



General Catalogue





The Company Pibiviesse





Design to Perform, Built to last

Engineering the future by providing products that are Designed to Perform and Built to Last






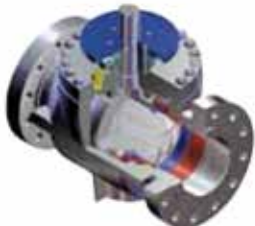
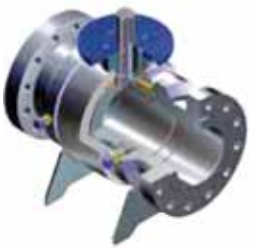

Pibiviesse, founded in 1981, is a worldwide leader in the manufacture of manual and automated On/Off and Control Ball valves. Our products are designed for the most demanding applications to meet Customer's requirements and the highest quality standards.

Pibiviesse serves the oil & gas, petrochemical, water transportation and power industries, providing solutions backed by experience and integrity, with a spirit of innovation and a focus on continuous improvement. Available in side entry, top entry and fully welded construction in sizes up to 64 inch and in pressure class up to ANSI 2500 and API 15000.

Our valves are also available for cryogenic, high temperature, HIPPS and subsea applications. Global networking makes commercial and technical support available for after sales assistance.



Products Overview

| | ON-OFF | | CONTROL VALVES | |
|--------------|---|---|--|---|
| | Rotary Ball | CageBall | HyperCage | HyperCage Multistage |
| SIDE ENTRY |  |  |  |  |
| TOP ENTRY |  |  | | |
| FULLY WELDED |  |  | | |

Sizes > On-off valves: from 1/2" to 64" > Control valves: from 1/2" to 64"

Pressure ratings > From ANSI 150 to ANSI 2500-4500; from API 2000 to API 15000

Temperature range > From -196#C (320°F) to +400°C (+752°F)

Materials > All our products are available in a wide selection of materials ranging from Low Temperature Carbon Steel up to Inconel 625, Incoloy 825 and more.



General Information

Product range

Wide range of high performance manually operated or automated, ON-OFF and CONTROL Ball Valves for any kind of fluid handled in the oil, gas, water, steam and power generating industry.

The basic ball valve design is Side Entry bolted body construction and the product line is then completed with our top entry ball valves, that can be easily serviced without removing the ball line from the line, and with our fully welded line that is typically used for pipeline/buried application or for sub-sea lines.

Trunnion Mounted ON-OFF ball valves

Side entry-bolted body, top entry and fully welded are available with Metal or Soft seats. Specific designs have been developed for HIPPS, SIL3, Sub-sea, Cryogenic, High Temperature, Slurry / Erosive applications, in addition to the Three way ball valves and any "Custom" engineered ball valve.

Trunnion Mounted CONTROL ball valves

Specifically designed to handle very high flow rates or very high differential pressures our exclusive CAGEBALL™, patented HYPER CAGEBALL™ and HYPER SILENT™ concepts have been integrated with the basic features of our trunnion mounted On-Off ball valves.



Technical features

Design

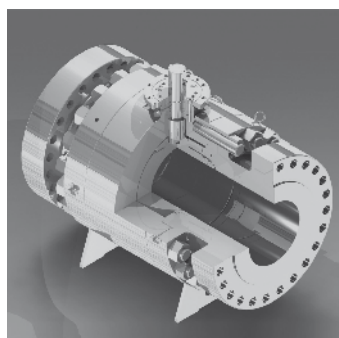
Pibiviesse ball valves are designed to meet the most stringent and demanding International Standards (ASME VIII, ASME B 16.34, API 6D, etc.) and, when required, the complete valve and its components can be designed and verified with any Customer requirements and with the most advanced calculation systems.

Trunnion mounted balls

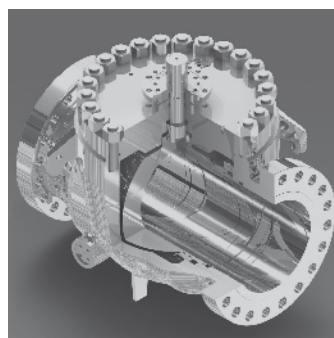
In the Trunnion mounted design configuration, the ball is supported by bearing plates, held in position by the valve closures. This configuration allows to discharge any side loads on the valve body, enabling a smoother operation of the ball, minimizing the operating torque and reducing seat seal wear.

