

**Our commitment to  
quality and innovation**



**Qingpu Manufacturing and Engineering Centre**

The world-class development and testing behind industry-leading  
Pressure Relief Valve products and technology



# Our facilities and expertise for engineering, testing and support are unmatched



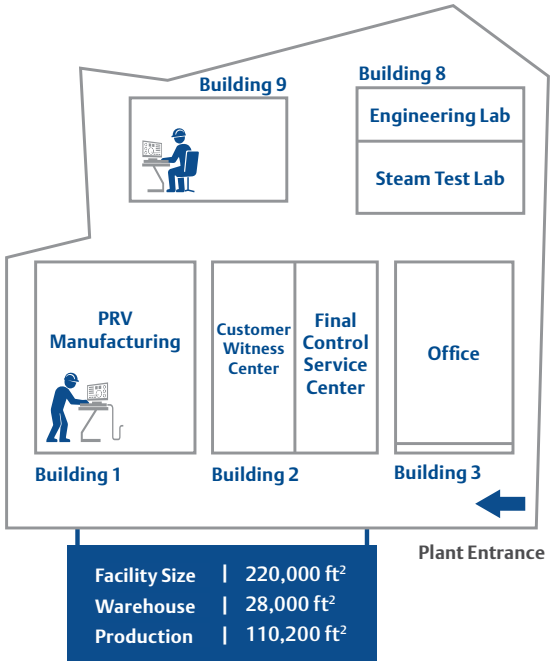
Emerson Qingpu Facility

Established in 2001, Emerson's Qingpu facility in Shanghai, China focuses on research and development, testing and production of the leading brand of Anderson Greenwood™ and Crosby™ pressure relief valves.

The facility enables improved responsiveness and market competitiveness by streamlining material sourcing, optimizing inventory management and an overall reduction in lead time.

With currently over 200 employees at this location, we are ready to provide greater LOCAL support to Asia customers serving major projects across the region and the rest of the world.

# Qingpu-at-a-glance






- ~200** Total employees
- 140+** Combined years of technical expertise
- 6** Weeks standard PRV lead time
- 50+** Number of accreditations
- 0** Reportable health and safety incidents

## OUR HISTORY OF TECHNOLOGY AND SOLUTIONS THROUGH THE YEARS

- 2001**: Shanghai AG Crosby Valves was established as joint venture between AGC and Shanghai Valve Factory at Anding.
- 2007**: Shanghai AG Crosby Valves was fully acquired by Tyco.
- 2008**: Moved from Anding to Qingpu.
- 2012**: Pentair and Tyco's flow control business formally merged as Pentair Ltd.
- 2014**: Commissioned state-of-the-art PRV Steam Testing in Shanghai. The first in China accredited with UV-NB ASME VIII Assembler status.
- 2017**: Emerson completed the acquisition of Pentair's Valves and Controls business, bringing the two leading PRV brands and technologies - Anderson Greenwood pilot valves and Crosby spring-loaded valves.
- 2020**: Shanghai PRV Engineering Center (SPEC) established with nearly 140 years combined experiences in NPD, cost reductions and product modifications.

## Broad product and solution portfolio serving diversified markets across regions

<p><b>Spring - API 526 and TRV</b></p> <ul style="list-style-type: none"> <li>• ASME VIII</li> <li>• API</li> <li>• ANSI</li> <li>• EN</li> <li>• DIN</li> </ul>  <p>J Series, OMNI, 80 Series 0.5 - 20 in., pressure rating up to API 15K</p> <p><b>CROSBY</b> <b>ANDERSON GREENWOOD</b></p>	<p><b>Steam Safety Valve</b></p> <ul style="list-style-type: none"> <li>• ASME I</li> </ul>  <p>H Series 0.5 - 12 in., CL150 - CL2500</p> <p><b>CROSBY</b></p>	<p><b>Pilot - Pop Action and Modulating</b></p> <ul style="list-style-type: none"> <li>• ASME VIII</li> <li>• API</li> <li>• ANSI</li> <li>• EN</li> <li>• DIN</li> </ul>  <p>High Pressure Pilot and Low Pressure Pilot</p> <p><b>ANDERSON GREENWOOD</b></p>	<p><b>Safety Selector Valve</b></p> <ul style="list-style-type: none"> <li>• ASME VIII</li> <li>• ASME I</li> <li>• API</li> <li>• ANSI</li> </ul>  <p>Safety Selector Valve 1 - 10 in., CL150 - CL2500</p> <p><b>ANDERSON GREENWOOD</b></p>
--	---	---	---

