

# QualSteam™

Innovative solution  
for optimal steam  
pressure, precise  
temperature control  
and indicative flow  
for process equipment

In a typical process plant, saturated steam is utilised in various process applications as a primary source of energy for heat transfer. To achieve optimum energy consumption in any process the key areas to focus are

- Optimal steam pressure
- Precise temperature control
- Correct process trapping

Any compromise on these 3 aspects results in loss of productivity, excess steam consumption and issues related to product quality.

The steam pressure at a process block level remains same for all the equipment within that block. However, the set temperatures are different for each equipment. Equipment level pressure optimisation provides an opportunity to optimise steam consumption.

Precise temperature control is the key to achieve higher productivity, consistent product quality and ensure safe and reliable operation of the process while reducing steam consumption.

For over 75 years Forbes Marshall has been providing innovative solutions to help businesses improve their process and energy efficiency and be more environmentally responsible. We work with industries globally to improve product quality and energy efficiency.

The Forbes Marshall QualSteam™ is an innovative, digitally enabled integrated PID control valve for combined steam pressure optimisation and precise process temperature control at an equipment level. It measures process temperature and steam pressure. The QualSteam runs two PID loops simultaneously; one for temperature control as primary loop and one for pressure control as a secondary loop.

It analyses the effect of change in valve opening based on product temperature and ensures that the steam pressure is always maintained at the lowest possible value.

The Forbes Marshall QualSteam has a built-in capability to compute steam flow and gives an insight into the instantaneous flow rate of steam.

## Features and Benefits

### Optimised Steam Pressure at Equipment Level

- Steam savings due to higher latent heat at lower operating pressure

### Temperature Control

- Accuracy of upto  $\pm 1^{\circ}\text{C}$  enables better controllability of set temperature, fuel savings, robust product quality and reduction in rework and  $\text{CO}_2$  emissions

### Indicative Steam Consumption

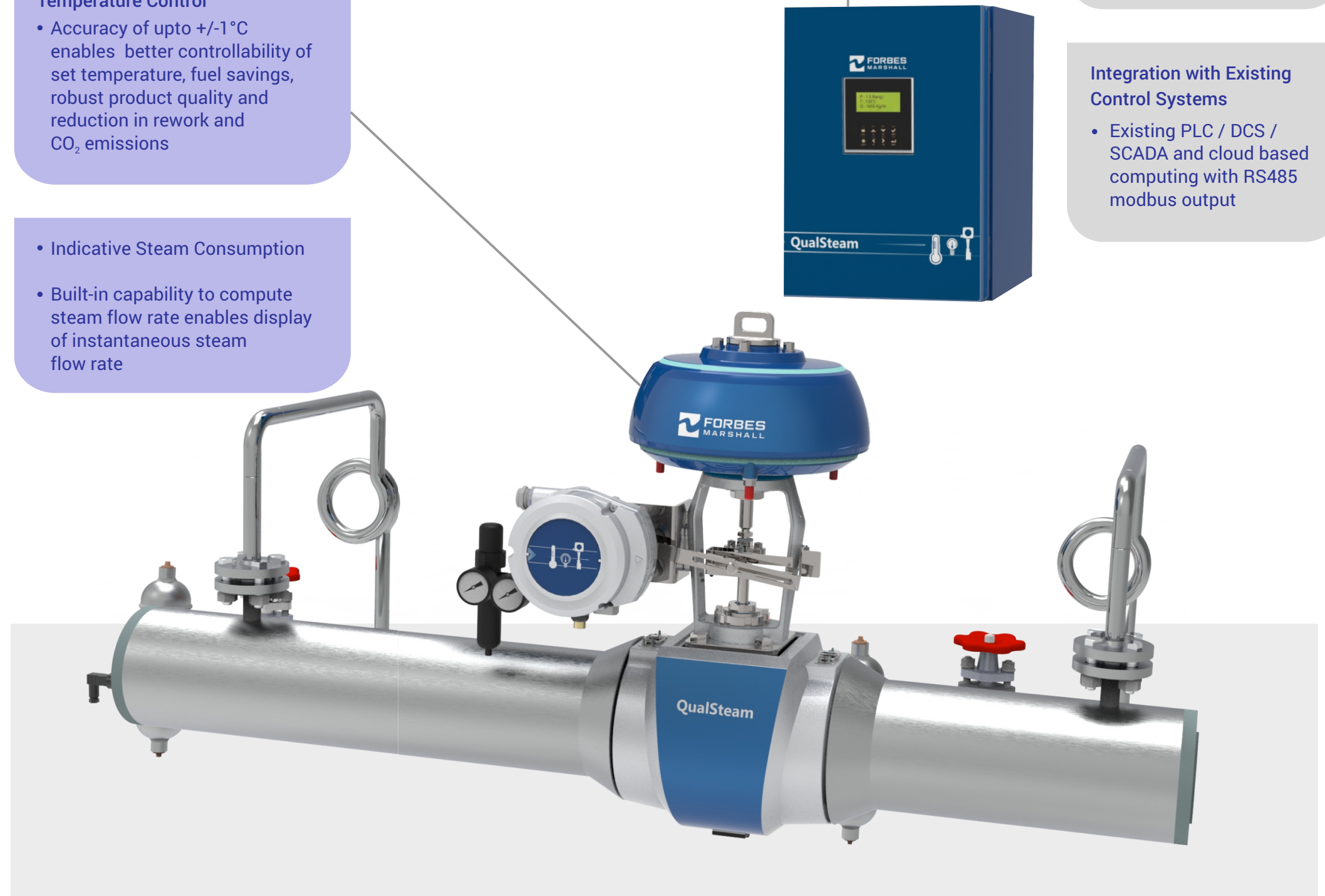
- Built-in capability to compute steam flow rate enables display of instantaneous steam flow rate

