Fondon®
global

GLOBAL SOLUTIONS IN FLOW SYSTEMS INSTRUMENTATION AND AUTOMATION

SAMPLING SYSTEMS FOR LIQUIDS AND GASES FOR ALL TYPES OF APPLICATIONS

Process sampling systems

In the current chemical and petrochemical industry, it is essential to perform analysis and in-process tests, which inevitably entails possessing on-line analysers, which is not always feasible, with the most appropriate option being obtaining a process sample to carry out discontinuous analysis. Therefore, the installation of "emission-free" sampling systems is spreading rapidly in plants which focus on safety, quality and the environment.

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Importance of having in-plant sampling systems

Today, high standards of quality in the final products produced are required, particularly in the chemistry and petrochemistry industry. Therefore, it is necessary to have process measurements, which are generally taken with on-line analysers.

However, there is an increasingly greater tendency to obtain samples to be analysed in the laboratory. This system enables the plant to obtain measurements in points without analysers.

The process analysers do not always cover all the analysis points due to their cost, complexity and required maintenance, and so the option of installing sampling systems in the significant analysis points is the best guarantee to control the process.

These systems have a series of advantages, in accordance with the requirements of the current, modern industry:

- They maximise the safety of the operator.
- They avoid product emissions, respecting the environment.
- They obtain a representative sample.
- They do not influence the development of the process.
- Ease of operation.
- Low cost, as they hardly require any maintenance.

Fondon Global, as a specialist in the integration of process analysis systems, has developed a wide range of samplers which cover the majority of the applications in the chemical, petrochemical and refining sector.

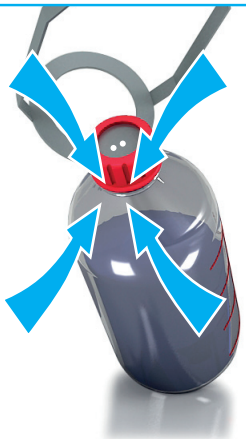
Liquid samples

The collection of liquid samples assures an "emission-free" system and its process is as follows:

The samplers have an adaptor, with two needles with different lengths designed to pierce the septum, assuring its sealing and avoiding emissions of the sample outside. It enters the sample with the longer needle and the shorter needle acts as a vent to avoid pressurisation in the container. This vent can be redirected to process, to the atmosphere or to a filtration system.

On extracting the container with the sample, the septum immediately seals the needle penetration holes. Next the container is taken to the laboratory, and the liquid can be extracted with a syringe, minimising exposure to the personnel.

Once the analysis procedure is completed, the sample remains sealed in the container.



Sampling systems for liquids
ES Model

With a single handle, this equipment enables the collection of process samples in a manner which is simple for the operator.
It is made up of a three-way valve with three positions and the "emission-free" sample collection system.

Operation:
The sampler container in the needle unit and its position is secured with the Click support. Next, the procedure for obtaining the sample is completed as follows:

Off Position:

In this position, the valve closes the process and return pipes, isolating the sampler from the process.

Bypass Position:

It enables the recirculation of the sample from the inlet until the point of return. The objective of this manoeuvre is to avoid the dead volume which exists in the stretch of pipe to the sampler and to remove the remains left behind by the collection of previous samples. As a result, we ensure that we obtain a representative sample.

Sample Position:

It connects the process channel with the sample channel, allowing the collection of the sample in the container, which remains sealed, just as is explained in the section relating to the collection of liquid samples.

Finally, the support below the container is taken away to remove the bottle; the septum will automatically seal the container, blocking any emission and ensuring its representativeness, with the container remaining available to be taken to the laboratory.

Although this design is essentially for low-pressure and -temperature applications (from atmospheric pressure to 8 bar(g) and 60 ºC), there are configurations that allow it to be adapted to process conditions of higher pressure and temperature.