Body joints

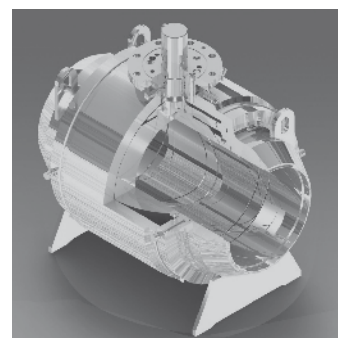
Double o-rings, or the combination of o-rings and other type of gaskets, grant a perfect and safe sealing of the body, closures and bonnet. Thus making PIBIVIESSE's ball valves suitable for a wide range of applications and installations (onshore, offshore, underground and subsea).



SIDE ENTRY



TOP ENTRY



FULLY WELDED

Port sizes

Pibiviesse valves are available in full or reduced Bore configuration. Special port sizes are also available to meet all Customer requirements.

Stem features

The stem seal integrity is achieved by the use of three o-rings (or a combination of o-rings and gaskets as required by the specification). The Stem is Anti blowout and the upper o-ring (or the graphite gasket) can be replaced with the valve in line. The ball and stem are separate components which allow a reduction of the operating torque. Stem and trunnion are supported by P.T.F.E. impregnated steel bearing sleeves. Provision for grease or emergency sealant is available on request.

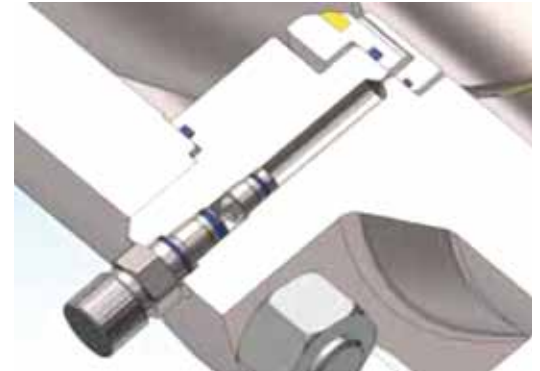
Seats features

Independent floating spring loaded seats are always in contact with the ball to provide an effective tight seal even at low differential pressures. With the single piston effect design, there is an automatic body cavity release of over pressure to the line through the down stream seat. The double piston effect design (available on request), maintains the sealing capacity of the valve even in the case of failure of the up

stream seats. Body cavity over pressure in this case can be released through a relief valve to atmosphere. A combination of double piston effect downstream and single piston effect upstream is available on request. This configuration allows a double sealing capability of the valve towards the most critical areas of the plants and still release any body cavity over pressure to the safer side. Double block and bleed operation is guaranteed with any seat design.

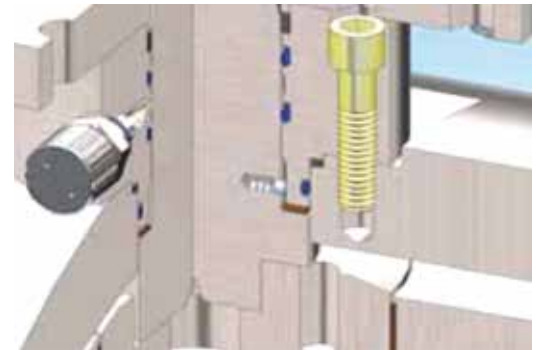
Emergency seat seal

Grease and emergency sealant injection systems are available on request. This system allows the lubrication of the seat area or allows to restore the sealing integrity in case of damages to the sealing surfaces.



Antistatic

A stainless steel or Inconel spring between the stem and the ball or between the stem and the gland plate permits electrical continuity between all valve components.



Extended stem

When ball valves are to be installed below ground on buried pipelines or where not easily accessible, operators can be mounted above ground by means of suitable stem extension. Drain lines and grease injectors (if required) will be piped up to the top of the extension for an easier access.

Extended bonnet

All valves to be used in high or low temperature/cryogenic service are equipped with an extended bonnet to allow vapour space between body cavity and gland seals.

This feature preserves stem seals from damages that may occur during operation at high or low/cryogenic temperatures, and allows stem seal servicing even on valves installed on insulated lines.

