Pumping Solutions for Carbon Capture + Storage
SPX - An introduction

SPX is a Fortune 500 multi-industry manufacturing leader, headquartered in Charlotte, North Carolina. SPX manufactures and markets products, components, services and technologies that are integral to meeting today’s challenges and tomorrow’s needs. We are a place where innovation is fostered, and the real needs of business are understood. We transform ideas into powerful solutions to help our customers meet their goals, overcome business challenges and thrive in a complex, always changing marketplace.

SPX’s Flow Technology segment designs, manufactures and markets engineering solutions and products used to process, blend, meter and transport fluids. We also offer equipment for air and gas filtration and dehydration. Our leading brands have global operations which service the food + beverage, power + energy, and industrial processes.

SPX - An introduction

Our Extensive Brand Heritage:
- Union Pump - David Brown Pumps
- DB Guinard Pumps - American Pump - Pumpline
- Weir Pumps - Clyde Pumps - Mather & Platt
- Drysdale - WH Allen - Girdlestone
- Allen Gwynnes - Harland

ClydeUnion Pumps, an SPX brand - generations of experience

Whilst the name is relatively new, the ClydeUnion Pumps brand is known worldwide for supplying reliable and robust engineered pumping solutions stemming from over 140 years of industry expertise. Our experience spans across several complex industries including oil and gas, nuclear and conventional power generation, desalination and other key markets relevant to our product portfolio.

ClydeUnion Pumps
ClydeUnion Pumps, an SPX Brand, understands the needs of the Carbon Capture and Storage (CCS) market. After its formation in 2008, ClydeUnion Pumps brought together engineering expertise and experience from throughout its global organisation to create a specialist team focused solely on serving the CCS industry and meeting its specific requirements. ClydeUnion Pumps delivers best efficiency, performance and quality at market leading pricing.

The company is strategically aligned with customers’ requirements and is fully committed to their working practices, and the demands of scheduling, efficiency and reliability, demanded by the CCS industry. This allows ClydeUnion Pumps to build considerable advantages into the services offered.

Within the Carbon Capture and Storage market, ClydeUnion Pumps offers a comprehensive range of products covering all applications.

Driven by customer satisfaction

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CO₂ Capture Processes + Pumps

CARBON CAPTURE INVOLVES SEPARATING CARBON DIOXIDE FROM FLUE GASES

ClydeUnion Pumps boasts over 50 years of operational experience with CO₂ capture processes. Our high performance range of API 610 centrifugal and API 674 reciprocating pumps provide reliable solutions for solvent, water and auxiliary pump applications in CO₂ capture processes. These comprehensive ranges include overhung, between bearings and vertically suspended centrifugal options and a range of reciprocating models, offering first class flexibility and integrity.

Where API compliance is not required, our high quality industrial standard ANSI or ISO pump ranges further provide reliable, economic solutions for CO₂ capture processes. Both ranges offer some of the most comprehensive application coverage available through an extensive array of configurations and hydraulics.

KEY PROCESSES:

- **Post-combustion capture:**
  Pumps must handle lean and rich solvents as well as water, across a range of temperatures. A variety of solvents may be used, such as amines, ammonia, ethers or potassium carbonate.

- **Pre-combustion capture:**
  For post-combustion processes, pumps handle similar fluids across a range of temperatures and pressures.

- **Oxyfuel combustion capture:**
  This process avoids the need for solvents.
Solutions for CO₂ Compression, Transportation + Injection

KEY CHARACTERISTICS + BENEFITS

Our high performance range of API 610 centrifugal pumps are at the forefront of CO₂ pumping technologies. These pumps provide reliable solutions for compression, transportation and injection. The most common selections for CO₂ service for CCS would be multi-stage between bearings pumps.

With CO₂ pumping experience stretching back to the 1960s and injection experience to the early 1980s ClydeUnion Pumps is at the forefront of high pressure pipeline and injection service.

• Special wear parts for dry running in upset conditions
• Special elastomers and elastomer free designs
• Seal arrangements suitable for CO₂ service
• Bespoke hydraulic solutions for large flow variations

