



Trusted Partners.  
Innovative Solutions.



# Global operations local solutions

Energy Conservation | Environment | Process Efficiency

[www.forbesmarshall.com](http://www.forbesmarshall.com)

Forbes Marshall

Forbes Marshall Arca

Forbes Marshall Codel

J N Marshall

Krohne Marshall

Spirax Marshall

Forbes Vyncke

**1946**

Forbes Marshall enters into association with Spirax Sarco, UK for selling Steam Traps and other steam efficiency equipment in India.



Trusted Partners.  
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**1959**

The association with Spirax Sarco, becomes a joint venture and starts manufacturing steam traps and other steam related equipment. The products of Spirax Marshall soon become the standard for increasing steam efficiency in the process industry.



**1997**

Forbes Marshall introduces consultancy services for layout and detailed engineering of new process plants. FM consultancy covers utility distribution, plant layout, and good engineering practices.

**1998**

The first boiler efficiency monitoring system, the Effimax, is developed. Effimax incorporates every important parameter to improving boiler efficiency in one package. Later, advances in instrumentation and internet technologies make the Effimax a complete remote efficiency monitoring solution.



**1962**

Forbes Marshall enters the field of control instrumentation. pH analysers are the first products introduced. Later in Joint venture with Polymetron of France (now part of Hach Ultra Analytics, Europe), Forbes Marshall manufactures a complete range of water quality analysers.



**2002/2003**

Piston Valves introduced. The versatile forged steel piston valve with perfect tightness becomes popular for a variety of steam, liquids and gases in the process industry.



**1984**

In joint venture with Krohne Messtechnik, Germany, Forbes Marshall begins manufacturing a wide range of flow and level meters. The vortex flowmeter becomes known as one of the most accurate and intelligent flowmeters in the world.



**2003**

Forbes Marshall sets up an internationally certified flowmeter calibration test rig for calibrating large bore magnetic flowmeters upto 2000 mm diameter. The flowmeter calibration facility is part of seven such facilities in the Krohne network worldwide.



**1985**

A range of control valves and desuperheating stations are introduced, in collaboration with Arca Regler, Germany. These control valves set a new standard in accuracy and reliability. Control valve actuators are tested not to fail over one million strokes.



**2004**

The compact Minimax boiler introduced. Forbes Marshall wins the best industrial design award for the year 2004 for its Minimax boiler



**2006**

Forbes Marshall now makes Dust Monitors with Codel, UK.



**2007**

Forbes Marshall introduces its range of QCS and Hoods for the Paper industry





1946 Forbes Marshall Pvt. Ltd.



1997 Forbes Marshall Kenya



1998 Forbes Marshall Sri Lanka



2000 Forbes Marshall USA



2001 Forbes Marshall Bangladesh



2002 Forbes Marshall Indonesia



2004 Forbes Marshall Thailand



2006 Forbes Marshall Malaysia



2007 Forbes Marshall Canada





# Manufacturing

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Quality and Innovation are the two most important reasons why Forbes Marshall is a supplier of choice to so many Process Industries around the world.







All, Forbes Marshall's manufacturing facilities are ISO 9001 certified. Total quality being an integral attribute of our manufacturing setup, we ensure that manufacturing procedures meet the highest standards of quality practice, and are in line with global quality norms. From critical safety and stop valves for Nuclear plants, to the most delicately calibrated pharmaceutical grade pure water analyzers, you will see the same strict adherence to quality standards that has become the hallmark of Forbes Marshall worldwide.

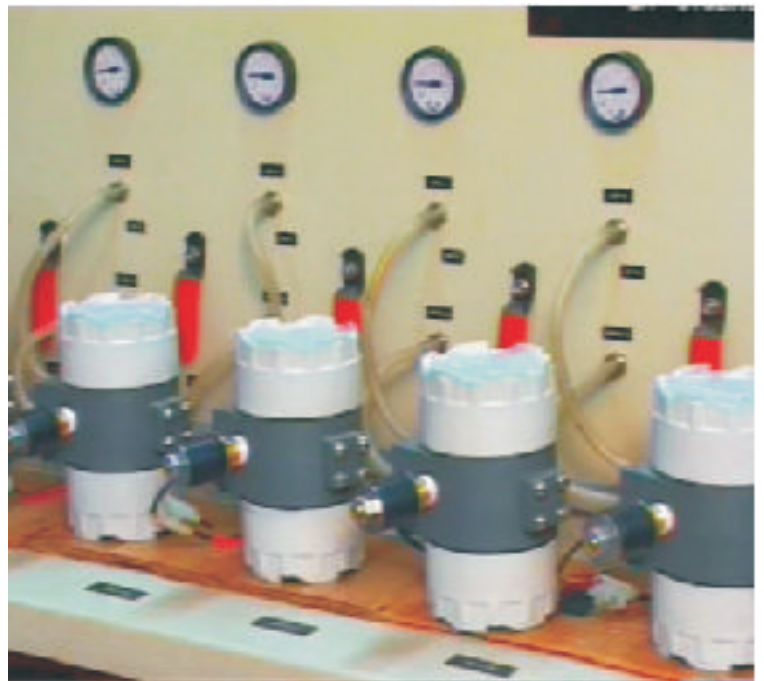


# Testing

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All our products bear appropriate standards and conformance marks in different countries, each one tried and tested on world class facilities.

Forbes Marshall control valve actuators are guaranteed to one million strokes. Guarantees like this are possible due to the number of tests that are carried out on each product before it leaves our factory. Rigorous tests mimic conditions for harsher than the real world, while equally stringent norms set the standard.





# Calibration

Forbes Marshall products are calibrated on reliable and modern calibration systems which can be traced to International standards.



Forbes Marshall products are seen on a host of critical applications, all of which are highly dependant on the accuracy of our equipment. Whether it is measuring minute quantities of liquids in pharmaceutical plants, metering millions of gallons of municipal supply water, or controlling the parameters of steam generation, accuracy is critical.



Forbes Marshall is committed to technology, innovation, quality and customer service. Our Research and Development constantly develops new products that add value to customer processes.