Pups

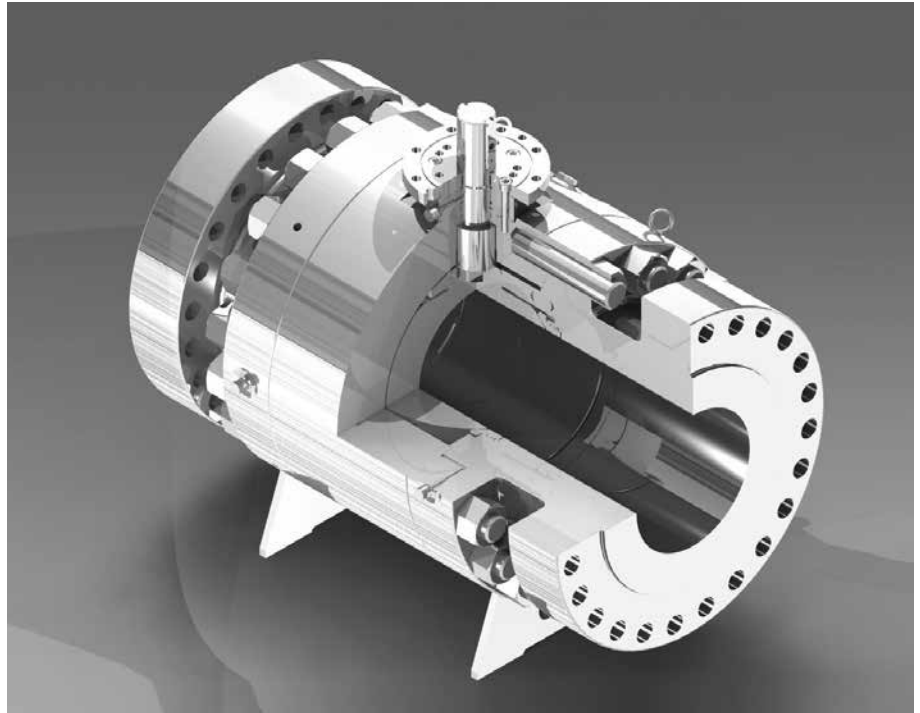
Butt welding ends valves can be supplied with transition pieces (PUPS) to avoid any risk of seat and seal damage during welding and post weld heat treatment operations on site.



Side Entry

Pibiviesse side entry ball valves are manufactured in a wide range of diameters and pressure classes. Pibiviesse valves are specified for transmission pipelines, pumping, compression and re-injection units, offshore platforms, onshore terminals, pig traps, measuring stations and any critical applications such as subsea installations, cryogenic service in LNG plants, high temperature and abrasive services.

The valves can be made in the various grades of carbon steel, stainless steel and high alloys thus complying with the most severe service conditions.



| | |
|--------------------|--|
| Model | > E |
| Size | > 1.5" through 64" |
| Classes | > 150 through 2500 and API 3000 to 15000 |
| Temperature | > -193 °C to 400 °C |

Design & Features

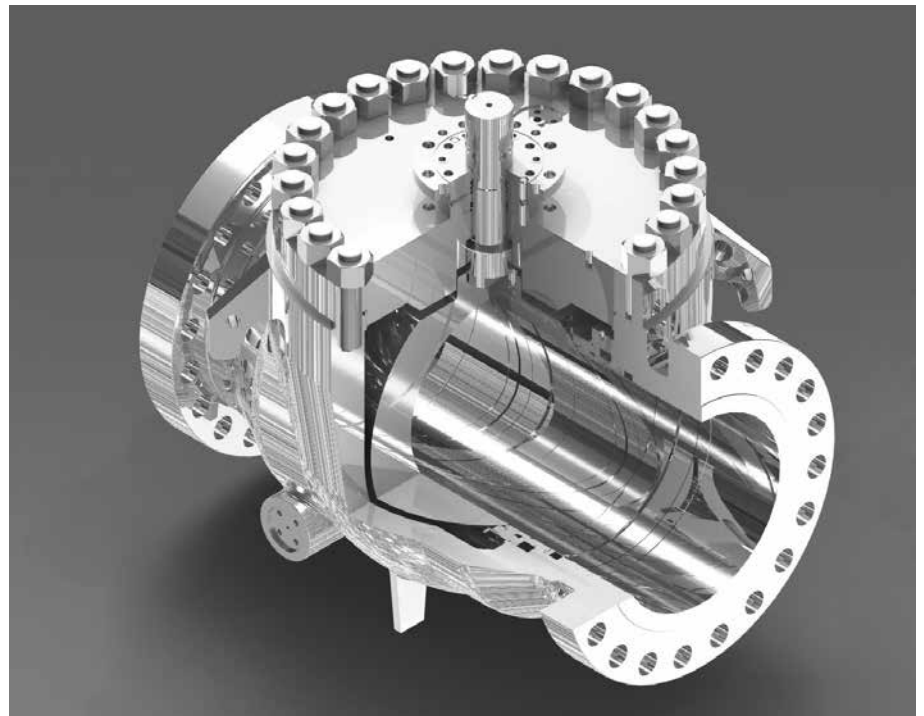
- > Trunnion mounted ball
- > Triple barrier stem seals
- > Anti-Blow Out stem design
- > Stem separated from the ball
- > Bearing blocks adsorbing the pressure load on the ball
- > Single or Double piston effect sealing barrier in both directions
- > Built in grease & sealant injection system for emergency stem and seat seal
- > Self lubricating PTFE sleeve bearings and thrust washer reducing torque and to extend service life
- > Body thickness in accordance with ASME B16.34
- > Bolting design to ASME VIII as standard. Different design available on request
- > Plastic polymer insert, O-Ring or Metal to metal seat sealing
- > Inconel 625 or 316 overlay on sealing areas or on all wetted areas when required
- > Integral stop in the adapter plate for a permanent reference of open and closed position
- > Antistatic device
- > Double Block and Bleed

