates into the valve cavity, improve gate and seat service life, prevent damage to the body-to-seat seal face, and improve valve performance at very low pressures.
- The stem packing is a pressure energized seal and can withstand severe temperatures and fluids. It is constructed of a non-elastomeric material that offers a low coefficient of friction.
- The seal between the valve body and both bonnets is a pressure-energized, BX-style metal bonnet gasket.

<table>
<thead>
<tr>
<th>Type</th>
<th>DLS-R Model Frac Valve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Size Range</td>
<td>5” 10,000 PSI Working Pressure</td>
</tr>
<tr>
<td>Nominal Size Range</td>
<td>7” 10,000 PSI Working Pressure</td>
</tr>
<tr>
<td>Nominal Size Range</td>
<td>5” 15,000 PSI Working Pressure</td>
</tr>
<tr>
<td>Nominal Size Range</td>
<td>7” 15,000 PSI Working Pressure</td>
</tr>
</tbody>
</table>
Choke Valves

<table>
<thead>
<tr>
<th>Choke Types</th>
<th>Adjustable Chokes &amp; Positive Chokes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Design</td>
<td>Angle type</td>
</tr>
<tr>
<td>End Connections</td>
<td>Flanged or Threaded ends</td>
</tr>
</tbody>
</table>

Adjustable Choke

The basic Adjustable Choke has threaded connections for use on pressure rating systems. It can be converted to a positive choke by changing bonnet and trim.
Positive Choke

All Delta Positive Chokes come with a one-piece bean, which can be easily changed without removing the choke from the production line. After shutting the well, pressure is bled from the choke body.

Then the bonnet is removed and a bean wrench is used to remove and replace the bean. The various sizes of positive beans allow the production flow to be set as needed. It can also be converted into an adjustable choke.
Unitized Wellhead

The Split Head is a multi-bowl system, connecting two casing strings in a single head which improves safety and reduces installation time.

Features:
- Saves installation time
- Flexible system
- Reduces BOP/diverter handling
- Alternate casing programs
- Accepts standard completion equipment
- Fluted mandrel casing hanger allows cement returns up through BOP stack

The Split Type Unitized Wellhead is a new generation of conventional wellhead. It is compact and has a vertical straight bore, which helps in saving installation time.

Its straight bore gives it the advantage of installing casings and tubing sequentially without the need to nipple-down and nipple-up BOP at each stage.

BOP is installed one time only at the beginning of the drilling process and this saves the time of repeating BOP nippling down and up processes.

In addition to that, the split type unitized wellhead can be split to act as a conventional wellhead in contingency cases, where each casing or tubing size are suspended from an individual spool or head.
Surface Safety Valves
Delta Hydraulic Actuated Valve (DHAV)

1. General Description

Delta Hydraulic Actuator (DHAV) is designed to be used in conjunction with Delta valve bonnets, to provide open and close control for major brands of API 6A through conduit reverse acting gate valves fitted to oil and gas wellheads and production flow lines.

Suitable for offshore and onshore locations and ideal for use in H2S and CO2 applications, the Delta range of hydraulic piston actuators provides a simple and reliable valve automation solution.

The DHAV is available in 2.1/16” through 7 1/16” nominal valve sizes with various pressure ratings.
2. Operating Principle

Valve actuation is achieved by applying hydraulic pressure to a piston in a closed housing, thereby exerting a force which compresses springs and extends a valve stem. This action is designed to open a reverse acting gate valve (or close a direct acting gate valve).

The valve is returned to its fail position upon release of the piston pressure. The actuator ensures that a fail position is achieved through the use of valve body pressure acting on the valve stem diameter, assisted by coiled springs. The springs provide rapid and reliable valve shutdown when there is little or no valve body or flowline pressure available.

The hydraulic actuator can be supplied to API 6A SSV to meet the quality assurance and test requirements of API 6A and Q1. The standard actuator must be supplied to meet the NACE MR0175-2003 requirements.
Delta’s Line Pressure Operated (DLPO) Surface Safety Systems are hydraulically operated flow line control valves, arranged to protect a facility from the effects of pipeline failures.

The primary function of the Line Pressure Operated Surface Safety System is to detect any abnormal high or low flow line pressure deviations and respond to it by shutting down the streamline.

The DLPO valve is an actuated gate valve controlled by hydraulic pressure fed from the pipeline stream, thus it is well-suited for remote unattended locations. The DLPO is normally closed, preventing the flow from the upstream to downstream, and it will open only if the pressure amount of the upstream side falls within a specific pressure range.

This pressure range is defined by two pressure sensors, one for high pressure sensing (High Pressure Pilot) and one for low pressure sensing (Low Pressure Pilot).

Each pilot has its own technical function and its set pressure knob.

Available in 2 1/16” through 7 1/16” nominal valve sizes with various pressure ratings.
The Self Contained Surface Safety Valve (SCSSV) uses hydraulic fluid pressure generated by a manual hand pump. Its major use is to protect facilities from the effects of pipeline failure and abnormal conditions. Unlike DLPO systems, line pressure is not used to operate the SCSSV system.

The Surface Safety Valve system is designed for remote shutdown of wellheads or flowlines that encounter a high or low pressure condition. It is operated by high and low pressure pilots sensing the flow line pressure, which enters the system through a tap in the upstream flange of the valve.

The optional ESD emergency shutdown system can be used to enable field operators to shut down the flow line at any desired time during production, testing or maintenance operations.

Available in 2.1/16” through 7 1/16” nominal valve sizes with various pressure ratings.
Solar Control System

System Operation

The solar panel uses the sunlight energy to compress enough air pressure to operate the pneumatic SSV. This technique allows the equipment to be used in an unattended or isolated location.