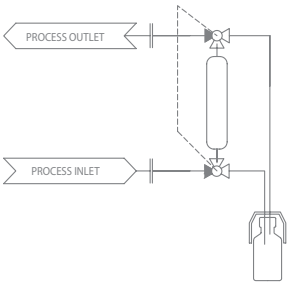
Sampling systems for liquids
FV 01 Model

Through a single handle, this equipment enables the collection of process samples in a manner which is simple for the operator. It is a fixed-volume collection system whose purpose is to collect a liquid sample in a safe manner in critical process conditions.
It is made up of 2 three-way valves with three positions which connect with one another, and the "emission-free" sample collection system.

Operation:
The sampler container in the needle unit and its position is secured with the Click support. Next, the procedure for obtaining the sample is completed as follows:

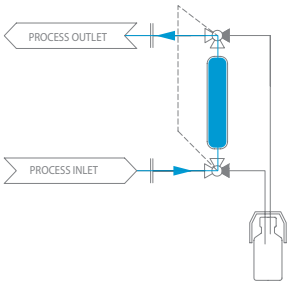
Off Position:

In this starting position, the valves close the process and return pipes, process isolating the sampler.



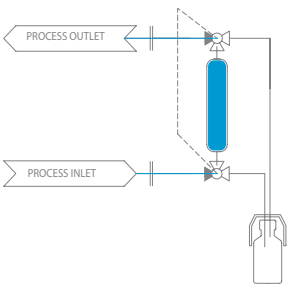
Bypass Position:

It enables the recirculation of the sample from the inlet to the point of return, whereby the sample moves through the fixed-volume chamber. The objective of this manoeuvre is to avoid the dead volume which exists in the stretch of pipe to the sampler and to remove the remains left behind by the collection of previous samples. As a result we ensure that we obtain a representative sample.



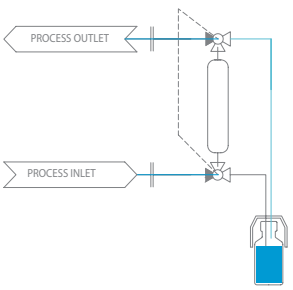
Off Position:

Again we go through the Off position in order to isolate the sample collected in the fixed-volume chamber. Since the fluid is a liquid, the pressure of the cylinder becomes atmospheric upon placing it in the following sample position, eliminating any danger to the operator.



Sampling Position:

It connects the fixed-volume chamber with the container, leaving the whole operation process isolated. The sealing takes place in the container, as has been explained in the section relating to the collection of liquid samples. The vent is directly connected with the upper part of the fixed-volume chamber, allowing the sample to flow and avoiding pressurisation in the container.



Finally, the support below the container is taken away to remove the bottle; the septum will automatically seal the container, blocking any emission and ensuring its representativeness, with the container remaining available to be taken to the laboratory.

This design enables the collection of samples at high pressure (up to 400 bar(g)) and high temperature (232 ºC). There are configurations that allow it to be adapted to process conditions of higher pressure and temperature.

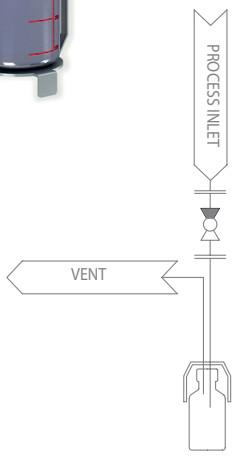
Sampling systems for liquids
ESV Model

Through a single handle, this equipment enables the collection of process samples in a manner which is simple for the operator.
It is made up of a two-way valve with two positions and the "emission-free" liquid sample collection system.

Operation:
The sampler container in the needle unit and its position is secured with the Click support. Next, the procedure for obtaining the sample is completed as follows:

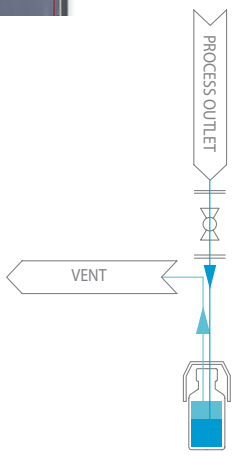
Off Position:

In this position the valve closes the process pipe, process isolating the sampler.