Our technical collaborators are pioneers in their industry and lead the field in the development of innovative, effective and reliable solutions to the challenges of the process industry today. Many of these partners rely on Forbes Marshall for a synergistic two-way collaboration in technology, manufacturing and research.





# Training

Complete knowledge of the working and benefit of a product, plays an important role in Customer delight.



Forbes Marshall regularly organizes training programs for customers at site as well as its modern training facilities at Pune. Our commitment to increasing practical knowledge of steam engineering and process efficiency and control, is evident from our Steam Engineering Training Center and our Instrumentation Training Center at our Pune works. Through both these institutions, Forbes Marshall conducts various courses in energy conservation and process efficiency, available to practicing managers and fresh engineering graduates.





# Services to enhance utility performance.

Fuels change, plants depreciate, and new requirements come up over time. Whether you're looking at revamping an old utilities system or planning out a new one, our audit and consultancy services are an ideal solution.

## Energy Conservation

Energy is an important resource. Everyone agrees Energy Conservation has great potential. It always has. But the imperative for Energy Conservation has changed radically in modern times. Ten years ago, energy conservation was something good to do. Today, energy conservation is a must for survival: that is a much more powerful imperative. As prices for materials and finished products- are increasingly dictated by global markets, what remains within our control is conserving cost, and energy costs are perhaps our greatest opportunity for cost reduction today.

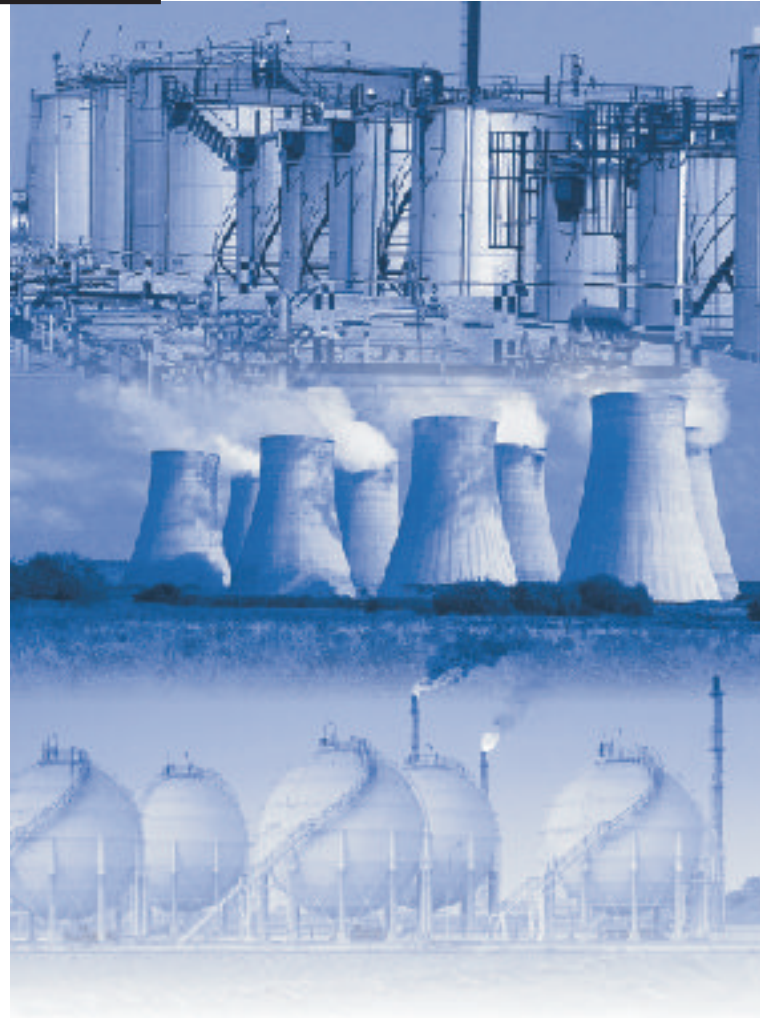
So while the potential for energy conservation has always been huge, the change in the demand for conservation to survive is creating today the most momentum we have ever seen for energy conservation. Steam is an expensive utility that finds application in a wide range of processes. The prudent, careful and energy-efficient use of steam can be as vital to affect the viability of any process activity.

For more than 60 years our proven expertise in the field of Steam Engineering & Control Instrumentation has enabled us to understand steam utilities perfectly and pioneer techniques & equipment for auditing energy consumption. Our technology tie-ups with globally known names help us put together systems that conform to internationally accepted standards of operation. We innovate, design, produce, and implement solutions to achieve amazingly large cuts in process costs, apart from drastically increasing product quality and yield.

## Forbes Marshall Consultancy

With a knowledge base of over six decades and the expertise of our skilled people, we can advise you on the utility distribution and layout for your plant. Good Utility Engineering practices mean that process equipment receives steam at the right pressure, in the right quantity and of high quality. It means proper equipment layout to facilitate maintenance-friendly operation and piping layouts that ensure optimum specific steam consumption norms.

Our consultancy service is comprehensive and covers writing of technical specifications, development of detailed engineering plans and layouts as well as tendering, evaluation and inspection.





# Saving Energy Starts Here.

In the boilerhouse. We've been slashing fuel bills in the boilerhouse for over 50 years. When you need a system to optimize your process and cut your expenses, come to the experts.



## Marshall 'S' Boiler — The most efficient solid fuel package boiler

In order to cater to these emerging trends and meet the requirement of our existing customers; we have added the solid fuel fired boiler, Marshall – S to our product basket. With a strong presence in Oil & Gas Boiler segment, the launch of Solid Fuel Fired Boilers reconfirms our commitment towards promoting energy efficient products, while maintaining our consistent efforts to high standards in quality.

The Marshall S boilers shall be available in the capacities of 1 TPH to 4 TPH. The boilers are designed to burn multiple solid fuels viz., wood, coal, briquettes of solid agrowaste etc. Marshall S boilers are shell type boilers with genuine three pass wet back design and shall be available in options of manual and automated fuel feeding systems.