### Overpressure protection for various industries

Emerson's industry leading pressure and safety relief valve designs with over 140 years of technical and application expertise provides custom engineered solutions for oil and gas, refining, chemical, petrochemical, process and power applications. Our designs meet global and local codes and standards (API 526; ASME Section I, IV and VIII; EN ISO 4126; PED and more). Emerson offers a comprehensive line of direct-spring and pilot operated valves to protect against overpressure events to avoid process interruptions and reduce risks to personnel.

### Meeting the fugitive emissions challenge

Emissions of hazardous air pollutants from leaking equipment may cause serious health effects and risk penalties from government regulators. Valves are one of the sources of these fugitive emissions and an important place to look for improvements.

Emerson has created testing protocols to ensure fugitive emission compliant PRVs. We offer a wide range of thermal relief valve and API 526 spring/pilot valve, of which designs ensure compliant for a safer working environment.

### Delivering safety and reliability for power plant boilers

Modern days requirement of higher efficient power plants operating at higher steam pressures and temperatures often create stresses leading to equipment failure. Boiler's overpressure is a serious issue and if not protected, could lead to severe catastrophic damages to the life and property.

Emerson's ASME Section I proven and reliable PRV solutions including best of the technologies from Crosby™ HCI ISOFLEX® design and Anderson Greenwood™ 5200 series pilot valve offers unmatched quality for the boiler applications, with each valve tested at in-house world class steam testing facility simulating the real world conditions.

### Optimizing LNG transportation cost efficiency from flow optimization

Emerson offers best-in-class pilot operated PRVs with unmatched flow capacity and seat tightness designed specifically for LNG and LPG carriers, FSRUs and FLNG ships. Designed to solve the toughest marine applications, the Anderson Greenwood™ 9300H series' help reduce initial valve costs, piping costs and maintenance costs by allowing for smaller and fewer valves.

### Meeting toughest challenge in FPSO and offshore operation with blockbody design

FPSO operating in deeper water depth requires high pressure API10K/API15K PRVs for overpressure protection. The Anderson Greenwood and Crosby™ forge design (blockbody) increases the valve's body strength allowing the PRVs to withstand high pressure and temperature. The blockbody can be set at higher maximum set pressure allowing it to operate beyond the traditional limit.

### Achieving lower CAPEX with true modulating pilot

Anderson Greenwood true modulating pilot ensures stable performance even under high inlet losses, backpressure condition and oversized condition. Our unique soft seat design provides repeatable, bubble-tight performance despite pressure "spikes" and minimizes product loss with modulating action. It helps to optimize the piping design and lower the CAPEX for the plant. The vent to main valve outlet configuration minimizes the fugitive emission to the environments.

### Increase operational efficiency with wireless pressure relief valve monitoring

Undetected Pressure Relief Valve (PRV) relief events may affect valve performance, leading to leakage or failure to reclose after a release. In addition to safety and regulatory concerns, an undetected failure may cause significant costs in product and energy losses that will remain unnoticed for years.

Monitoring PRVs provides real-time information enabling you to proactively develop proper corrective action, optimize maintenance schedules and improve asset management while ensuring regulatory compliance.