Sampling Position:

It connects the process pipe with the container, enabling the collection of a sample in the said container, which remains sealed, as has been explained in the section relating to the collection of liquid samples.



Finally, the support below the container is taken away to remove the bottle; the septum will automatically seal the container, blocking any emission and ensuring its representativeness, with the container remaining available to be taken to the laboratory.

Although this design is essentially for low-pressure and -temperature applications (from atmospheric pressure to 8 bar(g) and 60 ºC), there are configurations that allow it to be adapted to process conditions of higher pressure and temperature.

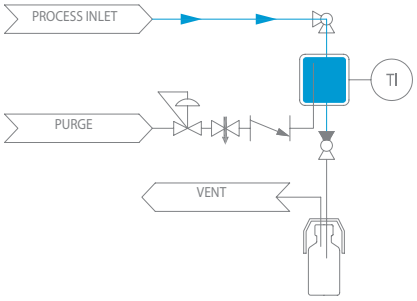
Sampling systems for liquids
VS Model

This equipment has been especially designed for viscous liquids. It is a fixed-volume chamber which enables the collection of a sample in critical process conditions.
It is made up of a piston valve, to ensure a representative sample is obtained, a fixed-volume system, a ball valve and the "emission-free" liquid sample collection system. It generally includes a purge system to remove the dead volume.

Operation:
The sampler container in the needle unit and its position is secured with the Click support. Next, the procedure for obtaining the sample is completed as follows:

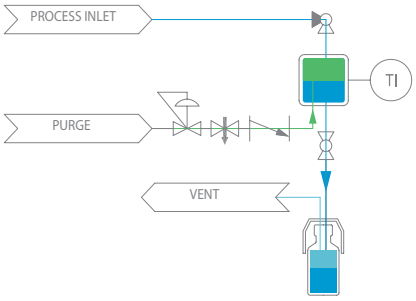
Pre-sampling:

The piston valve is opened to allow the sample to flow to the fixed-volume chamber; once it fills, the piston valve is closed.



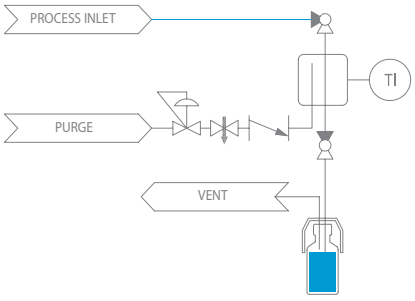
Sampling:

The sample collection valve is opened and then the purge valve. The inert gas pressurises the fixed-volume chamber and makes the sample flow to the sampler container.



Completion:

The purge valve and the sample collection valve are closed.



We proceed to take away the support below the container to remove the bottle, and the septum will automatically seal the container, blocking any emission and ensuring its representativeness, with the container remaining available to be taken to the laboratory.

This design enables the collection of samples at high-pressure (up to 400 bar(g)) and high temperature (450 ºC). There are configurations that allow it to be adapted to process conditions of higher pressure and temperature.

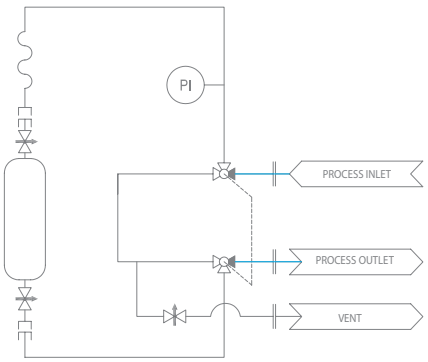
Sampling systems for gases
SG Model

This equipment has been especially designed for gases. It is a fixed-volume chamber and enables the collection of a sample in critical process conditions.
Its design, through single operation with two interconnected three-way valves, performs all the operations necessary, facilitating the work of the operator.