## Minimax — A Complete Compact Boilerhouse

An award winning 3 pass wetback boiler that redefines the meaning of the word "turnkey". Compact, fully packaged and ready to start, the Minimax has built in accessories that make it a complete boiler house and not just a boiler. In capacities of 500 to 6000 kg/hr of steaming, the Minimax has no limitations on heavy fuels like furnace oil and heavy oil. Forget the wet steam from small capacity coil type boilers. The Minimax gives you steam at 98% dryness! It's completely skid mounted with accessories like feedwater tank, fuel oil tank and instrument panel fitted on the boiler itself.

## Packaged Steam Boilers

Hundreds of our three-pass wetback boilers are generating steam in plants all over India, the Gulf, Africa, and Southeast Asia. These boilers provide the driest steam possible from the least amount of fuel and floor space. The true three-pass design ensures complete combustion, no dangerous soot build-up and low flue gas exit temperatures. The full Wetback structure saves fuel, money and improves boilerhouse safety by reducing radiant heat and keeping boiler surfaces cool to the touch.

The end result: thermal efficiencies in excess of 86% with gas, and 88% for oil.

Our boilers are designed for easy maintenance and inspection. Hinge-mounted front doors and rear lift-off doors give you clear and instant access. Every Marshall boiler is manufactured with the latest submerged arc fabrication technologies to ISO 9001, IBR, BS 2790 (stand-alone operation) standards. Every boiler is a complete packaged unit, with a Forbes Marshall automatic blowdown control system included as standard. Combined with Forbes Marshall's steam equipment and related instrumentation, you get more than a boiler, you get efficiently generated steam. Boiler capacities from 500 kg/hr to 16,000 kg/hr.

## Marshall Burners

The Simplex Pressure Jet Burner is a composite unit comprising a combustion head, electrically operated air damper and forced fan draught fan. The electric ignition and flame monitoring equipment comes prewired to a junction box. The oil pump comes with integral pipework and an oil pre-heater when necessary. For higher capacity boilers, our split-stream burners have a composite unit including and electrically operated air damper.





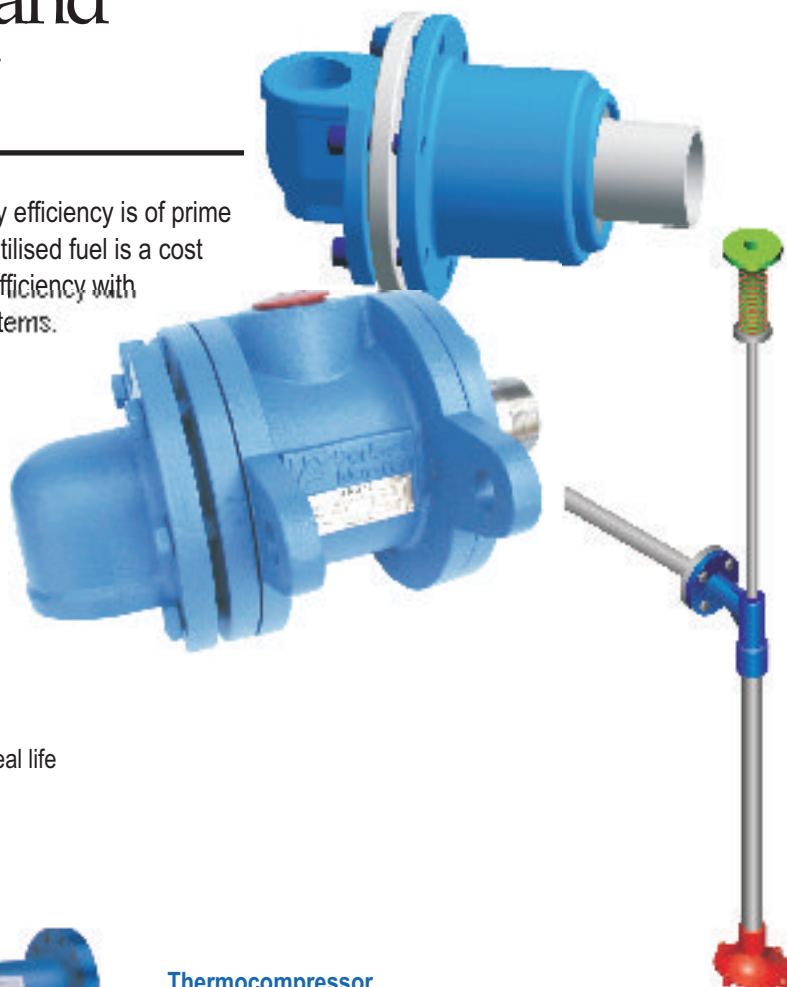
# Boosting steam to boost profits and product quality

Whichever industry you are in, maximising energy efficiency is of prime concern. That's because every bit of improperly utilised fuel is a cost wasted, a profit gone down the drain. Maximise efficiency with these economical, accurate and user friendly systems.

## Rotary Joints & Syphons

Forbes Marshall has a wide range of Rotary joints and syphons catering to every speed and drier type.

- From Balanced seal Rotary joints at low speeds to floating seals at high speeds
- Elbow and spring loaded Stationary syphons to High speed Cantilever Syphons with pickup shoes
- Robust Design with Aesthetic finish .
- Seals made from Antimony impregnated carbon giving high seal life
- Easy to Maintain and simple in construction
- High resistance to wear and seal leakage.



## Thermocompressor

The thermocompressor system offer an energy efficient solution and thus directly impacts your bottomline by compressing low pressure flash steam or exhaust steam to higher pressures and temperatures reclaiming energy which would otherwise be vented. These systems help realize a reduction in live steam consumption exceeding 15 – 20% as well as an improvement in the product quality.

Thermocompressor systems boost profits in practically every process industry like paper, textile, pharmaceuticals, sugar, chemicals, distilleries , steel and petrochemicals.