Learn More:



PRV Product Overview Brochure



PRV Engineering Handbook

## Paving the way for breakthrough innovations of the future



20

Subject matter experts



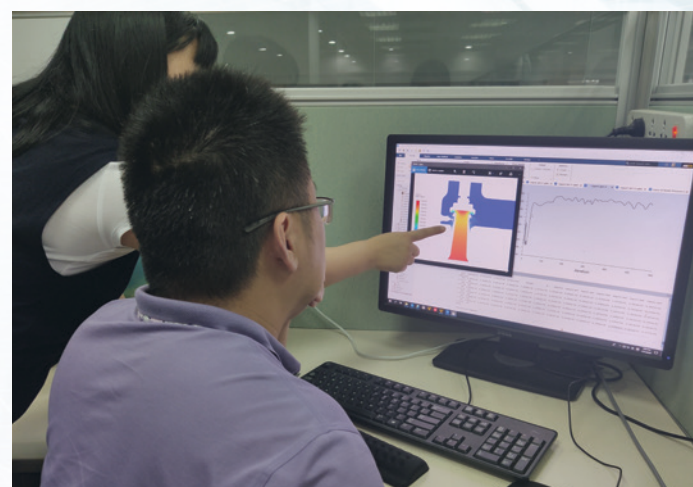
140

Years of combined experiences



30

US and China patents



Design and Engineering Center – Asia for Asia

NPD Projects for Asia and Global

Customized Design and Products Extension

Technical Support for Asia Sales And Service

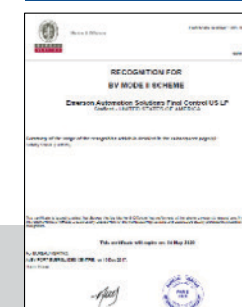
Troubleshooting and Failure Analysis

## Driving commitment to total quality

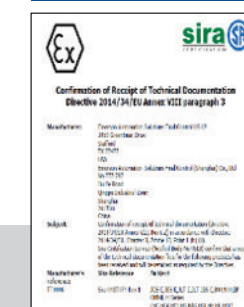
### ABS



### BV



### ATEX



### DNV GL



### PED



### KGS Cert



### ASME UV & V



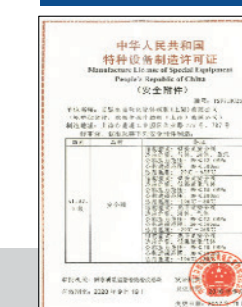
### Lloyds



### CuTR



### TS Cert



### China Nuclear PRV License



You demand high performance. We ensure it.

## Steam Test Facility

Established in 2014, the state-of-the-art ASME I "V stamp" approved lab is the highest rated in Asia.

### Capacity:

**3000 kg/hr**

- Superheat steam at 18 MPA / 2610 psig
- 2 x 10 m<sup>3</sup> accumulators

### Two test bays

- Support full product range

### Typical testing:

- Type test
- Full Functional test



## Nitrogen Gas / Liquid Flow Test Stand

Established in 2020.

### Capacity:

#### Nitrogen gas flow stand

##### Large

- Valve flow capacity up to 4 in.
- Test vessel capacity 38 cu ft.
- Set pressure up to 34 bar

##### Small

- Valve flow capacity up to 2 in.
- Test vessel capacity 20 cu ft.
- Set pressure up to 34 bar

### Typical testing:

- Blowdown
- Flow capacity
- Lift
- Overpressure
- Set pressure
- Custom testing as required



### Capacity:

#### Liquid flow stand

##### High pressure

- Valve flow capacity up to 2 in.
- Test vessel capacity 10 cu ft.
- Set pressure up to 172 bar

##### Low pressure

- Valve flow capacity up to 4 in.
- Test vessel capacity 30 cu ft.
- Set pressure up to 100 bar

## Cryogenic Test

Established in 2020.