Top Entry

Pibiviesse top entry ball valves are manufactured in a wide range of diameters and pressure classes. Pibiviesse valves are specified for transmission pipelines, pumping, compression and re-injection units, offshore platforms, onshore terminals, pig traps, measuring stations any critical applications such as subsea installations, cryogenic service in LNG plants, high temperature and abrasive services.

Pibiviesse Top Entry valves are full in-line field repairable and can be used in any critical service applications where in-situ field reparability and quick turnaround are needed. Thanks to this characteristics top entry valves can also be welded directly onto the pipeline still allowing easy maintenance operation. Pibiviesse Top Entry valves are sized to withstand external loads from the pipeline even when the bonnet, the ball and the seats are removed for maintenance.

The cast body and forged bonnet construction allow the use of various grades of carbon steel, stainless steel and other alloys thus complying with most severe service conditions.



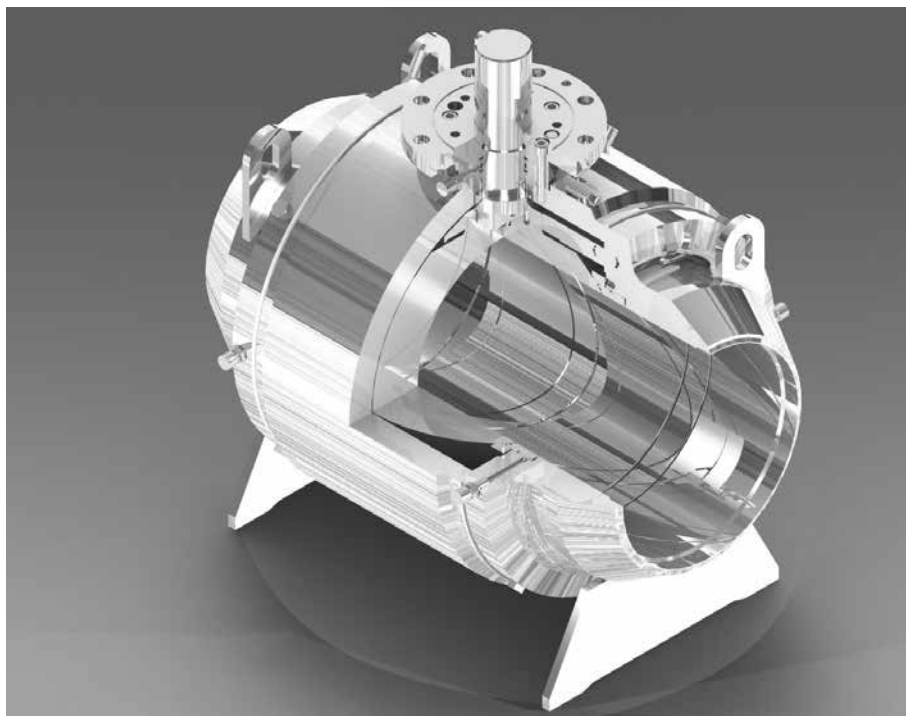
| | |
|--------------------|--|
| Model | > T |
| Size | > 1.5" through 64" |
| Classes | > 150 through 2500 and API 3000 to 15000 |
| Temperature | > -193 °C to 400 °C |

Design & Features

- > Trunnion mounted ball
- > Triple barrier stem seals
- > Anti-Blow Out stem design
- > Stem separated from the ball
- > Bearing blocks adsorbing the pressure load on the ball
- > Single or Double piston effect sealing barrier in both directions
- > Built in grease & sealant injection system for emergency stem and seat seal
- > Self lubricating PTFE sleeve bearings and thrust washer reducing torque and to extend service life
- > Body thickness in accordance with ASME B16.34
- > Bolting design to ASME VIII as standard. Different design available on request
- > Plastic polymer insert, O-Ring or Metal to metal seat sealing
- > Inconel 625 or 316 overlay on sealing areas or on all wetted areas when required
- > Integral stop in the adapter plate for a permanent reference of open and closed position
- > Antistatic device
- > Double Block and Bleed
- > In-line maintainable
- > Features for vertical pipe installation

Fully Welded

Pibiviesse Fully Welded ball valves are manufactured in a wide range of diameters and pressure classes. Pibiviesse fully welded valves are specified for transmission pipelines, pumping and compression units. Fully Welded valves can be supplied in the configuration with bolted or welded bonnet. The fully welded body construction allows the use of forged materials in the various grades of carbon steel complying with the most severe service conditions.