Operation:
The procedure for obtaining the sample will be as follows:

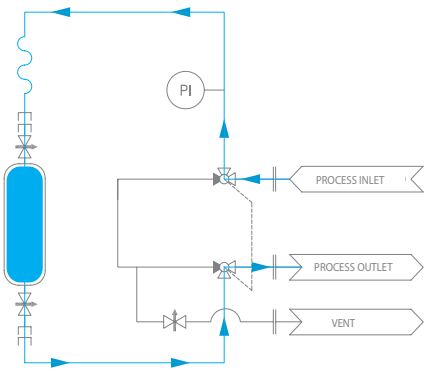
Off Position:

In this position, the sampler remains process isolated. With the valve in the Off position, the sampler cylinder is installed, the hose is connected and the cylinder's two needle valves are opened.



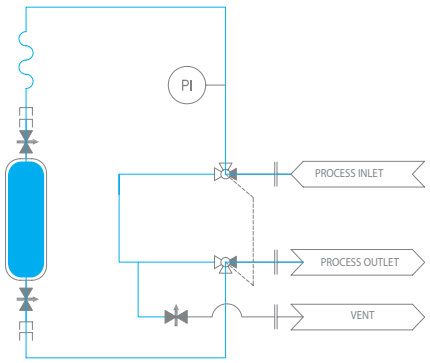
Bypass Position:

When the valve is placed in Bypass position, the sample is recirculated. The objective of this manoeuvre is to avoid the dead volume which lies in the stretch of the pipe to the sampler and to remove the remains left behind from previous sample collections. As a result, we ensure that we obtain a representative sample.



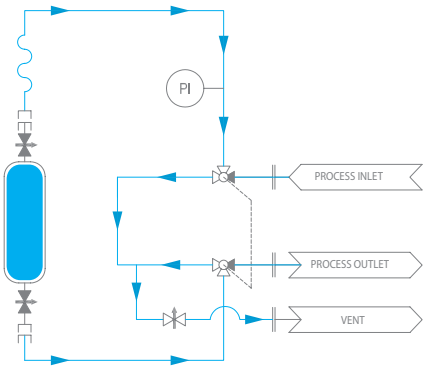
Sampling Position:

We place the valve in the Off position again, whereby the gas will be retained in the cylinder, proceeding to close the cylinder's two needle valves.



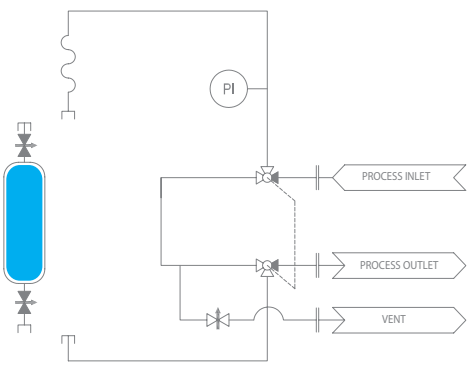
Depressurisation/Vent Position:

In this position, we depressurise the whole system except the sample retained in the cylinder, through which the vent can be redirected to the torch.



Off Position:

Finally, the valve is placed in the Off position again, with the sampler remaining process isolated. The quick connectors are then disconnected and the cylinder is removed with the sample, ready to be taken to the laboratory.



This design enables the collection of samples at high-pressure (up to 200 bar(g)) and high temperature (232 ºC). There are configurations that allow it to be adapted to process conditions of higher pressure and temperature.

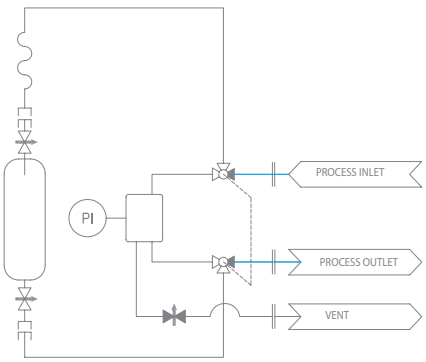
Sampling systems for gases
SLG Model

This equipment has been especially designed for liquefied gases. It is a fixed-volume cylinder chamber. Its design enables the operation of 2 valves with one handle.
It is possible to have an internal or external expansion chamber to avoid the danger posed by the exposure of the cylinder to high temperatures, allowing safe handling.

