

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 $+/1^{\circ}\text{C}$ enables better controllability of set temperature, fuel savings, robust product quality and reduction in rework and 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

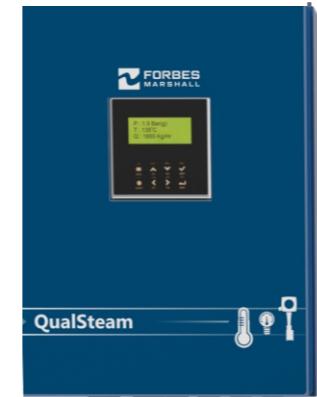
- Existing PLC / DCS / SCADA and cloud based computing with RS485 modbus output

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 ₂ emission

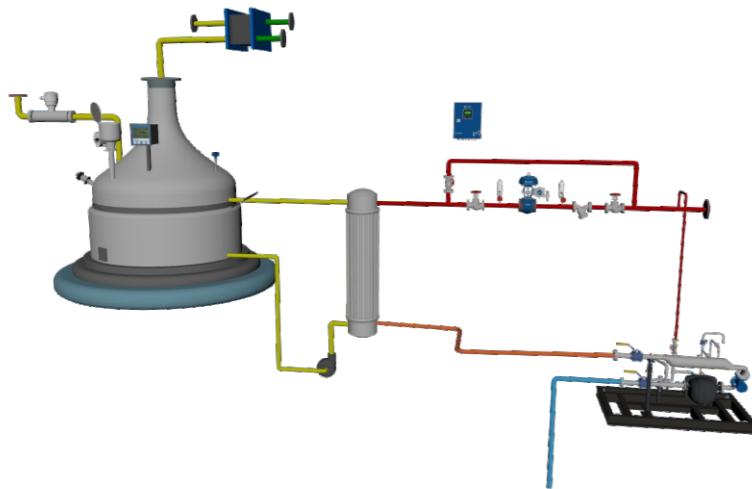


Bottle Washer



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 ₂ 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 ₂ 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

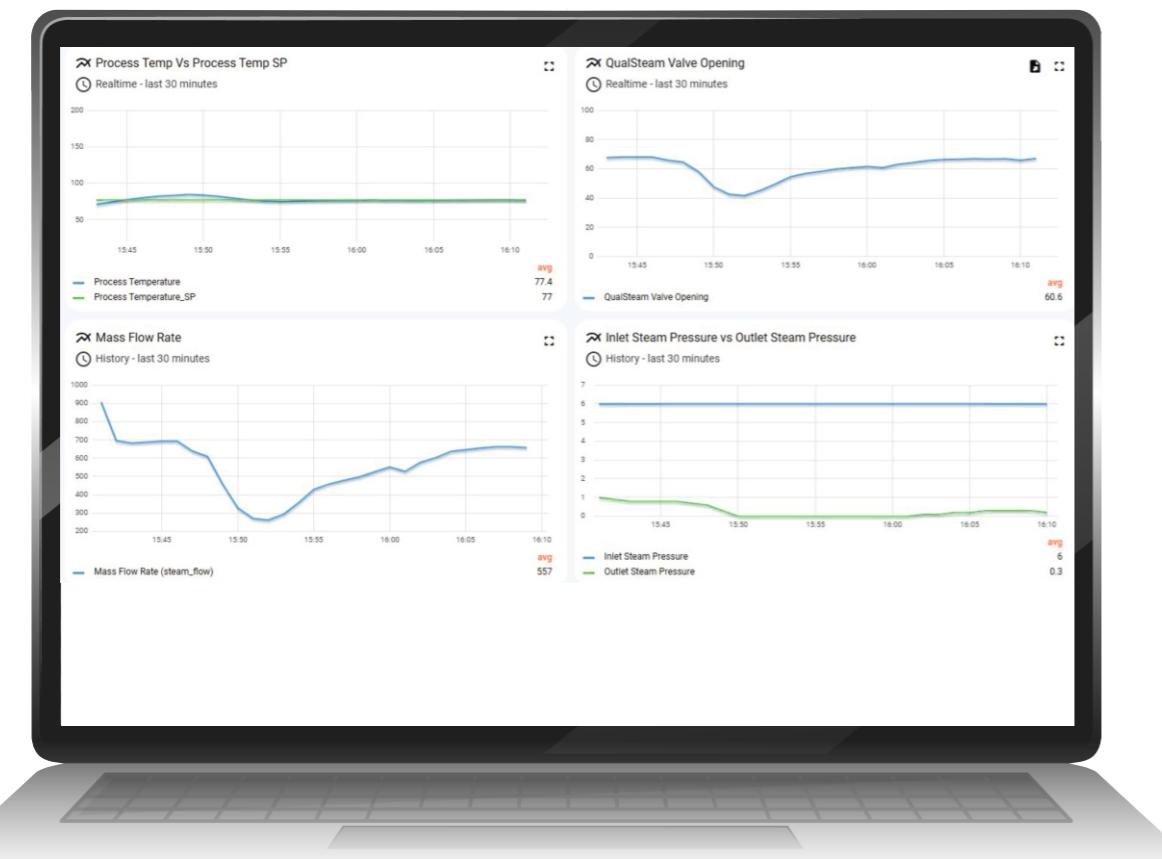


Process temperature range	45-85 degC
Current steam pressure	3-4 barg
Optimised steam pressure	1-1.5 barg
Energy savings	3-4% steam savings
Environmental impact	3-4% reduction in CO ₂ emission

