THE CHALLENGES

TODAY’S MARKET DEMANDS COMPLEX PROCESSES THAT COMPLY WITH STRINGENT REGULATIONS GOVERNING UPSTREAM APPLICATIONS

That is why our engineers are dedicated to understanding the complexity and ever changing oil and gas processes.

We have developed NACE MR0175/ISO1516-2009 compliant gauges, seals, transducers and switches designed to perform in wellheads, offshore rigs and shale fields. These instruments are also designed to meet the latest industry standards and regulations:

- ATEX, CE, UL and FM approved explosion/flame proof transducers
- ATEX, CE, UL, CSA, FM and IECEx approved explosion/flame proof, SIL 3 capable switches
- 316 SS corrosion and ingress resistant enclosures

At Ashcroft, we go beyond manufacturing. We are here to help you find the best instrument or assembly for your process.

Our team has extensive experience working to counter the potential effects of stress corrosion cracking in sour environments. We will engineer custom solutions to perform in processes where pressure spikes and pulsation can occur to meet unique installation requirements. Together we will determine the best instrumentation for your applications, as we did in the following case studies.
CASE STUDY

1109 Gauge Assembly

Products: 1109 Pressure Gauges
510 (XHP) All Welded Diaphragm Seal
Pressure Limiting Valve
Failure Mode: Gauge must meet strict
specifications and corrosion resistance
Process Media: Chemical injection, oil and gas
Maximum Pressure: up to 10,000 psi

The Problem:
An engineering company was awarded a contract to provide front end engineering design for an offshore tension leg platform (TLP) located under 3,500ft of water. During their review, they discovered that the requirement for ASME compliant gauges had not been met. Also, the gauges did not meet the unusually stringent overpressure requirements designated for the platform. The company was also bearing the expense of prohibitively high cost Monel® pressure limiting valves due to direct contact with corrosive media.

The Solution:
To fulfill platform requirements, Ashcroft offered the ASME compliant 4½˝ 1109 solid front gauge. With an optional 316L stainless steel case, the gauge was well suited to the salt spray environment, while the addition of the PLUS!™ Performance option kept the pointer stable despite process vibration.

The gauge was isolated from the corrosive media by a 510 diaphragm seal with Monel® wetted parts. The pressure limiting valve was relocated between the diaphragm seal and the gauge, isolating it from the corrosives as well. As a result, a 316 stainless steel valve could be used in place of the Monel® version, substantially lowering the cost of the assembly.

The platform now operates with the required ASME compliant pressure measurement instruments, and safely resists damage caused by corrosive media and salt spray. The new selection and configuration of component devices also lowered the cost of the assembly.

1109 Pressure Gauge, PLV and 510 (XHP) Diaphragm Seal

1109 SPECIFICATIONS
Accuracy: ±0.5% of span (ASME B40.100 Grade 2A)
Dial Size: 4½˝
Process Connections: ¼ NPT or ½ NPT
Pressure Ranges: Per diaphragm seal rating

1109 WETTED MATERIALS
Tube: 316L SS
Process Connection: 316L SS

1109 NON-WETTED MATERIAL
Case: 300 Series SS, 316 SS (OPT.)
Ring: 300 Series SS, 316L SS (OPT.)
Pressure Relief Back: 300 Series SS, 316L SS (OPT.)

PRESSURE LIMITING VALVE
Wetted Materials: 316L SS, 316Ti SS and 304 SS
Max. Pressure Rating: 14,500 psi
Max. Temperature Rating: 175°F (80°C)

510 (XHP) ALL WELDED DIAPHRAGM SEAL
Max. Pressure Rating: 10,000 psi at 212°F (100°C)
Bottom Housing: 316L SS, Hastelloy® C276, or Monel®
Diaphragm: 316L SS, Hastelloy® C276, or Monel®
Fill Fluid: Silicone
CASE STUDY

1259 Mounting

**Products:** 1259 Pressure Gauge  
**Failure Mode:** Gauge must be mounted on a pipe  
**Process Media:** Crude Oil  
**Operating Pressure:** 10 and 16 Bar

**The Problem:**  
A floating production, storage and offloading vessel (FPSO) was working 200 miles offshore. These vessels pump up to 150,000 barrels per day from existing wells, and store the oil onboard. Oil is then transferred to shuttle tankers. The Ashcroft® 1259 pressure gauge was the specified instrument to measure the pressures on discharge pumps. Due to the unusual location of the pressure port and the effects of the machinery, the gauge needed to be remotely mounted on a 2” pipe located ten feet away from the pressure source.

**The Solutions:**  
Stainless steel hardware was specially engineered by Ashcroft to adapt the 1259 gauge to a pipe mount configuration. Stainless steel brackets were then designed to allow the gauge to be safely and securely clamped to the 2” pipe for remote reading.