Operation:
Next, the procedure for obtaining the sample is completed as follows:

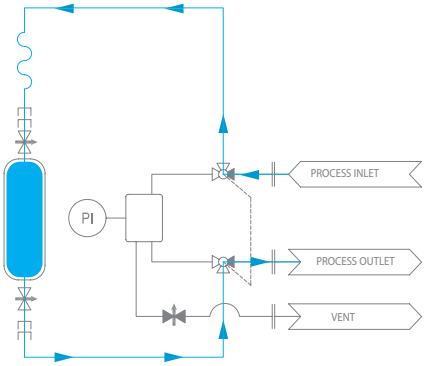
Off Position:

In this position, the sampler remains process isolated. With the valve in the Off position, the sampler cylinder is installed, the hose is connected and the cylinder's two needle valves are opened.



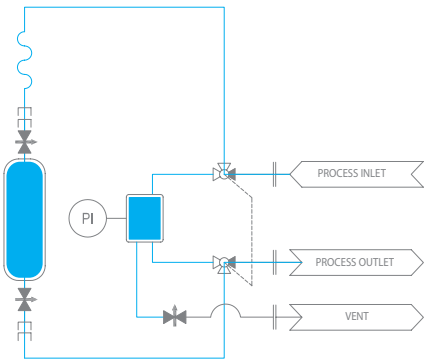
Bypass Position:

When the valve is placed in Bypass position, the sample is recirculated. The objective of this manoeuvre is to avoid the dead volume which lies in the stretch of the pipe to the sampler and to remove the remains left behind from previous sample collections. As a result, we ensure that we obtain a representative sample.



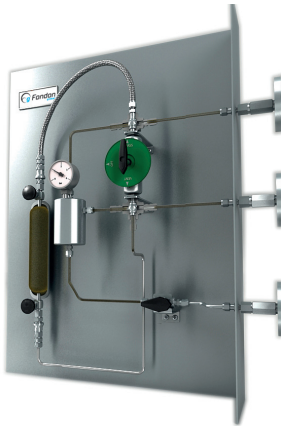
Off Position:

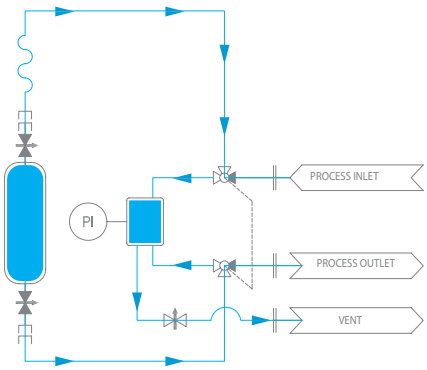
We place the valve in the Off position again, whereby the gas will be retained in the cylinder, proceeding to close the cylinder's two needle valves.



Depressurisation/Vent Position:

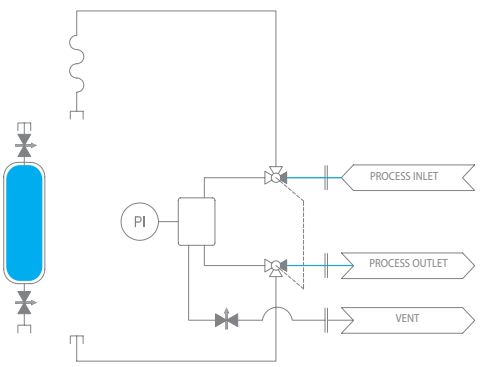
In this position, we depressurise the whole system except the sample retained in the cylinder, through which the vent can be redirected to the torch.





Off Position:

Finally, the valve is placed in the Off position again, with the sampler remaining process isolated. The quick connectors are then disconnected and the cylinder is removed with the sample, ready to be taken to the laboratory.



In the event that the expansion chamber is installed externally, it will have a gate valve to said chamber.