| | |
|--------------------|--------------------|
| Model | > W |
| Size | > 6" through 56" |
| Classes | > 150 through 900 |
| Temperature | > -50 °C to 200 °C |

Design & Features

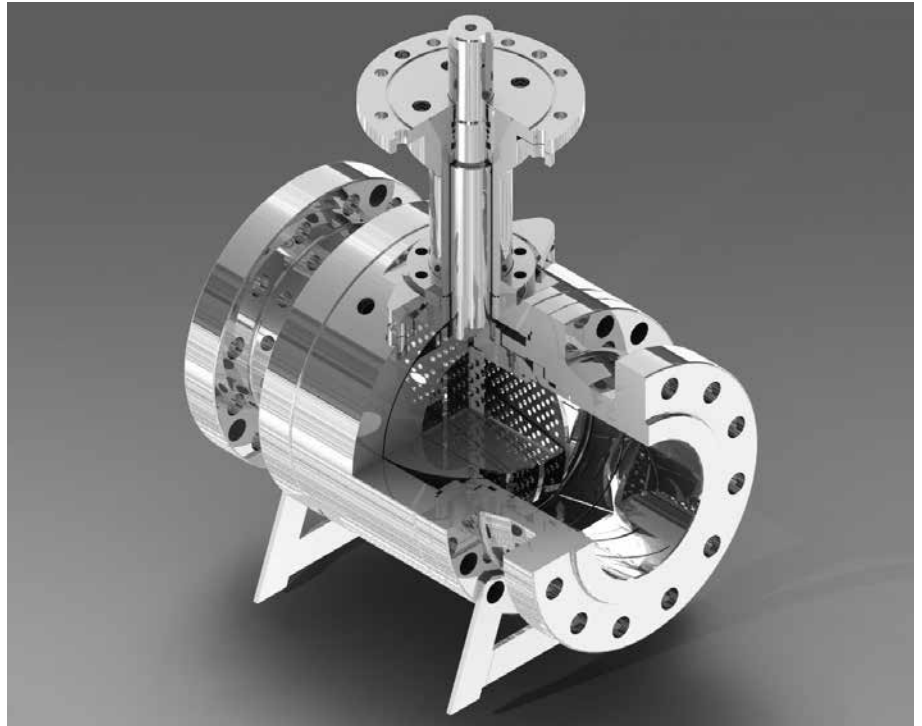
- > Welded construction
- > Trunnion mounted ball
- > Triple barrier stem seals
- > Anti-Blow Out stem design
- > Stem separated from the ball
- > Bearing blocks adsorbing the pressure load on the ball
- > Single or Double piston effect sealing barrier in both directions
- > Built in grease & sealant injection system for emergency stem and seat seal
- > Self lubricating PTFE sleeve bearings and thrust washer reducing torque and to extend service life
- > Body thickness in accordance with ASME B16.34
- > Plastic polymer insert, O-Ring or Metal to metal seat sealing
- > Inconel 625 or 316 overlay on sealing areas or on all wetted areas when required
- > Integral stop in the adapter plate for a permanent reference of open and closed position
- > Antistatic device
- > Double Block and Bleed

Control Valves

Pibiviesse Axial Rotary control ball valves are developed with the proprietary CAGEBALL™ technology, in accordance to International Standard ISA S75, IEC 534.

The ball has an integrated patented Cage trim to eliminate or minimize the hydro or aerodynamic flow control disturbances. The Cage is designed to meet the Project requirements with a number of attenuating plates to divide the pressure drop in stages and reduce the noise generated by the pressure regulation.

The attenuating plates are an integral part of a replaceable cartridge and are specifically designed to obtain a number of significant control advantages, such as reduction of noise, high frequency vibrations and cavitation. This advanced trim allows a bidirectional control of the flow.



CAGEBALL™ control ball valves are particularly recommended any time that noise reduction, cavitation control, erosion, hydrate formation, plugging and clogging risk are present or handling of very large flow rates is a challenge for conventional valves. Another important feature is the large rangeability. One valve can perform the duty of two or even three conventional control valves. The potential savings of building only one single control loop is huge.

These control valves product lines can be further personalized with: Integrated down stream Flow Restrictor, Special silencer or Hyper Silencer trim.

The Hyper-Cage trim is also available; this design combines the high efficiency of the multistage type trim with the Cv of a conventional ball valve allowing, if needed the pigging of the pipeline.

All Cage Trims are inserted into the PIBIVIESSE High Performance trunnion mounted ball valves. Thus all Design, Features and field proven valve reliability remain as standard.