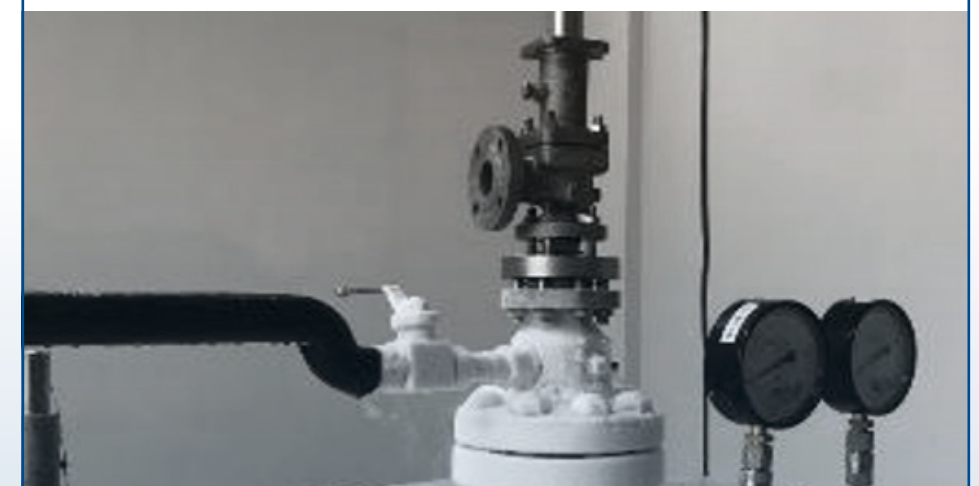
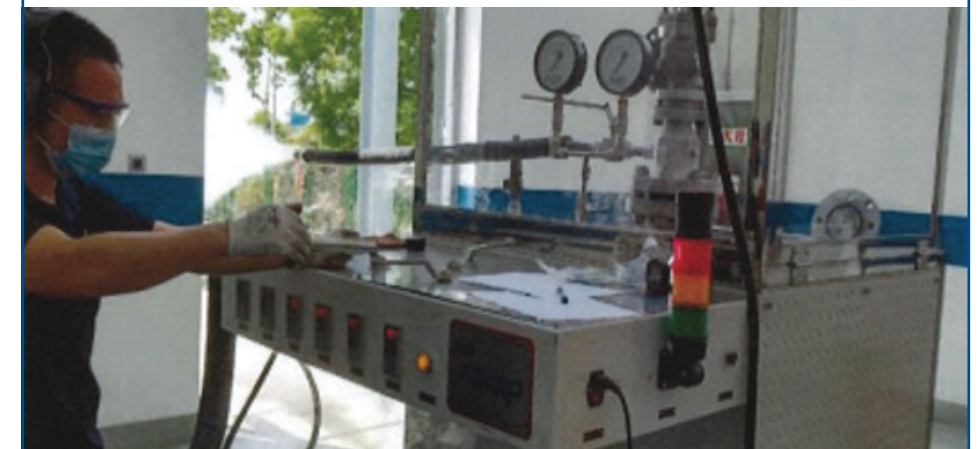
### Capacity:

**Up to size 400 mm / 16 in.**

- Set pressure up to 100 bar / 1450 psig
- Temperature down to -196°C / -321°F (varied based on set pressure change)
- Test vessel 0.02 and 0.57 cubic meter (0.7 and 20 cubic foot)

### Typical testing:

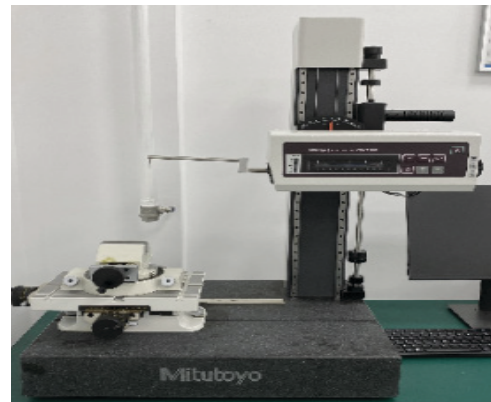
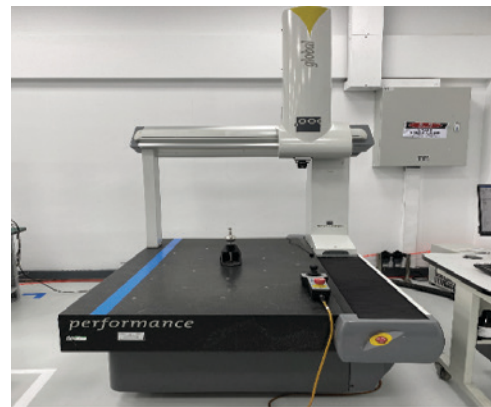
- Seat leakage
- Valve opening
- Valve closing
- Custom testing as required by customer



## Deliver superior quality and consistent performance – every time, all the time

Equipped with advanced tools, equipment and technology, Emerson research and development and testing facilities support some of the most sophisticated parts development and quality assurance initiatives.

