

Aftermarket service

Overhaul,
repair & upgrade,
maintenance solutions



**TRILLIUM FLOW TECHNOLOGIES MANUFACTURES
A COMPREHENSIVE RANGE OF PRESSURE RELIEF VALVE PRODUCTS FOR THE GLOBAL
OIL, GAS, CHEMICAL, PETROCHEMICAL AND POWER INDUSTRIES.**



TABLE OF CONTENTS

SERVICING

SPARE PARTS

UPGRADES

LIFETIME SERVICE SUPPORT: TOTAL RELIABILITY

At Trillium Flow Technologies France, we design and manufacture high integrity Pressure Relief Valves which are suitable for an extensive range of plant process application requirements.

Our dedication to our customers' needs does not stop at the supply of valves but also includes a commitment to provide ongoing service support and vital spare parts, ensuring that they deliver optimum performance for life.

Our Aftermarket Team are able to service, overhaul, repair and upgrade Pressure Relief Valves as well as supply accurately and correctly selected spare parts

We have a skilled team of engineers in our facility at Vendin-le-Vieil, France.

Alternatively, our selected accredited global channel partners will overhaul and service valves in fully equipped workshops, or at customers' sites throughout the world.

WE TAKE CARE OF EVERYTHING

Our teams take full ownership of every project in every respect.

We manage all processes from project requirement analysis through to any issue connected with servicing, testing, certification, handling, dispatch and transportation.

Recommendations can be made for future maintenance outages.

Working with Trillium is open and simple with all work carried out efficiently to recognized quality standards.



SERVICING

WORLDWIDE SERVICING FROM THE VALVE SPECIALISTS

Trillium's highly flexible and well-qualified service team offer service support, from commissioning, routine maintenance and trim overhauls to complete Pressure Relief Valve outages and pressure testing.

ANY JOB, ANY SIZE, ANY WHERE

Whether you have a single valve for service or a large quantity of valves requiring a complete overhaul, Trillium are able to offer the resources, skills and experience to complete your job efficiently, expertly and on time.

INTERNATIONALLY RECOGNISED QUALIFICATIONS

Our service team is highly qualified to perform work in global installations.

Our engineers have been approved by the National Board of Boiler and Pressure Vessel Inspectors to perform Pressure Relief Valve testing, repair and certification in accordance with ASME codes.

RAPID-RESPONSE SERVICE

The team can be mobilized for French services within 24 hours or within 72 hours for international requirements, subject to engineer availability.

YOUR VALVES ARE IN SAFE HANDS

Our engineers follow the strictest health and safety procedures, both on customer sites and within our workshop facility.

We observe rigorous safety precautions when receiving and servicing valves or when handling components which may be contaminated.

QUALITY-ASSURANCE

All completed service operations are covered by a service report and a final test certificate which identifies each stage of the work which has been completed along with recommendations for any future service work.

The procedures we employ mirror those used for manufacturing new valves, ensuring full compliance with ASME or PED requirements.

FULLY EQUIPPED WORKSHOP FACILITIES

The service workshop at our French plant is capable of handling large shutdowns within fast turn-around times. Our workshop facilities include:

- ▶ Shot-blast, aqua-cleaning and degreasing machinery to bring back components to 'near-new' condition.
- ▶ Multi-functional machines suitable for any shutdown work.
- ▶ Welding and overlaying equipment
- ▶ A dedicated service test bay capable of hydrostatic testing up to 1034 bar g [15,000 PSIG]
- ▶ Flexible workstations
- ▶ Machining of and provision of original manufacturer parts
- ▶ Painting and dye penetrant inspection facilities
- ▶ Gas, Liquid, Steam and cryogenic test facilities.
- ▶ Extensive storage capability

Cryogenic test bench

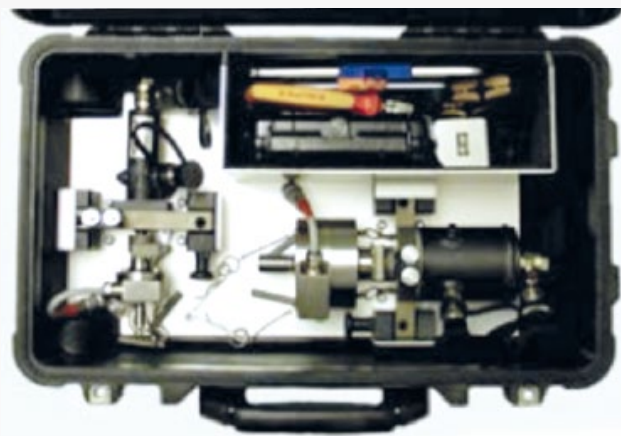
| TYPE | Boil-Off |
|---------------------------------|------------------------------|
| CAPACITY | 30L |
| MIN. / MAX. INLET SIZES | 1/2" through 8" |
| MAX. ALLOWABLE WORKING PRESSURE | 200 bar (liquid & gas) |
| TEMPERATURE RANGE | -196°C / +20°C |
| APPLICABLE STANDARD | NF EN 13648-1 API STD 527 |
| DESIGN STANDARD | PED 2014/68/UE |