Instant Diagnosis
Instant Control



Dashboard

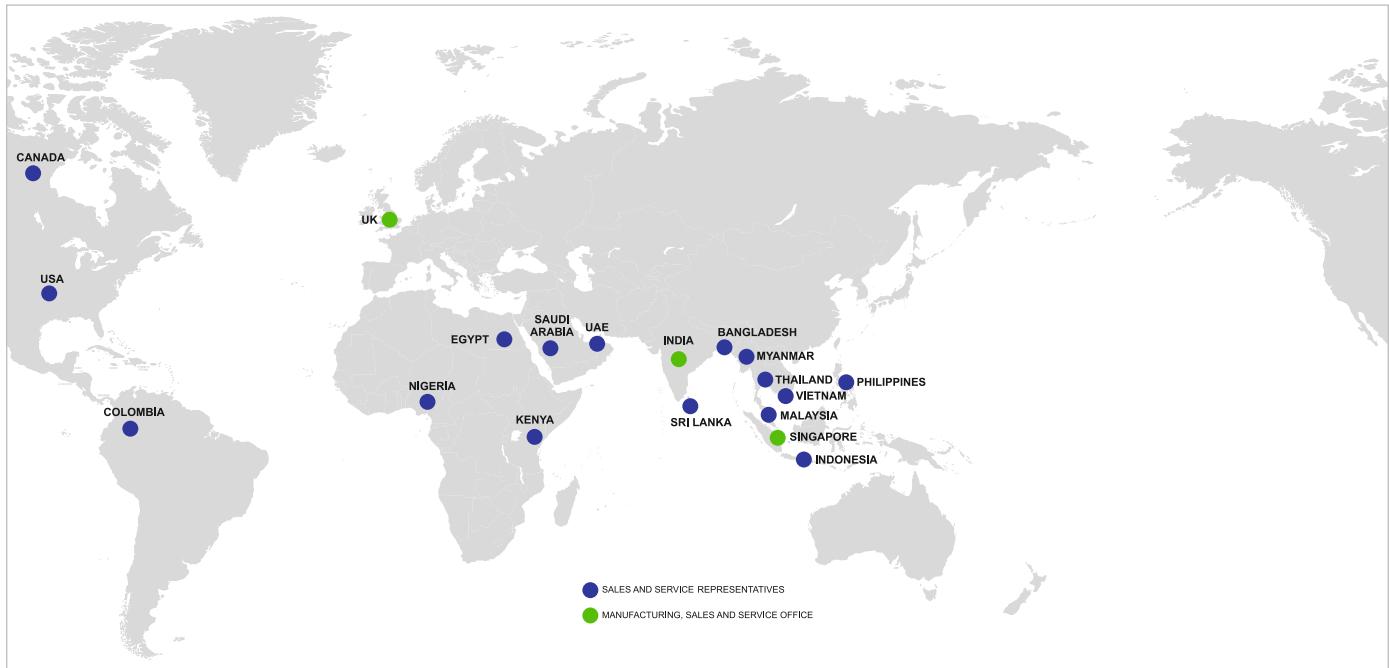


- Condensing pressure
- Process temperature
- Process temperature set point
- Control valve opening (%)
- Indicative Steam flow rate - instantaneous value
- Indicative Steam flow - totalised value



Real Minute History										
Realtime - last 7 days										
Timestamp	Process Temp	Process Temp SP	Process Temp(°C)/PLC In(%)	Steam Flow Rate	Steam Totalizer	PID Control Mode	QualSteam Valve Opening	MAN Mode Output	Inlet Steam Pressure	Outlet Steam Press
2025-04-09 16:18:00	78.0	77.0	0.0	627	1241864	AUTO	65.3	0.0	6.0	0.3
2025-04-09 16:17:00	76.9	77.0	0.0	696	1241851	AUTO	68.0	0.0	6.0	0.4
2025-04-09 16:16:00	77.0	77.0	0.0	688	1241837	AUTO	67.8	0.0	6.0	0.4
2025-04-09 16:15:00	76.9	77.0	0.0	693	1241823	AUTO	67.8	0.0	6.0	0.4
2025-04-09 16:14:00	76.8	77.0	0.0	693	1241808	AUTO	68.0	0.0	6.0	0.4
2025-04-09 16:13:00	76.7	77.0	0.0	683	1241798	AUTO	67.7	0.0	6.0	0.4
2025-04-09 16:12:00	76.5	77.0	0.0	680	1241783	AUTO	67.7	0.0	6.0	0.3
2025-04-09 16:11:00	76.6	77.0	0.0	663	1241770	AUTO	67.0	0.0	6.0	0.3
2025-04-09 16:10:00	77.2	77.0	0.0	632	1241763	AUTO	65.8	0.0	6.0	0.2
2025-04-09 16:09:00	77.2	77.0	0.0	658	1241755	AUTO	66.8	0.0	6.0	0.3

Energising Businesses and Communities Worldwide



A Multinational with Indian Roots

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Pimpri, India



Hyderabad, India



United Kingdom



Singapore



Enabling Results



Process Efficiency



Energy Efficiency



Optimum Productivity



Improved Asset Uptime



Environmental Responsibility



Safety and Regulatory Compliance



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