### Operational Flexibility

- Dynamic pressure set point feature ensures precise temperature at the optimum value of steam pressure for applications which have multiple temperature set points based on process requirement

### Integration with Existing Control Systems

- Existing PLC / DCS / SCADA and cloud based computing with RS485 modbus output

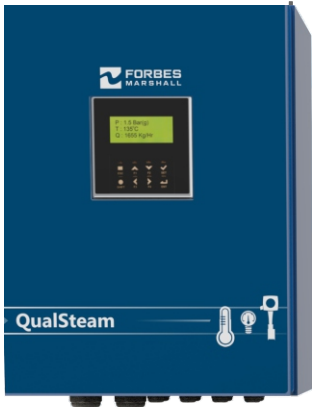


Optimal steam pressure, precise temperature control and flow measurement at equipment level

Clean-in-Place



Process temperature range	70-80 degC
Current steam pressure	3-4 barg
Optimised steam pressure	0.5-1 barg
Energy savings	5-6% steam savings
Environmental impact	5-6% reduction in CO <sub>2</sub> emission

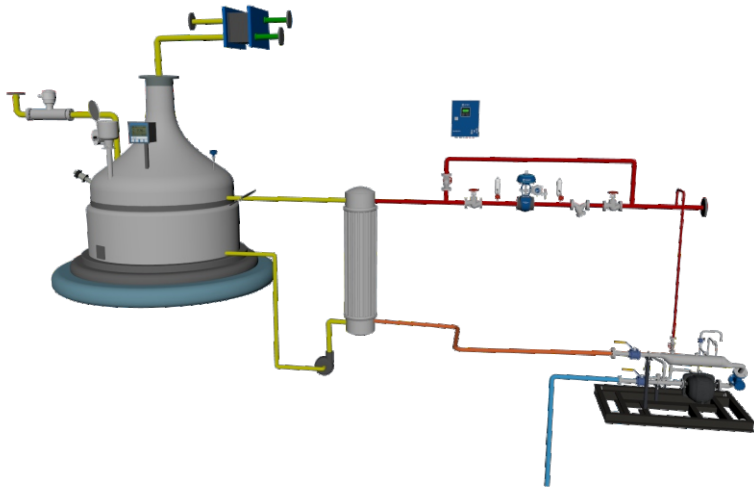


Bottle Washer



Process temperature range	55-85 degC
Current steam pressure	3-4 barg
Optimised steam pressure	1-1.5 barg
Energy savings	3-4% steam savings
Environmental impact	3-4% reduction in CO <sub>2</sub> emission

