



**SPX** POWER+ENERGY

## Pumping Solutions for Concentrated Solar Power

INNOVATION, DESIGN, MANUFACTURE + AFTERMARKET  
SERVICES: PUMPING SOLUTIONS FOR A BETTER WORLD

**> ClydeUnion Pumps**



## 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.

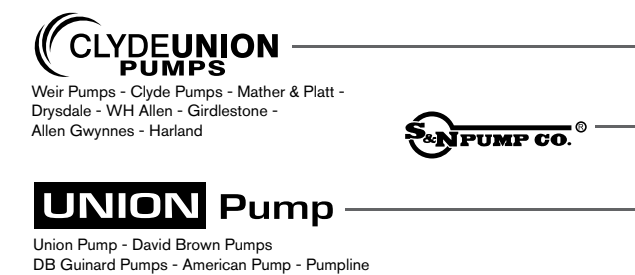
SPX's Flow Technology segment designs, manufactures and markets engineering solutions and products used to process, blend, meter and transport fluids. We also offer equipment for air and gas filtration and dehydration. Our leading brands have global operations which service the food + beverage, power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



### 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



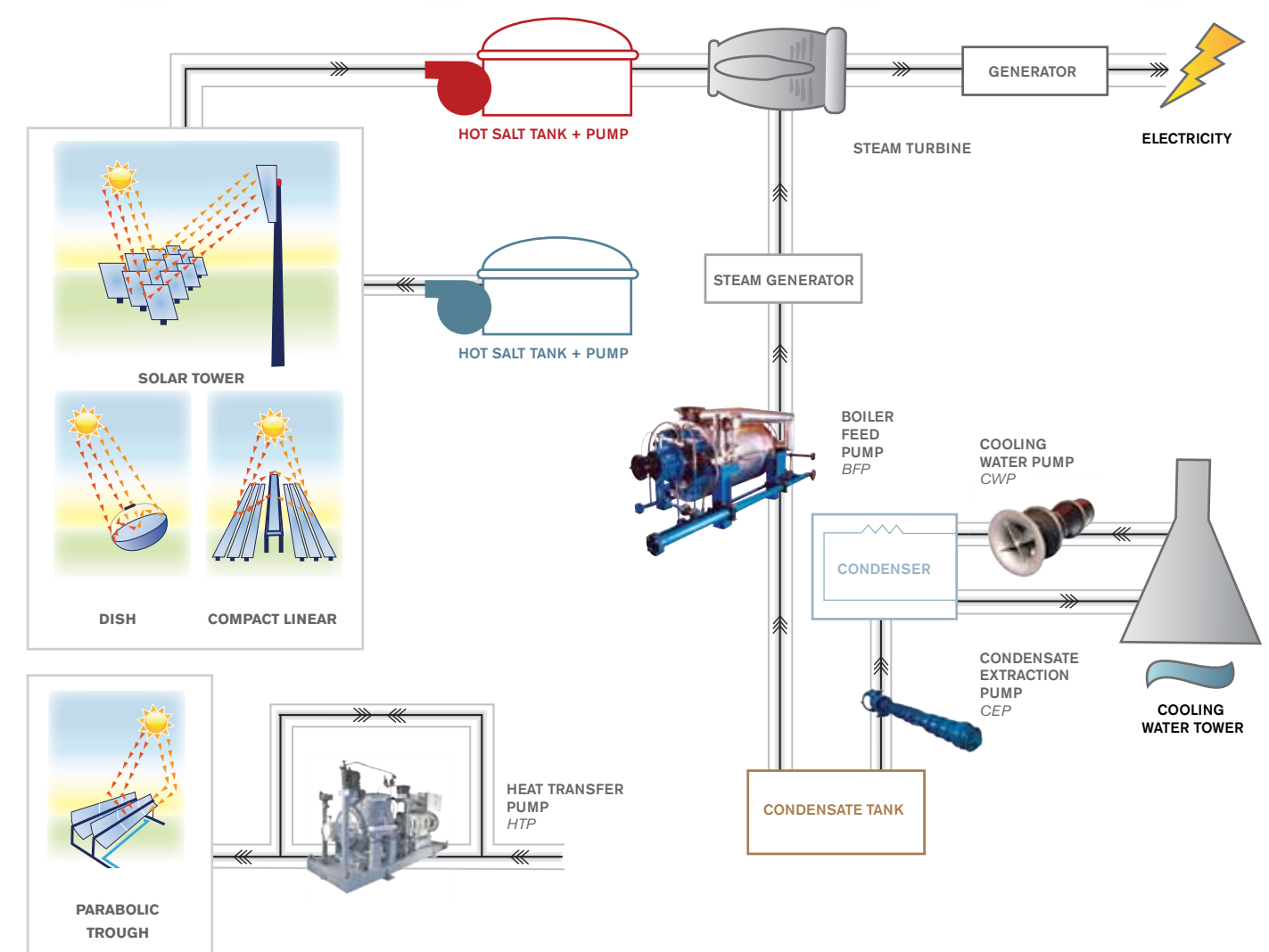




SOLAR POWER TOWER



## Key Pump Requirements for Concentrated Solar Plants



## Driven by customer satisfaction

ClydeUnion Pumps, an SPX Brand, understands the needs of the concentrated solar power 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 power industry and meeting its specific requirements. ClydeUnion Pumps delivers best efficiency, performance and quality at market leading pricing.