## QCS System

- Reliable and sturdy scanner — accuracy  $\pm 0.5$  mm
- IR Sensor accuracy  $\pm 0.1\%$



## Hood & Pocket Ventilation System

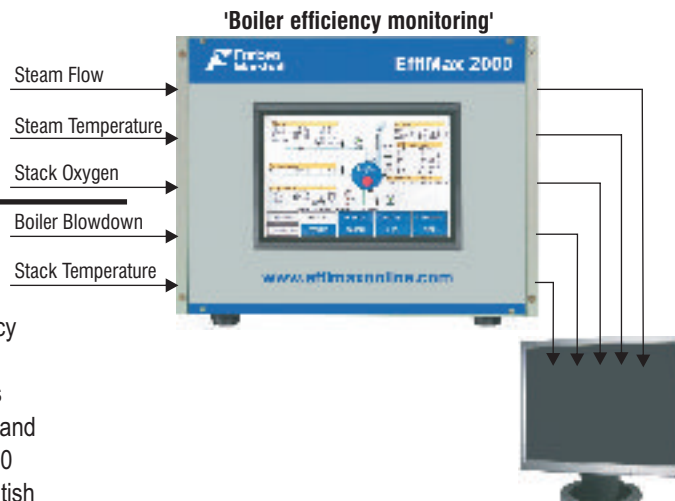
- Pocket Ventilation systems helps improving production
- HRU provides energy recovery



# Systems to maximise energy efficiency & productivity

## EffiMax - total boiler efficiency monitoring system

With the EffiMax 2000, the means to improving your boiler's total efficiency are available in a simple, cost-effective package. It incorporates every important parameter into one package: flue gas Oxygen levels, stack gas temperature, blowdown losses, radiation losses, feed water temperature and density compensated steam flow rate. With these inputs, the EffiMax 2000 calculates your boiler's absolute efficiency in general accordance with British Standards' recommendation BS845. This calculation can then be compared to your boiler manufacturer's stated optimum efficiency to determine overall performance. All measured parameters, calculated losses, savings and efficiency parameters are provided on digital display and can be sent to your PC with the provided data acquisition and diagnostic software package.



## BrewMax - For the brewery industry

The BrewMax is specifically designed for the Brew Industry. The performance, i.e. production efficiency, of any brewery is measured in terms of the Brew:Fuel ratio. The major parameters that affect this ratio are the boiler performance, condensate recovery factor, plant capacity utilization pattern, etc. BrewMax measures all these parameters to provide the overall thermal energy consumption of the plant and the Brew:Fuel ratio. This data is a useful tool in assessing the production efficiency of the unit in terms of an overall metric-the Brew:Fuel Ratio. The intelligent data analysis module is incorporated within the PC based BrewMax Software to generate various reports in tabular, graphical formats for further analysis.



## BevMax - for the beverage industry

BevMax is a unique fuel management and diagnostic solution, specially designed for the Beverage industry. In a typical Beverage Industry, Beverage:Fuel ratio depends on many parameters like, Boiler performance, Steam utilization, Condensate recovery & also on the capacity utilization. BevMax provides an effective monitoring tool to capture data that can lead to effective management of the thermal energy consumption of the beverage plant. The system measures the performance of the oil and gas fired boilers in terms of two critical parameters, thermal efficiency & Steam:Fuel ratio. It also calculates the condensate being recovered from different sections. Based on this data, the Beverage:Fuel ratio is calculated, which acts as a base for comparing overall production efficiency with the world standards.

## BHMS— Boiler House Management System

With This powerful diagnostics tool, used along with an Effimax 3000, has been designed to map all the losses of the boiler house using fundamentals energy balance equations. It also has an internal self learning logic to map various boiler operating parameters, which are then used for comparing and improving performance. The calculation of fundamental losses compares the current boiler house efficiency to the theoretical best possible. The self learning logic studies the boiler and recommends best operating parameters specific to your boiler.

## Boiler Load Management

The BLM is designed for managing the load on individual boilers in a boiler house depending on the total plant steam load. The product can be used along with an EffiMax 2000/3000/4000 or for boilers without individual EffiMax units.

The primary objective is to operate individual boilers in a manner so that the required amount of steam is supplied to the process with a minimum pressure drop during load changes.

The BLM also tries to sequence to the boilers in such a way so that the overall generation efficiency is optimized.

The unit accepts a steam flow, steam pressure and boiler On/Off signal from individual boilers in a boiler house. It also takes inputs from boilers with individual EffiMax units installed, if any. The BLM provides potential free On/Off contacts for the connected boilers for switching the boilers On/Off depending upon the total steam load.



# Valves<sup>to</sup> Condition and Control



## Valve with Roboter Pressure Controller

Combining the Arca Roboter pressure controller with the Arca pressure reducing Valve integrates the functions of a pneumatic positioner and a pressure controller. Ideal for using with Arca stations, these do not require any instrumentation

## Desuperheaters

Forbes Marshall Arca Desuperheaters are designed to match your process requirements for desuperheating and attemperation. Common models are Fixed Nozzle Desuperheater (FND) and Variable Nozzle Desuperheater (VND).



## Combined Pressure Reducing and Desuperheating Valves

Our Combined Pressure Reducing Desuperheating valve uses a revolutionary single piece design to eliminate all the constraints associated with two piece systems, for example: poor and inefficient mixing of cooling water, waterhammer, and wet steam. By injecting cooling water in the highly turbulent vena contracta immediately after pressure reduction, the combined PRDS design ensures perfect mixing, evaporation and desuperheating. Every PRDS is custom engineered to suit your exact pressure and temperature requirements. Also ideal for using with Arca stations.