Our world-class ISO 19001-certified sites are outfitted with state-of-the-art machinery, laboratories, test facilities and our team of engineers and experts applies best industry practices and processes to create exceptional product.



### Production and Testing

- CNC Machining
- Welding
- Lapping
- Shot Blasting
- Coating / Painting
- Steam Test
- Clean Room
- Tensile
- PMI
- CMM
- NDE
- Gauge Room



## Keep your plant operating safely, consistently and economically

### Fast, reliable fulfillment services to suit your need

You need speed and reliability from your technology suppliers to manage your projects and operations effectively, but finding a vendor you can count on when timing matters isn't always easy.

With Emerson's QuickShip fulfillment program, you'll have access to a range of fast, dependable production and shipment options for part and product replacement where you need it, when you need it.



### Anytime, anywhere services

Minimize schedule delays and receive Emerson certified repair with onsite service capabilities.

Emerson's **Mobile Service Centers** bring quality repair and support to your location for small or large maintenance activities.



#### QUICKSHIP EMERGENCY

For the fastest possible order, shipment and delivery of critical parts or products

#### QUICKSHIP EXPEDITE

To meet your required delivery date for any product with flexible price premiums

## Offering ongoing product and application EXPERTISE and TRAINING

You need support that doesn't end as soon as you've purchased a product. Collectively, our engineers have hundreds of PhDs, patents and years of experience and are actively involved in the development of national and industry standards. When combined with their product design and testing backgrounds, they are the perfect consultants for a host of application questions across all industries.

Our facilities are designed to demonstrate how Emerson products are installed, function and integrate with other critical components - all to make your operators more efficient for day-to-day processes.





**REAL-TIME ONLINE CONNECTIVITY** Transforming the way we engage to customers.

Connecting the experts with customers globally. **ANYTIME, ANYWHERE**





**Our commitment to quality and innovation is unparalleled in the process control industry. Come see for yourself.**



**Emerson Automation Solutions**

**Australia & New Zealand**  
Bayswater, VIC, Australia  
T +61 3 9721 0200

**China**  
Chengdu  
T +86 28 8536 0000

Shanghai  
T +86 21 2892 9000  
T +86 21 2412 6911

Beijing  
T +86 10 8572 6666  
T +86 10 6782 1000

Guangzhou  
T +86 20 2883 8900

Jinan  
T +86 53 18209 7184

**India**  
Mumbai  
T +91 22 6662 0566

Chennai  
T +91 44 6608 6601

**Japan**  
Shinagawa, Tokyo  
T +81 3 5769 6900

**Singapore**  
Singapore  
T +65 6777 8211

**South Korea**  
Gyeonggi-do, Seoul  
T +82 31 8034 0600

**Thailand**  
Bangkok, Thailand  
T +66 2 937 1190

 [webadmin.regulators@emerson.com](mailto:webadmin.regulators@emerson.com)

 [Emerson.com](http://Emerson.com)

 [Facebook.com/EmersonAutomationSolutions](https://Facebook.com/EmersonAutomationSolutions)

 [LinkedIn.com/company/emerson-automation-solutions](https://LinkedIn.com/company/emerson-automation-solutions)

 [Twitter.com/emr\\_automation](https://Twitter.com/emr_automation)

D353127X012 © 2020, 2021 Emerson Process Management Regulator Technologies, Inc. All rights reserved. 6/21.  
The Emerson logo is a trademark and service mark of Emerson Electric Co. All other marks are the property of their prospective owners.



**CONSIDER IT SOLVED.™**