<table>
<thead>
<tr>
<th><strong>1259 SPECIFICATIONS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accuracy:</strong></td>
</tr>
<tr>
<td><strong>Dial Size:</strong></td>
</tr>
<tr>
<td><strong>Process Connections:</strong></td>
</tr>
<tr>
<td><strong>Pressure Ranges:</strong></td>
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</table>

<table>
<thead>
<tr>
<th><strong>1259 WETTED MATERIALS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tube:</strong></td>
</tr>
<tr>
<td><strong>Process Connection:</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>MOUNTING BRACKET</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Material:</strong></td>
</tr>
</tbody>
</table>
1209 PRESSURE GAUGE

FEATURES
- Solid front case design with full pressure relief back
- PLUS™ Performance
- 316L SS case and ring

SPECIFICATIONS
- Accuracy: ±0.5% of span (ASME B40.100 Grade 2A)
- Dial Size: 4½”
- Ranges: Vacuum, compound, 20,000 psi
- Weather Protection: IP65 hermetically sealed
- Process Connection: ¼ NPT or ½ NPT

WETTED MATERIALS
- Tube: 316L SS
- Process Connection: 316L SS

NON-WETTED MATERIAL
- Case: 316L SS
- Ring: 316L SS
- Pressure Relief Back Cover: 316L SS

2008 PRESSURE GAUGE

FEATURES
- Corrosion resistant SS case
- Case welded mounting flange
- True Zero™
- High burst pressures

SPECIFICATIONS
- Accuracy: ±1.6% of span
- Dial Size: 63mm (2½”)
- Ranges: Vacuum, compound, 15 to 15,000 psi
- Weather Protection: IP65 and NEMA 4 for water and dust ingress
- Process Connection: ¼ NPT

WETTED MATERIALS
- Tube: 316L SS
- Process Connection: 316L SS

NON-WETTED MATERIAL
- Window: Polycarbonate
- Case: 304 SS or 316L SS
- Ring: 304 SS or 316L SS
### T5500 & T6500 Pressure Gauge

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>±1.0% of or ±0.5% of span (OPT.) (EN 837-1, Class 1)</td>
</tr>
<tr>
<td>Sizes</td>
<td>100mm (4”) or 160mm (6”)</td>
</tr>
<tr>
<td>Ranges</td>
<td>Vacuum, compound, 15 to 15,000 psi</td>
</tr>
<tr>
<td>Weather Protection</td>
<td>IP66</td>
</tr>
<tr>
<td>Connections</td>
<td>¼ NPT or ½ NPT</td>
</tr>
<tr>
<td>Wetted Materials</td>
<td>316L SS or Monel</td>
</tr>
<tr>
<td>Case Material</td>
<td>304 SS or 316L SS (OPT.)</td>
</tr>
<tr>
<td>Ring and Back Cover</td>
<td>304 SS or 316L SS (OPT.)</td>
</tr>
<tr>
<td>Case Style</td>
<td>T5500: Open Front</td>
</tr>
<tr>
<td></td>
<td>T6500: Solid Front</td>
</tr>
</tbody>
</table>

### 5503 Differential Pressure Gauge

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>±1.6% of span (EN 837-1, Class 1.6)</td>
</tr>
<tr>
<td>Sizes</td>
<td>100mm (4”) or 160mm (6”)</td>
</tr>
<tr>
<td>Ranges</td>
<td>0-30 IWD to 300psi</td>
</tr>
<tr>
<td>Static Pressure</td>
<td>1450 psi, 3625 psi or 5801 psi</td>
</tr>
<tr>
<td>Connections</td>
<td>¼ NPT or ½ NPT</td>
</tr>
<tr>
<td>Wetted Materials</td>
<td>316L SS, Viton O-Ring</td>
</tr>
<tr>
<td>Case Material</td>
<td>304 SS or 316L SS</td>
</tr>
<tr>
<td>Ring</td>
<td>304 SS or 316L SS</td>
</tr>
<tr>
<td>Case Style</td>
<td>Open Front</td>
</tr>
</tbody>
</table>

### 2198 Microtube™ Siphon

**Features**
- For working pressure up to 5,000 psi
- For process temperature up to 800°F (427°C)
- Compatible with many process media
- For use with gauges, switches, transducers and diaphragm seals

### 1009 Pressure Gauge

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>±1.0% of span (dry)</td>
</tr>
<tr>
<td></td>
<td>±1.5% of span (liquid filled)</td>
</tr>
<tr>
<td>Sizes</td>
<td>2½” or 3½”</td>
</tr>
<tr>
<td>Ranges</td>
<td>1000SW: Vacuum, compound, 15,000 psi</td>
</tr>
<tr>
<td>Weather Protection</td>
<td>IP65 or IP54</td>
</tr>
<tr>
<td>Connections</td>
<td>¼ NPT or ½ NPT</td>
</tr>
<tr>
<td>Wetted Materials</td>
<td>SW: 316L SS</td>
</tr>
<tr>
<td>Case Material</td>
<td>304 SS or 316L SS (OPT.)</td>
</tr>
<tr>
<td>Ring</td>
<td>304 SS or 316L SS (OPT.)</td>
</tr>
<tr>
<td>Case Style</td>
<td>Open Front</td>
</tr>
</tbody>
</table>