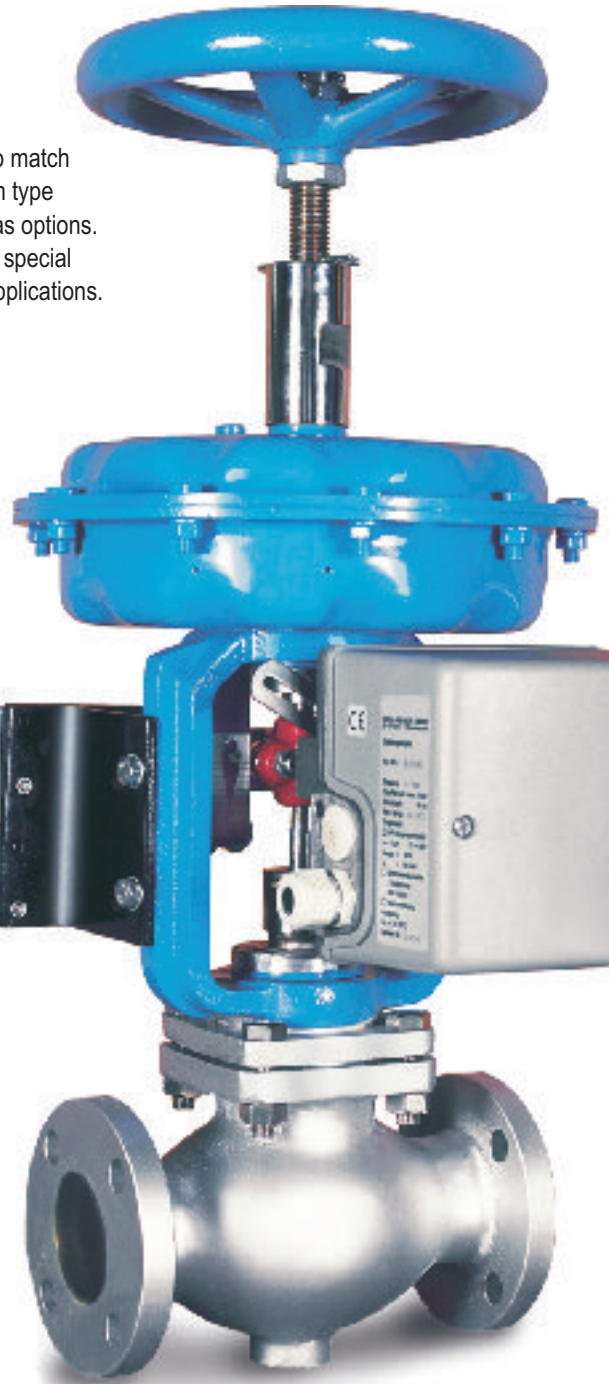
### Pressure Reducing Stations, PRDS Stations and Desuperheating Stations

We are your single source for stations, complete with piping and instrumentation. Our stations are supplied complete and ready to fit on your piping. We have a station to suit every need.



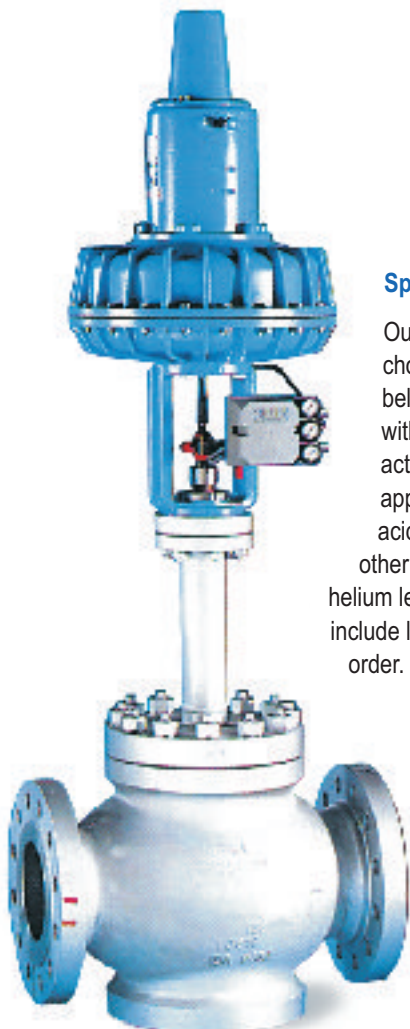
### Control Valves

We've designed our full range of Control and On/Off Valves to match any rigorous application in your plant. Pneumatic diaphragm type actuators offered as standard, with other actuators offered as options. Options also include 3-way diverting and mixing valves and special low dB trims. Internals are nitrided for high pressure drop applications.



### Specials

Our special valves are the valves of choice at nuclear power plants. Arca bellows sealed globe control valves with standard actuators and bellows actuators find use in demanding applications such as radioactive nitric acid, helium, hydrogen, ammonia and other services. Each valve is tested for helium leakage on request. Other specials include large size angle valves made to order.





# High performance Valves for the Toughest Jobs

A valve that fails is not just a nuisance. If it leads to a shut-down, it becomes an expensive liability. From extreme temperatures & pressures to precision control applications, our range of valves will be the most dependable assets on your process line.

## Piston Valves

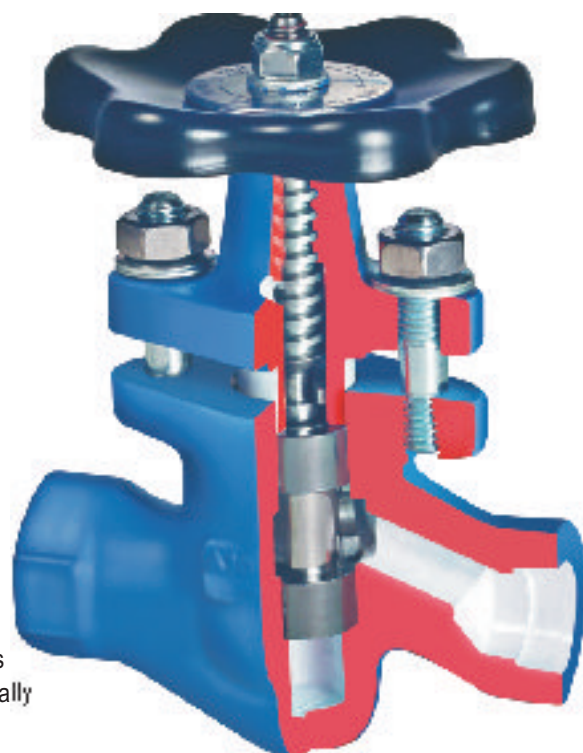
FM Piston Valve is seatless and glandless valve. The heart of the FM Piston Valve is Piston and Sealing Rings. A burnished Piston seals against metal reinforced graphite rings to achieve leak proof shutoff. This unique design ensures long life even at high temperatures - upto 427° C.

**Energy Audits** done at various sites have revealed that Valve leakage is the most serious concern in the industry. In a typical 5 year old plant, over 30% of the isolation valves actually leak.