Wort Kettle



Process temperature range	~100 degC
Current steam pressure	3-4 barg
Optimised steam pressure	1.5-1.8 barg
Energy savings	3-4% steam savings
Environmental impact	3-4% reduction in CO <sub>2</sub> emission

Deliverables

- Lowest possible steam pressure
- Precise temperature control; accuracy of +/-1 Deg.C.
- Higher uptime due to consistency in achieving desired temperature
- Reduced steam consumption
- Real-time monitoring of key parameters

Fluidised Bed Dryer / Wruster / Autocoater



Process temperature range	45-85 degC
Current steam pressure	3-4 barg
Optimised steam pressure	1-1.5 barg
Energy savings	3-4% steam savings
Environmental impact	3-4% reduction in CO <sub>2</sub> emission

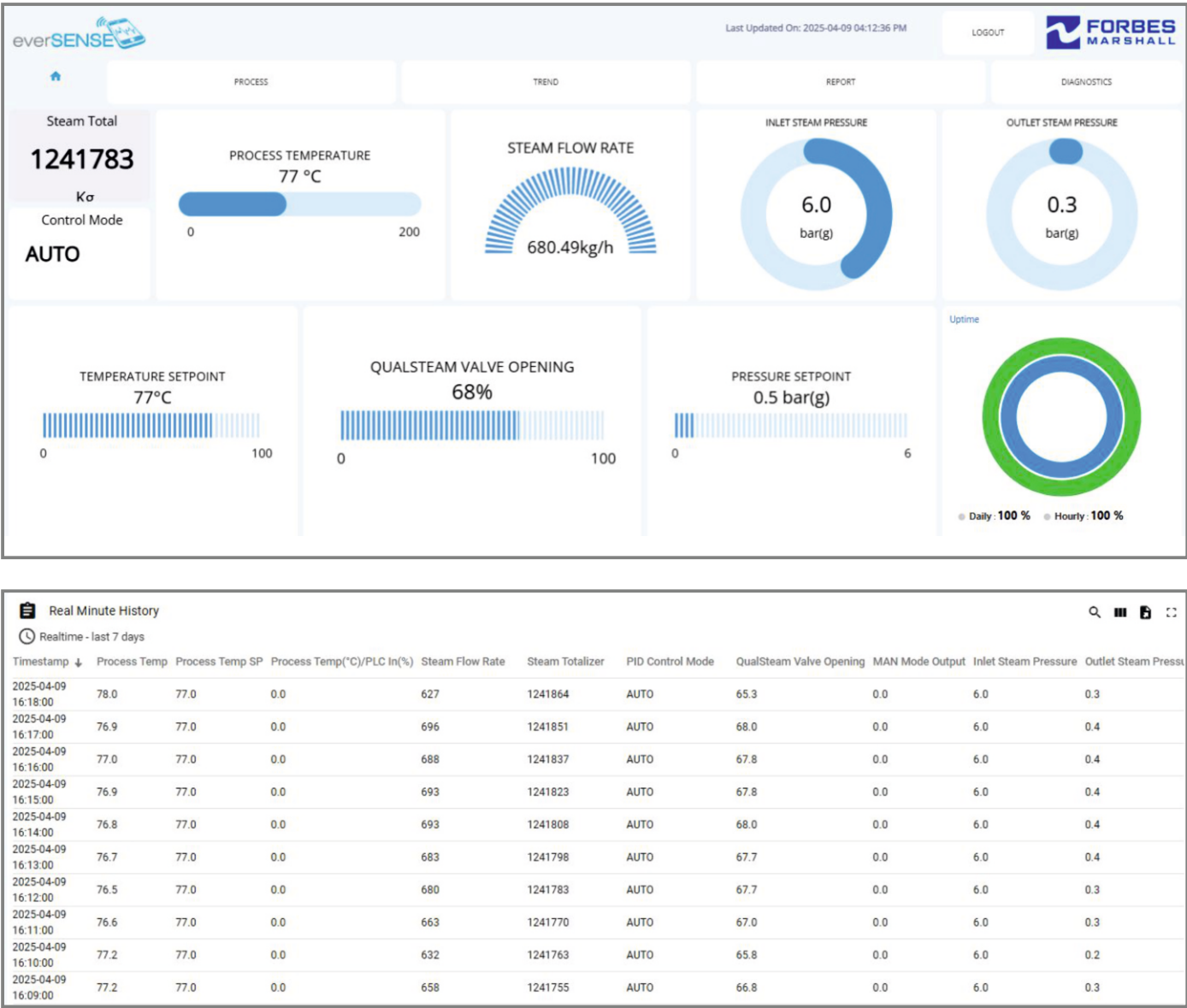


Instant Diagnosis  