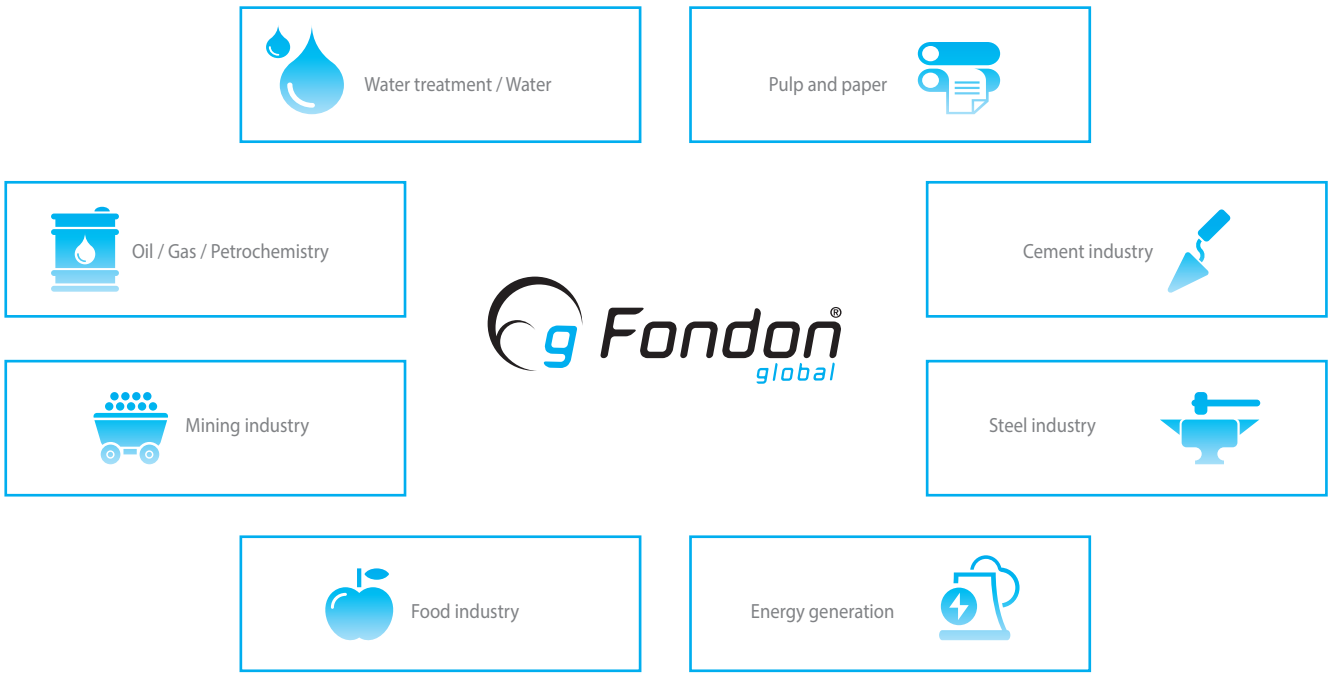
Options

Applicable options for liquid and gas sampling systems

Fondon Global has several options to adapt the standard sampling systems to the specific needs of our clients. In the table below you will see the most common ones. However, given that there are processes which require an individualised study to achieve the optimal result, in our company we have a specialist department dedicated to performing the analyses and studies necessary to offer our clients the most appropriate solution in each case.

- Floor-mounting bracket
- Ex zones approved mateials under request
- Pressure gauge
- Temperature gauge
- Valve locking device
- Alloy materials
- Dead Man valve operation
- Valve safety blockage system
- Sample cooler
- Steam trace heating
- Electric trace heating
- Flow switch
- Alloy materials
- Purges
- Activated carbon filters for atmospheric venting
- Valve position detection

Through its brand Fondon Global, Fondon Redes y Fluidos has a standard document to be completed by the client, which will include the main characteristics of the process where the samplers will be installed to facilitate the design and evaluation, on the part of our Department, of the most appropriate model or models. This document is known as the FG-IT-001-13 data sheet for equipment definition. You can request said document at the email address: otecnica@fondon.org.



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GLOBAL SOLUTIONS IN FLOW SYSTEMS INSTRUMENTATION AND AUTOMATION

What we offer

The companies which make up Fondon Global boast more than 35 years of experience in the field of fluid networks, particularly in the mining, oil, chemical gas, energy, cement, paper, food and steel industry.