## Features:

- ▶ Larger effective sealing area - 88% more than Globe Valve; Zero leakage assured.
- ▶ Durability - Piston unexposed to media
- ▶ Absence of Gland & Valve Key.
- ▶ The only scrap free valve
- ▶ Fire proof
- ▶ Maintenance friendly
- ▶ Self cleaning
- ▶ Self lubricating

**Available in sizes** of 15NB, 20NB, 25NB, 40NB, 50NB, 80NB, 100NB, 150NB and 200NB.



## High Pressure Stop and Check Valves

Our VKIN and VCI range of Stop and Lift Check valves combine unflagging resistance to extreme operating conditions with utmost ease of maintenance. The valve body is a two-piece design with a welded bonnet, designed for nominal pressures up to 500 bar. A unique completely non-rotating spindle-plug design prevents grinding between the seat and plug, guaranteeing perfect sealing and a long seat life. Minimal friction in the stuffing box and needle roller thrust bearing allow for easy operation. Our material selection and design allow for a zero leakage gland.



## Single Stage / Multi Stage Valves

The ACT\*83 series three stage angle pattern throttling/drain valves are designed for pressure drops of up to 200 bar, ideal for applications like Boiler drum blowdowns and turbine drainlines.

## Safety Relief Valves and Safety Valves

For all your needs, including the most critical safety applications, don't trust anything less than a Forbes Marshall Safety Valve. Constructed from Carbon Steel, Alloy Steel and Stainless Steel material combinations, our range of full lift safety valves can accommodate set pressures from 0.50 to 500 bar, with a wide range of temperatures as extreme as - 196° C to 550° C.



# Solutions for power generation

## Steam and Water Analysis Systems

With over 50 years experience in steam engineering and control instrumentation, Forbes Marshall can offer a well engineered SWAS package to you.

Forbes Marshall is one of the rare companies in world that can offer you a complete package comprising of:

- Sample probes
- Sampling systems (including Sample Coolers, Pressure Regulators etc.)
- Chillers
- On-line analysers (such as pH, Conductivity, Dissolved Oxygen, Silica, Sodium and so on)
- Analyser enclosures

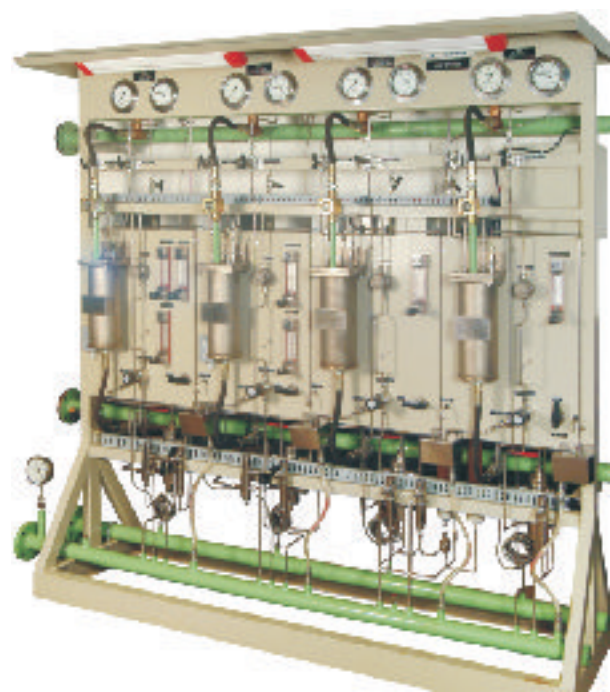
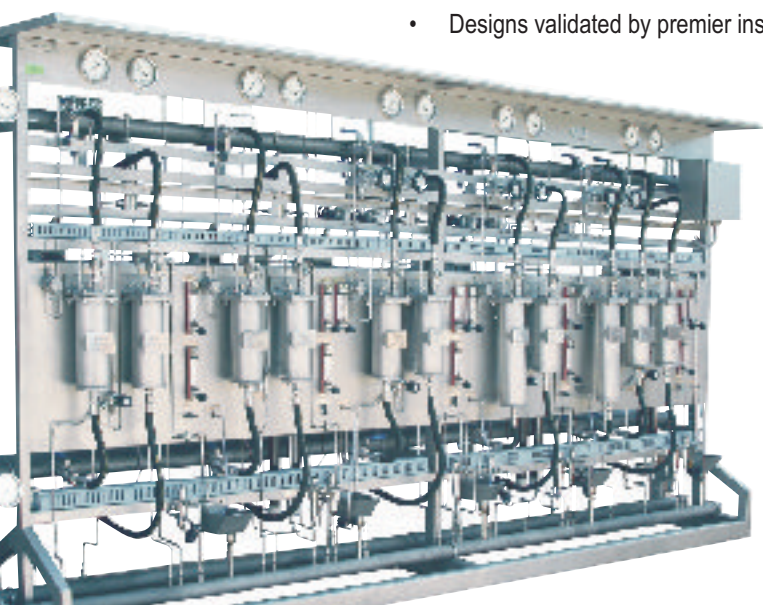
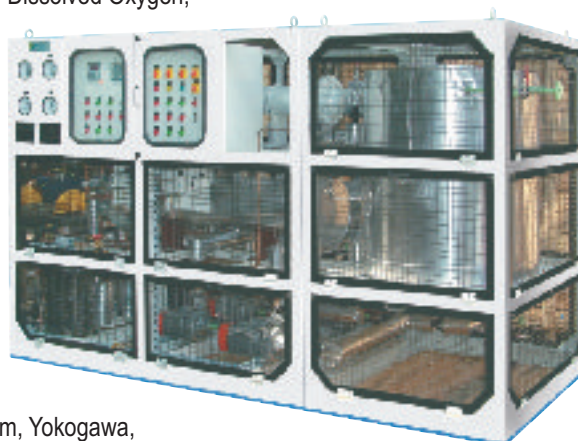
Corrosion and erosion reduce plant efficiency by 10% in just 2 years. Deposition, poor heat exchange and disturbed balancing affect productivity and cause losses.

The SWAS is an online system that can help you monitor important feed water parameters and arrest these losses.