Instant Control

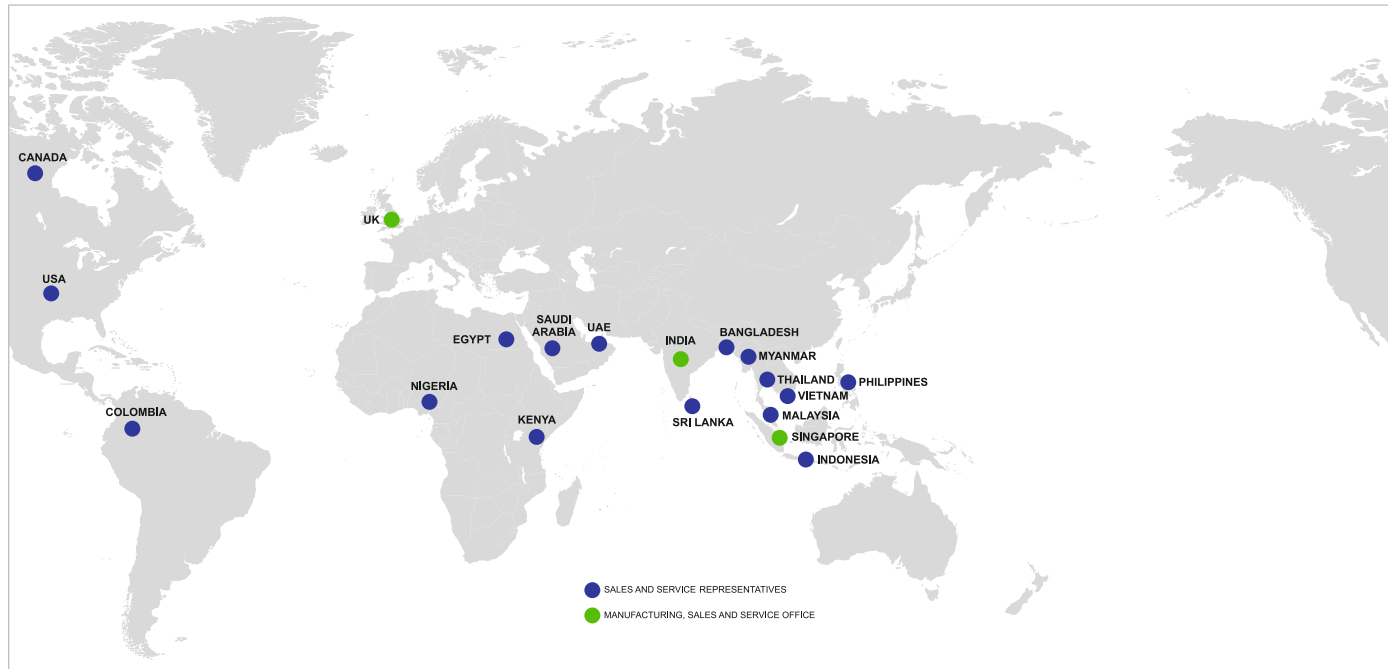


- Condensing pressure
- Process temperature
- Process temperature set point
- Control valve opening (%)
- Indicative Steam flow rate - instantaneous value
- Indicative Steam flow - totalised value

Dashboard



# Energising Businesses and Communities Worldwide



## A Multinational with Indian Roots

41	Countries
35	Offices Worldwide
33	Distribution Centres
500	Sales and Services Engineers
8,000	Customers Worldwide

## World Class Technology from World Class Facilities



## Enabling Results

Process Efficiency

Energy Efficiency

Optimum Productivity

Improved Asset Uptime

Environmental Responsibility

Safety and Regulatory Compliance



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