Organisation



Satisfying the Customers, no matter what it takes

More than just providing exceptional customer service and sales presence around the world, “customer focus” is PIBIVIESSE’s 360-degree approach to managing the relationship with our customer.

Our goal is to become a true partner to every person involved in a project and go above and beyond simply delivering a project on time and on budget. The net result we want to achieve is providing the means for our customers to grow their company more effectively than ever before.

Sales Support

“From quotation to field service”: this simple sentence means that PIBIVIESSE commitment is to provide its Clients with products of the highest quality, on-time, at competitive price. Customer satisfaction is our main objective and the same high level of attention is given for any phase of the product life, from quotation to field service.

The PIBIVIESSE Sales Organization has Customer dedicated Teams to better serve and meet Clients needs. Within the Sales Organization a strong Application Engineering Team can support and suggest any Project requirement, from the early development stage through the execution.

Project management

Upon receipt of an Order, the PIBIVIESSE Contract Management team is there to work in close co-operation with the client and ensures that each project is accurately defined and planned, since the early stages, and that the plan is continually tracked during all the design, production, assembly and testing phases.

By understanding the Customer needs and expectations, the Contract Management Team, in coordination with Engineering and Operations Departments, will be able to find the best solution for any issue or problem which may arise during the Project execution, with the aim to meet the product quality and the delivery time that satisfy the Project requirements.

Engineering the future - Design & Flow control capabilities

PIBIVIESSE is committed to manufacture and continuously develop best in class on-off and control valves, to meet the increasingly stringent demands of the energy and process industries. We have in-house Engineering and Design capability to manufacture safe, reliable and state-of-the-art products. We have developed a number of products and systems for which we maintain intellectual property rights and patents.

PIBIVIESSE ball valves are designed in accordance with the most common industry standards (e.g. API 6D/6A, ASME VIII Div.2, ASME B16.34, BS 5351, etc) and is available to develop specific design for critical applications using other design standards and Finite Element Analysis.

Research & Development

PIBIVIESSE has an internal Research and Development Department which, using the most up-to-date technology, can support the Customers in any special requirements which they may have or in developing and upgrading day by day the PIBIVIESSE products. When Research and Development requires extra competences, PIBIVIESSE works in cooperation with external research centers and universities, such as the Politecnico di Milano, to carry out special projects on materials, calculations and on valve's behaviour in critical conditions.

> SimOne™

SimOne is one of the development carried out in cooperation with the Politecnico di Milano. Pibiviesse remain the proprietary of SimOne, a simulation program for control valve sizing and valve behavior prediction. This software has been developed based not only on calculation equations, but also on Pibiviesse's experience on the field and on results obtained in the PIBIVIESSE TestOne Flow Lab.

> Liquid Flow Lab

With the aim of testing the experimental characterization of control valves, a test facility, named TestOne, has been installed at Pibiviesse. It is a flow loop, designed as per ISARP75.23-1995 norm, that allows Pibiviesse to make experimental measurements on valves.

This facility has been created with the cooperation of the Politecnico di Milano University. The loop is made by a tank containing water and glycol (about 30%), a centrifugal pump with variable frequency of rotation (from 20 Hz up to 45 Hz) and a drain valve (a full bore type) situated immediately upstream the tank and downstream the tested valve.

Varying both, the frequency of rotation of the pump, and the travel rate of the drain valve, it is possible to change the boundary conditions of the tests. The choice to use a vertical configuration and to place the test valves on the top side of the loop makes easier to reach the cavitation conditions. We developed a new Air Flow Lab, to study the complex phenomenons of control valves with compressible fluids.

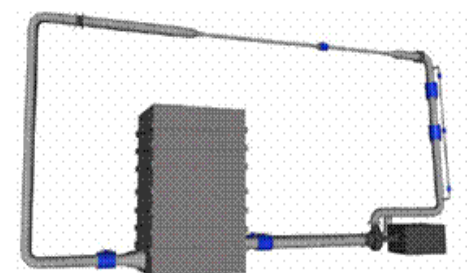
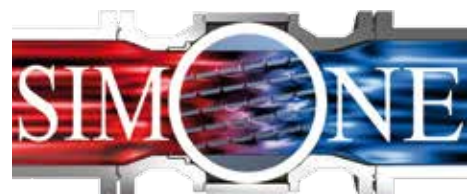
Loop Functional Features:

Pump Characteristic

- > Maximum Allowable
- > Frequency: 45 Hz
- > Maximum Head: 80 meters

Available Measures:

- > Flow rate
- > Pressure
- > Temperature
- > Acceleration
- > Sound Pressure Level



TestOne equipment
Qualification ISARP75.23.-1995

Operational excellence



Designed to perform, built to last

PIBIVIESSE pursues operational excellence every day through the alignment of people, processes and technology, and drives superior results through the pursuit of repeatable, reliable and lean processes that focus on continuous improvement. Our only goal is to fundamentally advance, and generate successful, tangible benefits for our customers, our industry and our global infrastructure.