- More than 300 systems in operation worldwide
- Some of our major clients include Siemens, Alstom, Yokogawa, ABB, BHEL, Power Machines, Indonesia Power, Reliance, Honeywell, Foster & Wheeler, AES
- System design in accordance with ASME PTC 19.11 as well as GDCD codes
  - From Valves / Sample Coolers to Analysers under one roof
  - Designs validated by premier institutes like IIT



- Thermal Power Plants
- Nuclear Power Plants
- Captive Power Plants in :
  - Refineries
  - Fertilizer plants
  - Steel plants
  - Cement plants
  - Petrochemical plants
  - Paper industry
- Co-gen plants





# Keep your power plant peaking and environmentally sound

The PLF of any power plant depends on the reliability and sensitivity of its control systems, while its profitability depends on its efficiency. Protecting line equipment while ensuring maximum efficiency and adherence to environmental norms is what Forbes Marshall is best equipped to do, with a variety of solutions to enhance power equipment reliability.

## Dust monitoring

The Forbes Marshall Codel Cross duct non contact type Dust Monitors are designed to suit all kinds of processes and application that are susceptible to dust generation. They include automatic zero and span verification check, automatic lens contamination check and compensation and automatic misalignment checks. To suit different needs, readouts are presented in the form of percentage of opacity,  $\text{mg}/\text{m}^3$  or  $\text{mg}/\text{Nm}^3$ .



## Stack Emission

Our emission monitoring systems are designed to provide the plant operator with high reliability, low maintenance, the flexibility to be used as stand alone units as well as to form part of an integrated emission monitoring system.



## Gas Analysers

The Forbes Marshall CODEL Model GCEM4000 can be used as a single gas or multi-gas monitoring station capable of measuring upto 7 gases in a single instrument. These in situ probe type gas analysers are easy to install and ensure drift-free calibration, eliminating expensive calibration and test gases



## Oxygen Analysers

The Oxitec in-situ Zirconia Oxygen analyser offers 0.2% measurement accuracy using a unique patented gold brazing technology for the Zirconia Cell, which ensures extremely tight measurement control. The probe, fitted with ceramic/sintered filters, comes with V shield deflectors so no air purging is required for probe cleaning.

# Calibrated Flowmeters for Every kind of Flow

Not all flow applications look alike, but whether it's molasses or demineralised water, inaccuracies can lead to expensive mistakes. Forbes Marshall has flowmeters for every application to optimize your process and your peace of mind.

## Vortex Flowmeters

Vortex Flowmeters, which work on the vortex shedding principle, are globally accepted as the world standard in measurement of liquid, steam and gas flow.

Forbes Marshall is a technical leader in vortex flowmetering. Our flowmeters are manufactured to world standards at Pune and exported globally. Field tested, with thousands of units operating worldwide, every flowmeter is individually checked and calibrated at our extensive testing facilities to ensure maximum accuracy.

Available in standard 2-wire version or application specific versions in sizes from 15mm to 300mm. Applications include are Saturated Steam Metering, Condensate Flow Metering, Gas Flow Metering, Free Air Delivery Metering, Natural Gas Metering, Heat Metering, Net Heat Metering and Tonnage of Refrigeration Metering. These models include built-in temperature and pressure transmitters and offer on-line pressure, temperature and compressibility factor correction.



*At our ISO 9001 approved flow rig, we follow a pneumatic calibration method. Our meters are calibrated on air, not water, like everyone else's. Where we say  $\pm 1\%$  m.v., We mean it!*





# When it's Time to take Control

Whether you are a huge plant or a small batch producer, any loss of control can mean ruined batches, poor product quality, or equipment damage. That means massive losses. Our control systems are designed to keep your process and your expenses in check, plant wide.



## Epitrans CB compact boosted I/P converter

This I/P converter incorporates standard MOC as cast aluminium which makes it light weight and compact. Boosted output is available as an option. These models are available as IP65 standard and with an intrinsically safe option.



## Epitrans I/P converter

Our I/P converter has become the industry standard. Rugged and reliable, there are over 25000 units in field operation today. It is completely serviceable and is known for its dependable performance. The 77 I/P converter comes with weather proof IP 65 enclosure as standard, and an intrinsically safe option. An economical and dependable solution.

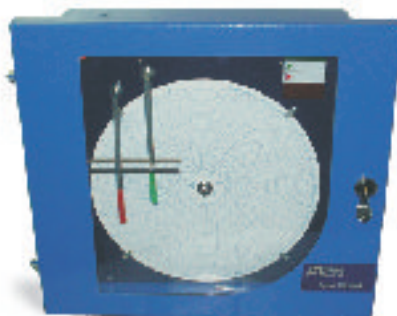


## EP Pac I/P converter with True Electronic Feedback

With true electronic feedback, this state-of-the-art I/P converter comes with a unique 8 position split range and direct/reverse field selectable option. The 773F comes with flame proof Exd and intrinsically safe approvals from CMRS, CCOE and DGFASLI. It is the preferred I/P converter in the petrochemical and refinery industries.

## Rotrak Circular Chart Recorder

Our new Rotrak can be adjusted for 24 hour or 1 week periods. The Rotrak accepts mA/mV signals as well as RTD and Thermocouple inputs.



## Pressure gauges

Forbes Marshall pressure gauges in SS 316 or phosphor bronze wetted parts meet new standards of reliability and conform to IP 66 standards. These are available in various dial sizes with cast iron, aluminum, stainless steel, or sheet metal casings. These gauges are available in vacuum, compound, ammonia (with temperature scale) pressure gauges in SI, dual scale or OEM version dials.



## Dial Thermometers

Forbes Marshall dial thermometers are available in rigid stem or capillary stem options. These thermometers are mercury or gas filled with the indicating pointer driven by a chrome molybdenum centre wound coil and do not have any moving parts. The continuity between the sensing bulb and the coil is maintained by a microbore mild steel capillary. Rigid stem thermometers are available for immersion lengths upto 1800 mm and capillary type thermometers upto 30 meters long. Special electrical contacts and protection thermowells can be provided where required. Special bimetal dial thermometers provide contamination free fast response measurement with stability in 40 seconds.