In normal operation, air pressure is supplied to the actuator from the air receiver through the inlet port at the top of the actuator, which holds the valve in an open position, by compressing the actuator spring. If the line pressure should rise or fall outside the set pressure sensing range of the hi-low pilot, the pilot switches to its exhaust position, releasing air pressure from the actuator.

As the air pressure is released from the actuator, the spring moves the gate of the valve to the closest position.

Major System Components

- Surface Safety Valve
- Pneumatic Actuator
- Solar Panel and Control Panel
- Battery Storage
- Voltage Controller
- Explosion Proof Motor
- Air Compressor
- Air Receiver
- Control Panel and Housing.
Capabilities & Services
PR2

1. Hydraulic Ram
2. Cooling Facility
3. Heating Facility
4. Data Acquisition System

Hydraulic Ram

Double Acting Hydraulic Ram with capacity of 2,000,000 lbs. can be used to perform load cycling test for different types of hangers. Different pulling adapters can be connected to its heavy duty piston in order to match with wide size range of hangers.
Cooling Facility

Different sizes of testing chambers fitted with heat insulation layer and required injection parts to minimize the use of liquid nitrogen and precisely control the tested, e.g. at the required low temp.
Heating System

Heating system is used for heating equipments to achieve high temperature qualifications that are required by API 6A. The heating capacity of this system can go up to 1200 degree Celsius / 2192 degree Fahrenheit.
Data Acquisition System

Provide full control of test data performed by collecting readings every second those data could be pressure, temperature, deflection, strain, etc. After that, the appointed data can be easily processed to get the required information.

Example: strain gauges can be attached to any test specimen and while performing the test, data acquisition sys. collects as many point as required and then process them to get the needed information such as stress strain diagram.
At Delta, we have invested heavily in weld overlay cladding capabilities to provide our customers with the full Cladding and Machining package.

Delta has the weld overlay technology to clad bores from 2” up to 48” diameter.

Our experienced weld overlay technicians operate four Fronius ETR, two Fronius CCC and one polysoude cladding system.

We have pre-heating machines and in-house PWHT furnace (8 tons).

**Qualified Weld Overlaying Procedures**

Delta cladding has developed weld overlaying procedures for Ni based alloys (625) and Stainless Steel (316L) on C.S or Low Alloy Steel parent materials used specifically in the oil and gas industry.

These welding procedures are fully qualified and endorsed based on customer’s specifications, ASME Sec. IX and API 6A.
Quality and Testing

We provide customers with Non-Destructive Testing (NDT) including MPI, DPI, PMI and Ultrasonic Testing.

Full NDT documentation packages are provided upon the completion of all weld overlay projects to assure customers the highest quality standards.

Continuous Improvement

With the additional support, Delta Corporation is committed to improving the quality and value of the engineering services offered to customers.
High Velocity Oxy-Fuel thermal coating

HVOF or High Velocity Oxy-Fuel thermal coating is a state-of-the-art coating process, where particles of harder material are accelerated in a high temperature and pressure flame generated from combustion of liquid fuel and pure oxygen. The accelerated high temperature particles are fused into the base material’s surface creating a layer with enhanced mechanical properties.

HVOF coatings mainly provide high wear and corrosion resistance in addition to protection against galling of sliding surfaces.

Currently we are providing coating solutions with Tungsten Carbide and Stellite 6 materials, with the capability of spraying several other types of materials upon customer’s request and compatibility of the system.

Main benefits of Thermally Sprayed Tungsten Carbide Coating are:

- Higher density coatings; lower porosity.
- Better wear resistance due to harder coatings.
- Higher bonding strength to the substrate material and improved cohesive strength within coating itself.
- Less degradation of carbide phases which results in higher coating hardness.
- Improved corrosion resistance due to the less porosity present in the coating.
- Lower presence of oxidation due to less in-flight exposure.
Typical applications of Tungsten Carbide Coating include:
- MTM technology ball valves and seats
- Gate valves
- Valve actuators
- Stems

Our current setup also includes fine surface finishing capabilities for the above materials such as surface grinders and lapping equipment.

<table>
<thead>
<tr>
<th>TC Coating</th>
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<tr>
<td>Property</td>
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<tr>
<td>Coating Micro Hardness</td>
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<tr>
<td>Finished Apparent Porosity</td>
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<td>Bonding Strength</td>
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<td>Coating Thickness</td>
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<td>Final Surface Finish</td>
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After Sales Services

Precise industrial solutions

Delta Corporation has the reputation and capabilities for repairing valves of all types, sizes and pressure ranges. We service Gate, Globe, Check, Plug, Ball, Butterfly, Control and Safety Relief Valves. We also do refurbishment of pneumatic, hydraulic and electric actuators and calibration of pressure gauges.

Supported by 38 years of experience in valve manufacturing. DC works closely with major Oil & Gas operators, industrial plants and OEM’s, to assure optimal operation of installed valves – by offering preventive maintenance schemes and emergency response during breakdown times.
Delta Corporation has a large team of experienced and well-trained valve engineers and technicians who support our client’s requirements either at shop or onsite.

**Our services include:**

- Hydrostatic & low pressure testing as per API 598 & 6D.
- Repairing, and overhauling of pipeline valves such as gate, ball, globe, check, etc.
- Diagnostic services, calibration, and overhauling of Control Valves.
- Manufacturing of spare parts.
- Installation and commissioning of valves for new projects.
- Rental of testing rigs and tools including Pumps and Blind Flanges.
- Valve cleaning for oxygen service.
- Asset management, maintenance planning, and procurement services.
- Valve inspection identification Service.
- Valve Modification.
- Polishing of valve ball for Ball Valves.
- Testing, calibration, and overhauling of Pressure Relief Devices “PRD” including Conventional type, Pilot operated type, and Breather/Vacuum valves.
- Trevi test for Safety Valve (online testing).