Steam test bench

| TYPE | Saturated |
|---------------------------------|-----------------|
| CAPACITY | 2 x 1700L |
| MIN. / MAX. INLET SIZES | 1/2" through 8" |
| MAX. ALLOWABLE WORKING PRESSURE | 100 bar |
| TEMPERATURE RANGE | Up to 300°C |
| APPLICABLE STANDARD | ASME PTC 25 |
| DESIGN STANDARD | PED 2014/68/UE |

Our field service units and our certified partner network provide extensive valve repair capabilities. Our mobile workshop facilities include:

- ▶ Lapping and polishing machines
- ▶ Ultrasonic Cleaners: five models in sizes of ½ gallon, ¾ gallon, 1 ½ gallon, 2 ½ gallon and 5 ½ gallon.
- ▶ Plug-in and battery-powered bolting systems up to 4067 Nm [3,000 ft.lb].
- ▶ Gas portable test benches up to 200 bar g [2,900 PSIG]
- ▶ Liquid portable test benches up to 250 bar g [3,625 PSIG]
- ▶ Online Safety Valve testing (1kN, 10kN, 20kN, 50kN & 100kN)



Online testing accessories with 1kN and 20kN bridge



Test bench control panel

SPARE PARTS

SPARE PARTS FOR ALL VALVE PRODUCTS

Trillium Flow Technologies France offers a comprehensive spare parts supply service to support all of our Pressure Relief Valves.

Whilst our policy is one of continuous development and whilst we reserve the right to modify our designs and specifications a full spare parts or a replacement support package is in place for our full product range.

The traceability of any modifications is logged against the valve serial number to ensure we keep track of our customers' future needs.

SUPPLY OF ROUTINE AND EMERGENCY SPARE PARTS

We provide a service which fits in with your routine maintenance and shutdown schedules, delivering the components you need, precisely when you need them.

If you need spares urgently on an emergency basis or for a site breakdown, we provide fast-track deliveries which will help minimize downtime at your plant.

REVIEWS AND RECOMMENDATIONS

For customers who are changing their plant operational parameters, we can carry out a full process application review, enabling us to recommend the most suitable parts for optimum productivity and efficiency.

Our specialists will also suggest the most suitable materials to provide enhanced durability and longevity for your valves.

GUARANTEES AND TRACEABILITY

We would like to draw your attention to the importance of regular maintenance of your equipment and its impact on safety.

Such maintenance may require the replacement of strategic components.

It is of vital importance to replace any defective components with true and genuine manufacturer's parts. Failure to use genuine parts will negatively affect the performance of a valve which could in turn impact the safety of your installation and also risk the validation of the relevant code certification.

All spares are supplied with a certificate of conformance and original equipment manufacturer (OEM) in order not only to guarantee the valve performance and the safety of your installation, but also to preserve the essential product certification.

Valve trim components (gasket, nozzle, disc, spring, rod ...) are always etched with a unique part number and a heat number for ease of traceability – Material certification is available upon request.



STEAMLINE YOUR STOCKHOLDING

We maintain historical records of all the valves which we supply.

To add value to your stock holding, we can provide spare part interchangeability reports (SPIR's), as well as full site survey reports.

These reports will assist you not only in maintaining sufficient stocks of critical parts to cover any emergency requirements, but also in optimizing your stocks of common parts.

UPGRADES

EQUIPMENT UPGRADES ENSURE OPTIMUM PERFORMANCE

Our service engineers are highly experienced in providing valve solutions for the most demanding processes applications.

When the performance of your protected equipment needs to be improved, or a Pressure Relief Valve needs to be replaced after a long service life, Trillium Flow Technologies France will review your requirements, re-size and re-specify a complete solution to meet your needs.