# Solutions Engineering Turnkey systems

Forbes Marshall draws upon its diverse industry experience to engineer complete turnkey solutions for process industry. Right from design, through detailed engineering, to drawing, documentation, procurement, supply, installation and commissioning, we provide complete solutions under one roof. Our process specialists are experts in chemical and pharmaceutical plants, sugar, distilleries, paper, power, integrated steel plants, and any process where steam, air and water is used.

## MICROCON DCS System

The MICROCON DCS system is modular and expandable and provides unique solutions to handle both continuous and batch applications in the same hardware. An ideal hybrid control system with flexibility on redundancies and open network structure, MICROCON provides convenient configuration functions as per IEC1131-1 International standards. User friendly and versatile, the MICROCON supports various field-bus standards, provides multimedia capabilities, Internet connectivity and capability for communication with plant-wide ERP systems. An ideal solution for small or large system applications in virtually all process industries and water supply and treatment facilities.



Solvent Recovery Columns and Formulation Processes. Our modern control systems provide an ideal tool to meet FDA documentary requirements.

## Systems for the Pharmaceutical Industry

Vital to the consistency of end product specifications in pharmaceutical industries is the proper selection of process control and utility systems. We provide specialised packages for control of Drug fermenters, Bulk Drug reactors,

## Sugar Systems

We provide complete solutions for Sugar plant automation. Our packaged systems are proven and include systems for Boiler House, Arca PRDSH stations, Auto Cane Feed control, Imbibition Water control, Juice Flow Stabilization, pH control for clarification, Evaporator and Pan controls. Modern DCS Control Systems are provided for plant wide control right from cane crushing to bagging.

## Steel Systems

Our steel systems are designed to achieve maximum plant efficiency, absolute safety and high degrees of product quality. These include Instrumentation systems for Coal Tar Injection, Water Injection

## Distillery Instrumentation

We offer complete distillation column instrumentation and process control for potable alcohol distilleries. Most of India's major liquor manufacturers have enjoyed enormous energy savings and improvement in consistency of product quality, thanks to our systems. Plus, our Biogas plant control system has helped users harness huge energy savings from process waste.



for blast Furnaces, Ladle Furnace Instrumentation, Electric Arc Furnace Instrumentation, Gas Mixing Stations for Secondary Steel making, Vacuum Oxygen De-carburization and Continuous casting Instrumentation. We also offer specialized high accuracy measurement techniques for Mass flow metering of Industrial Gases.





# Social Responsibility

Forbes Marshall takes its corporate social responsibility seriously, with an approach arising out of concern more than merely fulfilling a responsibility.

"Concern beyond the factory gate."

These words of founder-director Darius Forbes have become a credo at Forbes Marshall, with an approach arising out of concern more than merely fulfilling a responsibility. At both manufacturing operations locations in Pune, we have contributed significant community infrastructure, including a hospital and a welfare centre. Our Social responsibility activities include medicare, education, counseling, de-addiction, sanitation, and programs for women.



## Some of our esteemed customers

### Americas

Sentech,  
Steam Sys  
Solar Turbines  
Heat Tech  
Hile Controls  
Green Mountain  
Spirax Canada  
Spirax Argentina  
Flow Media  
Calgon Carbon  
Dupont  
Onicon Inc.  
Siemens Energy  
Fergusson Enterprises  
C. B. Marketing  
Instrument Tags  
Calpex  
SDK Automation  
Flow Media Inc.

### Africa

Kenya Paper	Kenya
Pan Paper	Kenya
Mabati Rolling Mills	Kenya
Global Apparels	Kenya
West Kenya Sugar	Kenya
Bidco Oil	Kenya
ACFC	Kenya
Chemelil Sugar Co.	Kenya
Pwani Oil	Kenya
Mufundi Paper	Tanzania
Sheba Tannery	Ethiopia
Ajoukota Steel	Nigeria
Kumar Metal	Nigeria
Nile Breweries Ltd.	Uganda
First Paper Mills	Egypt
IBN Engineering	Egypt
Kishco Kodier	Egypt
Islamic Paper	Egypt

### Middle East

Pepsi Dubai	UAE
Coca Cola Bottling Co.,	Jordan
Oman Pharmaceuticals	Oman
Mepco, Jeddah	Saudi Arabia
Union Paper Mills, Dubai	UAE
Gulf Baraka Apparel	UAE
Metito	UAE
Dutco Tennant	UAE
Kahrizak Paper	Iran
Semnan Soda Ash	Iran
Marun Petrochemical	Iran
Abadan Refinery	Iran
Esfahan Power	Iran
Eshfahan Steel Complex	Iran
Mobarakhe Steel	Iran

### India

Coca Cola  
Nestle  
Unilever  
Procter and Gamble  
Glaxo Smithkline  
Pfizer

### China

Beijing OMT  
K.Wah  
Shjizazuang Refinery  
Dongfang

### South East Asia

Ranhill Corporation	Malaysia
Maser/ Petronas	Malaysia
South Pacific Viscose, Purwakarta	Indonesia
Indo Rama Synthetics, Purwakarta	Indonesia
Maurakarang Power plant, Jakarta	Indonesia
IPMOMI Power plant, Paiton	Indonesia
Indonesian Power, Paiton	Indonesia
Petrokimia Gresik	Indonesia
Chevron Oil and Gas, Duri	Indonesia
Jivi Kimia Paper Plant, Sidorjo	Indonesia
Thai Polyphosphate	Thailand
Wlts Corporation	Thailand
Thai Rayon	Thailand
Goodyear	Thailand
Pure Chem	Thailand
Kenaf Paper & Pulp/Skymoon	Myanmar

### South Asia

Unilever	Sri Lanka
Sigri Textiles	Sri Lanka
Adamjee Textiles	Sri Lanka
Cliftex Industries	Sri Lanka
Must Garments/ Kwun Tong Apparels	Bangladesh
British American Tobacco	Bangladesh
Apollo Ispat	Bangladesh
Nestle	Bangladesh
Soaltee Hotel	Nepal
Surya Tobacco	Nepal
Hyatt, Katmandu	Nepal
Dabur	Nepal



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