PARABOLIC SOLAR PANELS

## Boiler Feed Pumps

### KEY CHARACTERISTICS + BENEFITS

Boiler feed pumps (BFP) are critical to the efficient functioning of all concentrated solar plants. BFP's deliver boiler feed water, which is heated by solar energy, to form steam driving the plants main generating turbines.

ClydeUnion Pumps provides boiler feed applications on solar power projects from our extensive range of multi-stage dual volute and double case diffuser pumps.

- Designed with a higher head per stage capability than industry standards, meaning that fewer stages are needed, resulting in improved shaft deflection characteristics of the pumps
- These pumps have an inherent advantage in the demanding regime of stop-start operations in a concentrated solar power plant

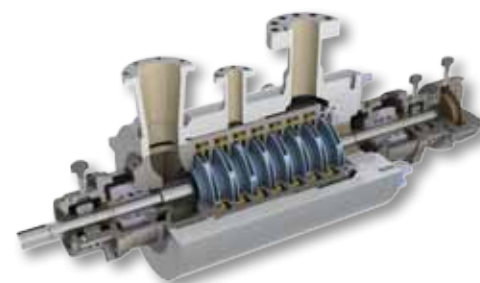
### BOILER FEED PUMPS

- CUP-BB3
- CUP-FT

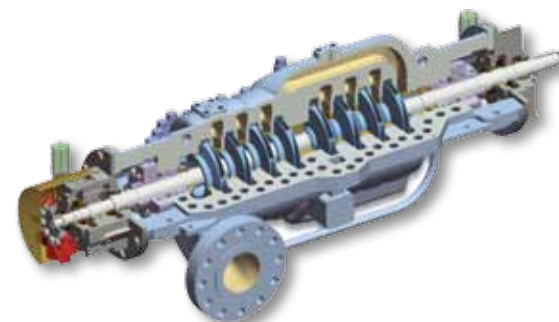
### TECHNICAL DATA

**Capacity:** up to 1,100 m<sup>3</sup>/hr / 4,840 USgpm

**Delivered head:** up to 2,500 m / 8,200 feet



CUP-FT



CUP-BB3

## Cooling Water Pumps

### KEY CHARACTERISTICS + BENEFITS

Cooling water pumps (CWP) circulate cooling water from a source (river, lake, estuary, sea or cooling towers) to condense steam in the condensers and to provide auxiliary water for various application.

ClydeUnion Pumps provides cooling water applications on solar power projects from our extensive range of large capacity vertical turbine pumps or horizontal volute pumps.

- Focus of design features, which ensure optimum operational performance and longer times between overhauls, is an important consideration for concentrated solar plants in remote locations
- These pumps grant trouble free operation together with reduced through life costs