RESPONSIVE REPLACEMENT SERVICE

We offer a fast-track replacement service for Trillium Pressure Relief Valves, as well as advice and guidance on upgrades and trim retrofits for valves manufactured by other companies.



ADVISORY EXPERTISE

We will examine all issues associated with any premature valve failure or poor performance, including flashing process fluids, pressure drops, erosion and corrosion.

Following this review, we will offer recommendations and will advise you on the optimum solution for your application, based on your process conditions.

As well as product servicing, our team can conduct site surveys and can offer advice on routine maintenance and plant optimization.

Our field service and repair team is committed to the philosophy of making our customers our partners.

As a strategic lifecycle partner, we can jointly address performance issues through root cause analysis and then achieve improved valve reliability.

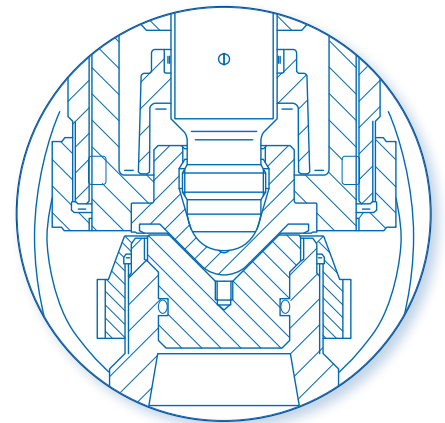


EXPERT SUPERVISION

For ASME I Safety Valves which are supplied with butt welded inlet connections, our field expert will offer support with valve preparation in order to proceed to the stage of hydrostatic testing, hydro-plug removal, valve reassembly and pressure setting.

We will provide instruction for re-setting a valve, providing guidance concerning installation and advising any non-conformity with the recommendations of API RP 520 part II or EN ISO 4126 Part 9.

In cases of spring replacement, the product certification will be preserved.





TRAINING

Because Pressure Relief Valves are vital safety-critical items of pressure equipment, Trillium Flow Technologies France will help you to build your product education.

Our training courses combine classroom valve theory instruction with practical workshop training.

Courses are tailored to meet the specific needs of plant owners and operators.

SARASIN-RSBD BRAND

WHAT IS SARASIN-RSBD?

Trillium Flow Technologies France is a leading manufacturer of high performance SARASIN-RSBD Pressure Relief Valves for the most demanding applications in oil, gas, chemical, petrochemical and power industries worldwide.

With our blend of proven expertise, innovative design technology and skilled engineering, we have been setting the standard in the severe service valve market for more than 170 years.

SARASIN-RSBD also shares technology from SEBIM who is a leading supplier to 3rd and 4th generation of nuclear reactor designs.

With an extensive global installed base, both product brands have gained a high reputation for world-class engineering, quality and reliability.



QUALITY MANUFACTURING

Maintaining the highest standards of quality through design, production and customer service is the cornerstone of Trillium Flow Technologies France's philosophy.

Our plant is accredited in accordance with Quality Management System ISO 9001 and Environmental Management System ISO 14001.

In addition all products, where necessary, conform to ATEX, PED and other EU Directives and carry the CE mark accordingly.

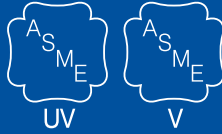
The company's standard manufacturing codes include NACE MR01.75 and API 520 along with individual customer specifications.

Our in-house inspection and testing facilities include various levels of NDE and PMI, steam and cryogenic testing.

Safety is the key element in everything we do, with all employees undergoing both general and specific Health and Safety training.

Our manufacturing facilities and product lines are accredited and certified in accordance with:

ASME B&PV Codes



SELO TS



PED 2014/68/UE



EAC TR CU 010/012/032



ATEX 94/9/EC



TSSA



ISO 9001/14001
ISO/TS 29001



Korea Gas Safety
Corporation Certificate



ISO 45001



Type approvals
Lloyd's & BV





sales.sarasinrsbd@trilliumflow.com
spareparts.sarasinrsbd@trilliumflow.com
aftermarket.sarasinrsbd@trilliumflow.com



Flow Technologies France

Rue Jean Baptiste Grison
Zone Industrielle Bois Rigault
62880 Vendin-le-vieil
FRANCE

Téléphone : (+33) 321 182 088
Facsimile : (+33) 321 286 200

Luc BEVE

Coordinateur SAV / Service
Coordinator - Aftersales Dpt
TRILLIUM Flow Technologies

T. (+33) 321 182 085
M. (+33) 687 433 757
E. luc.beve@trilliumflow.com