Guided by a global leadership team with deep industry experience and records of accomplishment at every level, we will exceed customer expectations as we continue to:

- > Create industry benchmarks in performance, productivity and reliability
- > Maintain operational flexibility to allow us to efficiently align our processes with our customers'
- > Remain committed to our core competencies
- > Foster an open, non-bureaucratic environment that promotes personal initiative, and inspires a commitment to excellence that supports our vision and values
- > Provide dedicated and continuing training and education to our employees and interested customers
- > Take personal responsibility and accountability in all aspects of our lives

We are applying Lean and Six Sigma techniques to non-manufacturing processes as well, improving administrative and supply chain processes to significantly enhance our customers' operational capabilities.

Sub-suppliers

Our sub-suppliers' quality is just as important as our own. This means that their quality, and the work they do to improve the level of quality still further, is also a matter of concern to us.

We therefore aim to establish long-term and close partnerships with our sub-suppliers. We like to think to our sub-suppliers as partners with a joint aim, nevertheless their performances are monitored and recorded on a regular basis that, combined with our frequent audits, give us the guidelines to enhance and grow the overall products quality and reliability.

Machining

In-house machining capacity reaches 60” in turning, milling and boring and 72” ball turning and grinding. All these operations are carried out by means of very-high precision machinery and skilled operators, to guarantee the design tolerances required by highly engineered valves. Continuous attention is dedicated to maintain equipment and machinery at the maximum efficiency level, and the personnel is continuously trained and motivated to obtain the maximum precision and best quality needed for our products.

Welding and cladding

Cladding capability can count on four “state of the art” automatic units, able to cover most of the PIBIVIESSE production with the ultimate control technology. High productivity and consistent quality of the output make this equipment the jewel in the crown of our manufacturing processes.

Welding is another qualifying step of our manufacturing process. Pibiviesse capability covers a large spectrum of valves types, from side entry ball valve to fully welded, from top entry ball to control ball valve, always granting the quality and integrity of welding overlay. On welding overlay activities, PIBIVIESSE is able to manage different types of corrosion-resistant alloys and hard-facing materials, considering the application, the nature and temperature of the fluid/gas to be processed. The principal materials are AISI 316L, INCONEL 625, Duplex F51 and Super Duplex F53, including special materials Stellite 6 and Hastelloy C276. For full penetration joints, PIBIVIESSE produces not only standard butt weld joints, in compliance with the main international code (ASME VIII. B31.3, etc), but also special assembly details such as “narrow-gap” profile, to ensure welding of thick materials (up to 300mm). The welding material involved in these activities are not only carbon and low alloy steel, but also dissimilar material composed by AISI 316, carbon steel and INCONEL 625. All welding activities are qualified with or without PWHT (Post Weld Heat Treatment), based on project specification, but always in compliance with the main international standard codes (ASME IX and EN 15614-1 & 15614-7) and with the Major Customers specifications. PIBIVIESSE is qualified to use automatic, machine processes, such as GMAW (Gas Metal Arc Welding), ESW (Electro Slag Welding), SAW (Submerged Arc weld), manual process GTAW (Gas Tungsten Arc Welding) and SMAW (Shielded Metal Arc Welding), for both weld overlay activities and full penetration joints. Our welding processes produce minimum heat input, in order to protect the metallurgical properties of the base material from alteration.



Assembly and testing

PIBIVIESSE ball valves are subjected to extremely severe special tests, far in excess of the requirements of the API and ANSI Standards. Our in house testing capabilities, in addition to the standard requirements of International specification, include:

- > High Pressure Nitrogen Test
- > Low temperature (cryogenic) shell, seat and operational test (down to -196°)
- > High temperature shell, seat and operational test (up to 400°C)
- > Fugitive Emission Helium Leak Test at low, ambient and high temperature condition.
- > Cycling operational “wear resistance” test
- > Torque test
- > Hyperbaric test to simulate sub-sea condition (down to 4000 mt water depth)
- > Vacuum shell test
- > Hysteresis and dead band verification for actuator/valve assembly (control valve)

Bending tests, to verify the performance of the valves when subject to bending loads transmitted by piping, have been performed both on side entry and top entry ball valves. Tests included checks of possible body distortion, torque and leakage rates.





Quality and continuous improvement



Quality assurance system

PIBIVESSE is particularly dedicated to ensure the quality of its products and processes. A Total Quality Management System is in place and certified since 1990, in accordance with the new 2008 edition of ISO 9001 standard (certificate n°180347 del 17/01/1990).