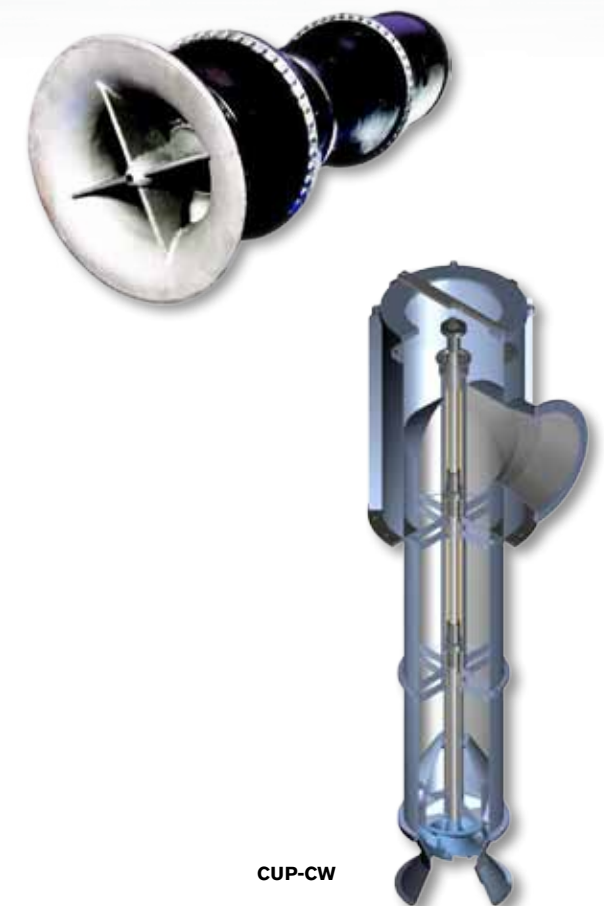
### COOLING WATER PUMPS

- CUP-CWP

### TECHNICAL DATA

**Capacity:** up to 40,000 m<sup>3</sup>/hr / 176,000 USgpm

**Delivered head:** up to 100 m / 320 feet



CUP-CW





SOLAR PANELS IN DESERT SETTING

## Heat Transfer Pumps

### KEY CHARACTERISTICS + BENEFITS

Heat transfer pumps (HTP) are used to pump synthetic oil which has been heated by concentrated sunlight to temperatures of approximately 400°C (750°F). Hot oil is pumped to a generating station through a heat exchanger raising steam to drive electricity generating turbines.

ClydeUnion Pumps provides heat transfer applications on solar power projects from our extensive range of single or multi-stage between bearings pumps.

- With over 600 pumps installed globally, we take pride in the proven reliability of our heat transfer pumps
- Our heavy duty pumps operate robustly at elevated temperatures

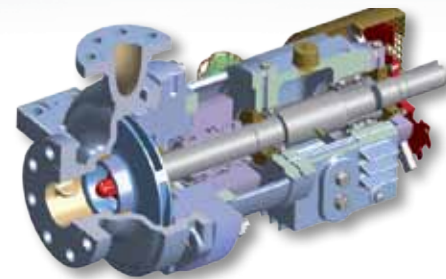
### HEAT TRANSFER PUMPS

- CUP-BB2
- CUP-OH2
- CUP-OH3
- CUP-OH4

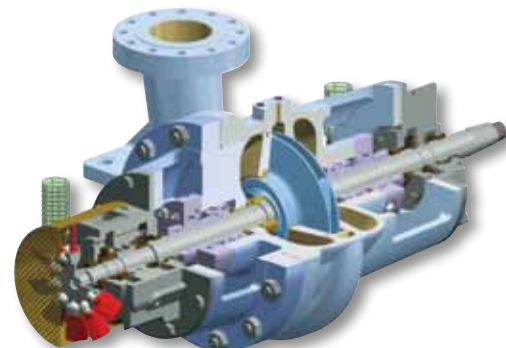
### TECHNICAL DATA

**Capacity:** up to 4,000 m<sup>3</sup>/hr / 17,000 USgpm

**Delivered head:** up to 500 m / 1,650 feet



CUP-BB2



CUP-OH2

## Condensate Extraction Pumps

### KEY CHARACTERISTICS + BENEFITS

Condensate extraction pumps (CEP) are used to pump water from the condenser. As in other types of power plants, the water is pumped from near vacuum, therefore the pumps are generally of the vertical canister design.

ClydeUnion Pumps can service condensate extraction applications on solar power projects from our extensive range of single and multi-stage vertical canister pumps. These are available with single or double entry first stage impellers to suit all site conditions.

- Focus on unique design features which ensure optimum operational performance and longer times between overhauls is an important consideration for concentrated solar plants in remote locations
- Our pumps give trouble free operation together with reduced through-life costs and efficiency

### CONDENSATE EXTRACTION PUMPS

- CUP-EN
- CUP-CEP

### TECHNICAL DATA

**Capacity:** up to 3,300 m<sup>3</sup>/hr / 14,500 USgpm

**Delivered head:** up to 400 m / 1,310 feet



CUP-CEP

ClydeUnion Pumps extensive product portfolio, created by the legacy products of Weir Pumps Glasgow, David Brown Pumps, Union Pump and DB Guinard Pumps can be found at [www.clydeunion.com](http://www.clydeunion.com)





**INSTALLATION + COMMISSIONING: TROUBLE FREE COMMISSIONING ANYWHERE IN THE WORLD**



**PARTS: ANY BRAND, ANY MATERIAL, ANYTIME**

## 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.

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.

ClydeUnion Pumps history and breadth of experience, as well as its geographical coverage and expertise, make it the natural first choice for any pump related problem or enquiry, no matter what the location, the scale of the task or the original manufacturer.

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
- Allen Gwynnes
- David Brown Pumps
- DB Guinard Pumps
- American Pump
- Pumpline



**PARABOLIC TROUGH**





## PUMPING SOLUTIONS FOR CONCENTRATED SOLAR POWER

## Global locations

### EUROPE

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<b>Burlington, ON</b>	<b>P:</b> +(1) 905 315 3800	<b>F:</b> +(1) 905 336 2693	<b>E:</b> cu.burlington@spx.com
<b>Calgary, AB</b>	<b>P:</b> +(1) 403 236 8725	<b>F:</b> +(1) 403 236 7224	<b>E:</b> cu.calgary@spx.com
<b>Los Angeles, CA</b>	<b>P:</b> +(1) 562 622 2380	<b>F:</b> +(1) 562 622 2375	<b>E:</b> cu.downey@spx.com
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### ASIA

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