Our offer encompasses the design and manufacturing of standard and special valves, the sale of products of our brand or leading manufacturers in their markets, supply integration, and even turnkey contracts for industrial automation engineering projects. For years, this structure has offered the guarantee of the ISO 9001 quality certificates.

Business Model

The business model of Fondon Global is built upon four solid pillars, from which we offer comprehensive solutions adapted to the needs of each client:

Design | **Manufacturing** | **Representation** | **Integration**

Design

The equipment design division for the control of fluids enables tailor-made solutions for special knife gate, valves, dampers, hollow jet valves, butterfly valves, check valves, gate valves and other hydro-mechanical equipment. We also offer special configurations that do not require manufacturing but do need adaptations to plant requirements.

The industrial engineering division develops projects with any communication protocol. We have vast experience in the FF (FieldBus Foundation) protocol.

Manufacturing

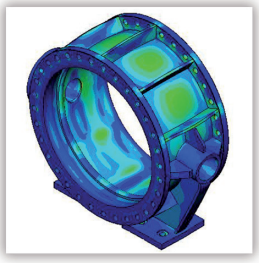
The Fondon Redes y Fluidos facilities serve as the coordination headquarters of all the production centres. From here, a network of centres which manufacture the different equipment is managed.

Representation

Fondon Global (FG) is a registered trademark of Fondon Redes y Fluidos, through which the products manufactured by the company are marketed. The objective of this measure is to strengthen and extend the range of solutions which, through our partners, leaders in the market of fluid networks and/or automation, we can offer. This strategic action allows us to provide comprehensive solutions to any company with this type of requirement.

Integration

The possibility of representing leading manufacturers in their respective markets allows us to integrate solutions in automation and fluid networks, through the combined experience of all of them and our own.



Design

Manufacturing

Representation

Integration

In what sectors can Fondon help with its solutions?

	Sectors of application							
	Treatment of water / Water	Oil / Gas / Petrochemistry	Mining	Food	Pulp and paper	Cement	Steel	Energy generation
Instrumentation	■	■	■	■	■	■	■	■
Industrial automation	■	■	■	■	■	■	■	■
CCTV		■	■	■		■	■	■
Knife Gate Valves	■	■	■	■	■	■	■	■
Dampers		■	■		■	■	■	■
Hydro-mechanical equipment	■							■
Butterfly Valves	■	■	■	■	■	■	■	■
Ball Valves	■	■	■	■	■	■	■	■
Gate Valves	■	■	■	■	■	■	■	■
Globe Valves	■	■	■	■	■	■	■	■
Check Valves	■	■	■	■	■	■	■	■
Plug Valves		■	■	■		■	■	■
Diaphragm Valves		■	■	■		■		■
Pressure-reducing Valves	■	■	■	■		■	■	■
Control and Safety Valves	■	■	■	■	■	■	■	■
Balancing Valves	■			■				
Operations	■	■	■	■	■	■	■	■
Solenoid Valves	■	■	■	■	■	■	■	■
Filters	■	■	■	■	■	■	■	■
Accessories	■	■	■	■	■	■	■	■
Pipes and Accessories	■	■	■	■	■	■	■	■

Our Mission

Transparency and proximity to the client have always been our philosophies. Upon them we have built our strategy: "To be the benchmark in the manufacturing and provision of technological services in the industrial automation and fluid networks sector, particularly in emerging countries, mainly in the Latin-American market, while remaining aware of our responsibility in the advancement of the countries in which we operate".

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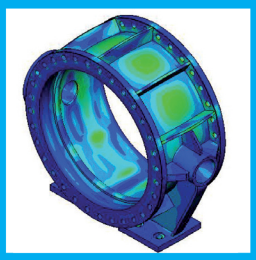
GLOBAL SOLUTIONS IN FLOW SYSTEMS INSTRUMENTATION AND AUTOMATION



Design

Manufacturing

Representation

Integration

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