The full production range is therefore available with CE marking and ATEX certificate of conformity.





Pibiviesse defines and issues a dedicated Quality Control Plan for each Order. This document provides the written set of procedures and quality controls that PIBIVIESSE is going to deliver to meet customer's expectations.

The Quality Control Plan also identifies the organization and the team that will be responsible for quality controls, the specific procedures to be used, the quality assurance measures and the required documentation.

Some of the controls that are normally included in the plan are:

- > Visual and Dimensional checks on Incoming materials
- > Non destructive Tests on Incoming materials
- > Issue of N.C.R. on inspected materials and items
- > Check of sub-contractor's certificates
- > External audits and visit to sub-contractor

Pibiviesse provides all available non destructive tests on Valves and components, according to major applicable standards (i.e. Dye Penetrant, Magnetic particles, X and Gamma ray, Ultrasonic, PMI Analysis, Hydrostatic and pneumatic, Stem torque, Visual and dimensional, Hardness, High pressure gas test). Other additional non destructive or destructive examinations may be performed to customer requirements or specifications.

Certifications achieved over the years

- > PED 97/23/EC (CE Marking): certificate no. CE-1370-PED-H-PBV001-10-ITA obtained on 13/06/2001
- > ATEX 94/09/CE: conformity to ATEX 91/9/CE Directive of 23/06/2003
- > SIL : IEC 61508 – SIL 3:
 - Conformity certificate no. 28710067 for “top entry trunnion mounted ball valves”
 - Conformity certificate no. 28710068 for “side entry trunnion mounted ball valves”
 - Conformity certificate no. 28710069 for “fully welded trunnion mounted ball valves
 - Conformity certificate no. 28710106 for “functional safety management system for development, design, engineering and manufacture of ball valves for safety instrumented systems”
- > ISO 3834-2: certificate no. IT241498 of 10/11/2011
- > GOST certificate no. PPC 00-044011 of 23/06/2011
- > OHSAS 18001:07.



The Lean journey

Pibiviesse drives superior results through the pursuit of repeatable, reliable and lean processes that focus on continuous improvement.

Pibiviesse is implementing the CIRCOR Business System, whose pillars are:

- > Building a results-driven leadership and continuous improvement culture
- > Eliminating waste across the company (cost, quality, time, resource, space)
- > Utilizing Lean and Six Sigma for speed, flexibility and efficiency
- > Delivering better performance to customers, enabling Pibiviesse to take market share

In the first few years, our goal has been two-fold: first, develop a talented leadership engine to take Pibiviesse to higher levels of operational performance and second teach employees how to continually improve their work processes.

More recently, Pibiviesse started applying these techniques to non-manufacturing processes as well, improving administrative and supply chain processes to significantly enhance our competitive advantage and take market share.

Although Pibiviesse is in the early stages of its lean journey, we have gained significant wins shortening lead times and improving delivery performance to customers, enhancing the quality of our products and improving the work environment for our employees.



Health, Safety and Environment

The health and the safety of our people and the respect for the environment where we live are a foundation of our corporate culture and a prerequisite for our business.

Totally in compliance with European Regulations, we care about the health and safety of our employees and the environment where our people work.

We make a real effort to use non-toxic materials and processes, and constantly strive to improve our working conditions, equipments and workplace, to protect our employees.

Our goal is to safeguard our people, the environment and -while meeting our customers' requirements- to enhance the quality and safety of the workplace in which our products are produced and used.

References and approvals

PIBIVIESSE has been audited and approved by many of the major worldwide Engineering Companies, Contractors, Oil Companies, Oil and Gas Pipeline Authorities and is supplying valves for many different and demanding service conditions for off-shore and on-shore applications.

Please contact our offices for specific references and approvals.

Global presence



PIBIVIESSE's after-sales quality

Even if quality is normally associated with the characteristics of our products, our commitment to quality does not end with the delivery, wherever in the world.

As PIBIVIESSE sees it, quality is a responsibility throughout the life of our products which also includes the transfer of experience, service and the supply of spare parts to our After Sales Partners in the world. To ensure that this is the case, we are constantly training our staff in every area of the world, to act as support and problem-solvers for our customers.

A world of servicing

PIBIVIESSE can count on a worldwide valve repair and servicing network to guarantee all of his customers a professional, competent and quick response to any site request.

PIBIVIESSE's Authorized Repair Workshops are qualified companies that have been selected in various areas of the world to work on our products and their valve technicians have been trained on PIBIVIESSE products.

The Personnel of our repair workshops are qualified engineers with proven field experience and fully trained on our products.



Continuously Improving Flow Control. Worldwide.



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