CCS selection matrix

<table>
<thead>
<tr>
<th>API 610 STANDARD CENTRIFUGAL</th>
<th>CUP DESIGNATION</th>
<th>FLOWS UP TO M³/Hr USGPM</th>
<th>HEADS UP TO M</th>
<th>SUITABLE FOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single stage API end suction pump</td>
<td>CUP-Oh2</td>
<td>1,700</td>
<td>7,500</td>
<td>350</td>
</tr>
<tr>
<td>Single stage API vertical in-line pump</td>
<td>CUP-Oh3</td>
<td>1,365</td>
<td>6,000</td>
<td>305</td>
</tr>
<tr>
<td>Single stage API vertical in-line pump</td>
<td>CUP-oh4</td>
<td>1,365</td>
<td>6,000</td>
<td>305</td>
</tr>
<tr>
<td>Multi-stage API vertical diffuser / turbine single case pump</td>
<td>CUP-VS1</td>
<td>7,000</td>
<td>31,000</td>
<td>600</td>
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<tr>
<td>Single stage pump pump</td>
<td>CUP-VS4</td>
<td>450</td>
<td>2,000</td>
<td>160</td>
</tr>
<tr>
<td>Multi-stage API vertical diffuser / turbine double case pump</td>
<td>CUP-VS6</td>
<td>7,000</td>
<td>31,000</td>
<td>600</td>
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<tr>
<td>Single / two stage API axially split between bearings pump</td>
<td>CUP-BB1</td>
<td>15,000</td>
<td>65,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Single / two stage API radially split between bearings pump</td>
<td>CUP-BB2</td>
<td>4,000</td>
<td>18,000</td>
<td>500</td>
</tr>
<tr>
<td>Multi-stage API axially split</td>
<td>CUP-BB3</td>
<td>3,750</td>
<td>15,000</td>
<td>3,250</td>
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<tr>
<td>Multi-stage API barrel radially split pump</td>
<td>CUP-BB5v</td>
<td>5,000</td>
<td>23,200</td>
<td>4,100</td>
</tr>
<tr>
<td>INDUSTRIAL STANDARD CENTRIFUGAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single stage end suction pump</td>
<td>ISOGLIDE</td>
<td>1,000</td>
<td>4,400</td>
<td>200</td>
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<tr>
<td>Single stage large end suction pump</td>
<td>AQAGLIDE</td>
<td>10,000</td>
<td>44,000</td>
<td>1,100</td>
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<tr>
<td>Single stage axially split between bearings pump</td>
<td>UNIGLIDE</td>
<td>2,500</td>
<td>11,000</td>
<td>300</td>
</tr>
<tr>
<td>Single stage axially split between bearings pump</td>
<td>UNIGLIDE-E</td>
<td>4,000</td>
<td>17,600</td>
<td>250</td>
</tr>
<tr>
<td>Two stage axially split between bearings pump</td>
<td>DUOGLIDE</td>
<td>2,500</td>
<td>11,000</td>
<td>300</td>
</tr>
<tr>
<td>Two stage axially split between bearings pump</td>
<td>DUOGLIDE-E</td>
<td>1,350</td>
<td>5,950</td>
<td>375</td>
</tr>
<tr>
<td>Single stage vertical in-line pump</td>
<td>VCM</td>
<td>410</td>
<td>1,800</td>
<td>150</td>
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<tr>
<td>API 614 OR INDUSTRIAL STANDARD RECIPROCATING PUMPS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power driven small (single acting plungers) - simplex/duplex/triplex</td>
<td>Small Power</td>
<td>17</td>
<td>75</td>
<td>6,600</td>
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<tr>
<td>Power driven medium (single acting plungers) - tripex/triplex</td>
<td>Medium Power</td>
<td>87</td>
<td>385</td>
<td>6,600</td>
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<tr>
<td>Power driven large (single acting) - tripex/triplex</td>
<td>Large Power</td>
<td>146</td>
<td>645</td>
<td>6,600</td>
</tr>
<tr>
<td>Steam driven simplex (direct acting)</td>
<td>Simplex Direct Acting</td>
<td>160</td>
<td>705</td>
<td>8,000</td>
</tr>
<tr>
<td>Steam driven duplex (direct acting)</td>
<td>Duplex Direct Acting</td>
<td>170</td>
<td>780</td>
<td>8,000</td>
</tr>
</tbody>
</table>
ClydeUnion Pumps after sales support extends across all of its legacy brands as well as new equipment, and provides full backup for obsolete products and for third party equipment. The parts ClydeUnion Pumps supply meet the original specification, or are upgraded where appropriate, and many components can be covered by a Rapid Response option which can have parts on site within 24 hours.

ClydeUnion Pumps after sales support is subject to the same supply chain management as the pump manufacturing. This provides customers with the lowest lead times and costs whilst meeting the highest standards of quality assurance.

In addition to spare parts, routine servicing, overhauls and inventory control, the aftermarket support covers upgrades and comprehensive technical advice about the potential refitting of existing installations for greater efficiency and reliability. ClydeUnion Pumps can work with your own engineers to carry out meticulous inspections and advise on maintenance schedules, carry out full vibration analysis, pressure and pulsation testing, and train your service personnel.

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We guarantee supply of parts for all heritage brands and/or obsolete products, including:
- Weir Pumps
- Clyde Pumps
- Union Pump
- Girdlestone
- Mather & Platt
- Harland
- Drysdale
- WH Allen
- Allan Gwynnes
- David Brown Pumps
- DB Guinard Pumps
- American Pump
- Pumpline

Lifetime worldwide support

Every product ClydeUnion Pumps supplies is supported by a full lifetime commitment. ClydeUnion Pumps provides a full aftermarket service, drawing on either its own engineers or fully trained and highly experienced service partners, depending on the location of the installation. ClydeUnion Pumps has service facilities in over 40 countries spread throughout Europe, America, Asia, the Middle East and Africa.
Global locations

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