### 1279 Pressure Gauge & Diaphragm Seal

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>±0.5% of span (ASME B40.100, Grade 2A) (Gauge)</td>
</tr>
<tr>
<td>Size</td>
<td>4 ½”</td>
</tr>
<tr>
<td>Ranges</td>
<td>Per diaphragm seal ratings</td>
</tr>
<tr>
<td>Connections</td>
<td>¼ NPT or ½ NPT</td>
</tr>
<tr>
<td>Wetted Parts</td>
<td>Diaphragm and bottom housing</td>
</tr>
<tr>
<td>Case Material</td>
<td>Phenolic</td>
</tr>
<tr>
<td>Ring &amp; Pressure Relief Back Cover</td>
<td>Polycarbonate (Meets UL94V-0)</td>
</tr>
<tr>
<td>Case Style</td>
<td>Solid Front</td>
</tr>
</tbody>
</table>

### DF Flush Flanged Diaphragm Seal

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection Style</td>
<td>Flanges, flush diaphragm</td>
</tr>
<tr>
<td>Process Connection</td>
<td>ASME 1, 1½, 2, 3, or 4 NPS</td>
</tr>
<tr>
<td>Instrument Connection</td>
<td>¼ or ½ NPT Female</td>
</tr>
<tr>
<td>Flange Ratings</td>
<td>ASME 150, 300, 600, 900, 1500, 2500</td>
</tr>
<tr>
<td>Flange</td>
<td>Raised face or ring joint</td>
</tr>
<tr>
<td>Added Tolerance</td>
<td>±0.5% typical</td>
</tr>
<tr>
<td>Wetted Components</td>
<td>Diaphragm</td>
</tr>
<tr>
<td>Non-Wetted Components</td>
<td>Top housing and flange</td>
</tr>
</tbody>
</table>

### 2198 Microtube™ Siphon

### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Connection</td>
<td>¼ NPT, ½ NPT, G ¼ B or G ½ B</td>
</tr>
<tr>
<td>Instrument Connection</td>
<td>¼ NPT Female, ½ NPT Female, G ¼ B Female or G ½ B Female</td>
</tr>
<tr>
<td>Wetted Material</td>
<td>316L SS</td>
</tr>
<tr>
<td>MAWP</td>
<td>5,000 psi at 800°F (427°C)</td>
</tr>
</tbody>
</table>
### SPECIFICATIONS

**Accuracy:**
- **A-series:** ±2.0% of span; **B-series:** ±1.0% of span

**Ranges:**
- **A-series:** Vac to 15,000 psi; **B-series:** Vac to 3,000 psi

**Weather Protection:**
- **A-series:** IP67, NEMA 6
- **B-series:** IP66, NEMA 4X

**Explosion Proof:**
- **A-series:** IP67, NEMA 4X, 7, 9
- **B-series:** IP66, NEMA 7, 9

**Approvals:**
- **A-series:** UL, CSA, CE, CRN, SIL 3 Capable, RoHS
- **B7 Series:** FM, CSA, CE, CRN, SIL 3 Capable, RoHS2

**Wetted Materials:**
- **Sensing Element:**
  - **A-series:** 316L SS
  - **B-series:** Buna-N, Viton®, Teflon®, 316 SS or P-Monel®

### EI AND EL THERMOMETERS

**Accuracy:** ±1.0% of span

**Sizes:**
- 2”, 3” or 5”

**Ranges:**
- -80°F to 1,000°F (-50°C to 500°C)

**Weather Protection:**
- IP66, NEMA 4X

**Connections:**
- ¼ NPT, ½ NPT, plain or pointed

**Wetted Materials:**
- 316L SS or 304 SS

**Case Material:**
- 304 SS or 316L SS

**Mounting:**
- EI: Everyangle™, Rear or Lower
- EL: Everyangle™ (Liquid Filled)

### THERMOWELLS

**Process Connections:**
- Threaded
- Socket Welded
- Weld-In
- Flanged
- Van Stone

**Connections:**
- ½ NPSM or ½ NPT Male

**Wetted Materials:**
- 304 SS, 316 SS and others

**Shank Style:**
- Straight, Tapered or Stepped

**Bore Sizes:**
- 0.260” or 0.385”

### A2X AND A4 TRANSDUCERS

**Accuracy:** ±0.25%, ± 0.50% or ±1.00% of span

**Ranges:**
- 15 to 7,500 psia, 1.5 to 10,000 psig or compound to 100 psig

**Output:**
- **A2X:** 4-20 mA, 0-5, 0-10, 1-5, 1-6
- **A4:** 4-20 mA

**Connections:**
- ¼ NPT or ½ NPT

**Wetted Materials:**
- Diaphragm: 316L SS or 17-4 ph SS
- Process Connection: 316L SS

**Approvals:**
- **A2X:** Explosion/flame proof, cUL, ATEX, CE, FM (for intrinsically safe 4-20 mA output only)
- **A4:** Intrinsically safe/non incendive, CSA, FM, CE

### ACCESSORIES

**Types**
- Siphons
- Pressure Limiting Valves
- Needle Valves
- Capillaries
- Multiport Valves
- and More...