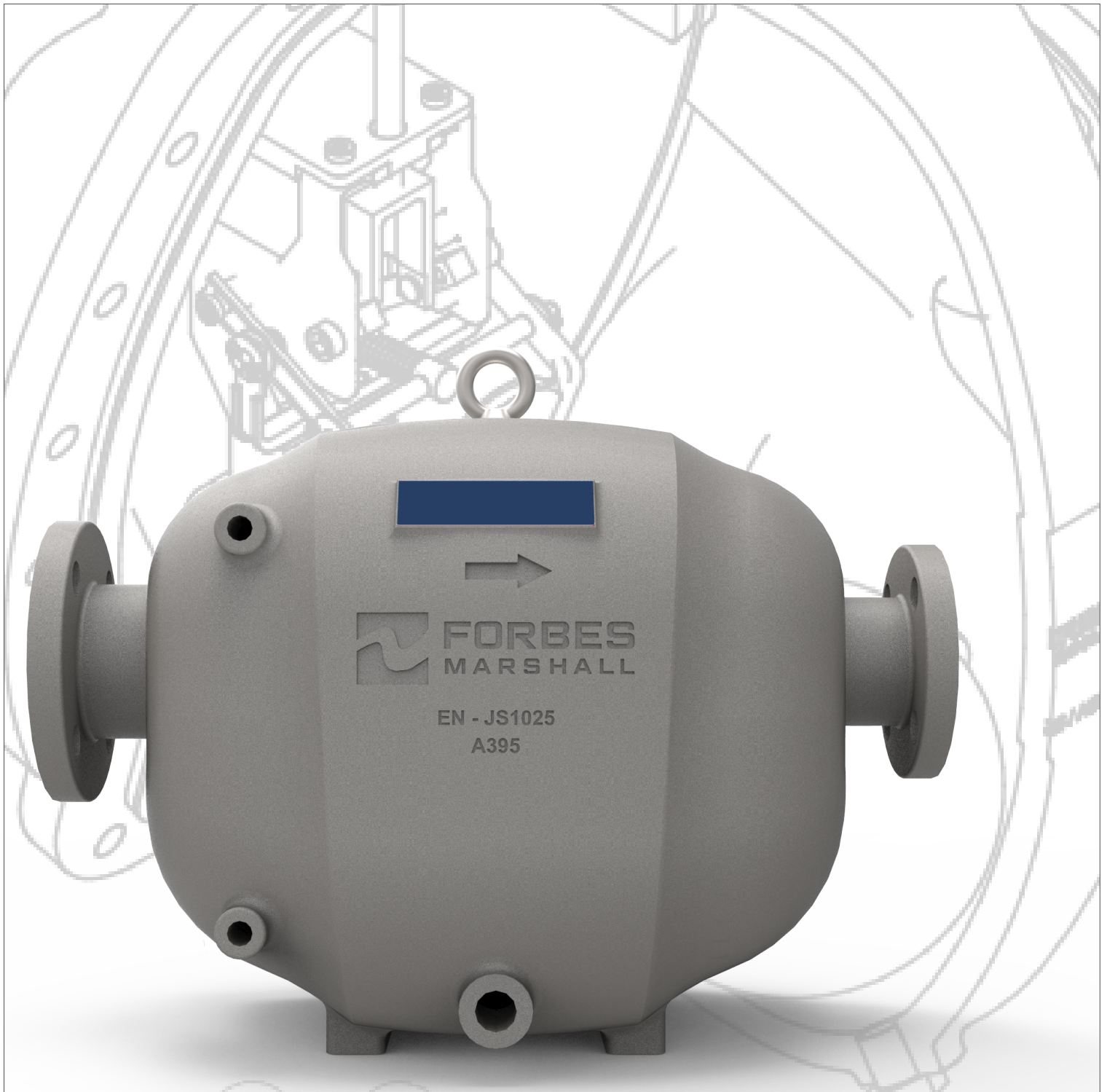


Ideal Solution for Condensate Evacuation Under Stall Condition

Steam operated pump trap



Steam Operated Pump Trap

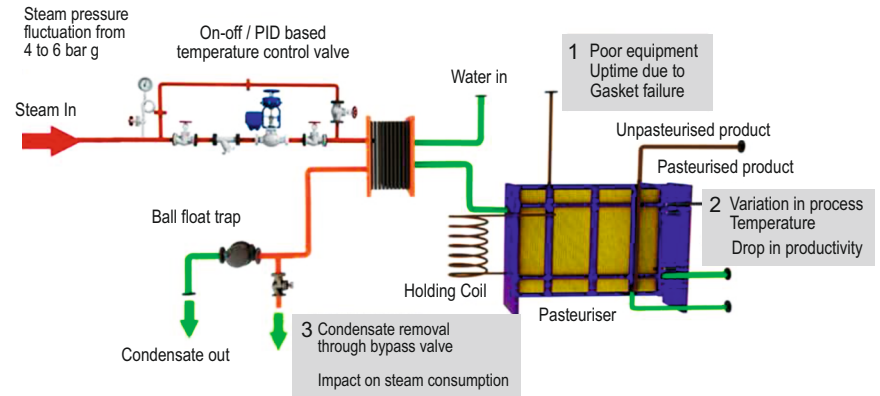
To ensure that process KPIs of Productivity, Product Quality, Energy Efficiency, Safety and Reliability are met, besides supplying steam at the right temperature and pressure, it is essential that condensate is efficiently evacuated from the equipment.

Due to incorrect selection of process trapping, applications with process temperatures below 100°C face condensate accumulation in the equipment, thereby reducing the heat transfer efficiency. This leads to issues of process temperature variation, reduced productivity and heat exchanger failures, resulting in energy loss of 5-10%, increased fuel and water consumption and higher CO₂ emissions.

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.

Our steam operated pump trap is an innovative trapping solution assuring efficient condensate evacuation from process equipment enabling high system uptime, enhanced productivity and energy savings. It is designed to handle condensate evacuation under stall as well as normal conditions.

Common Issues faced in a process plant

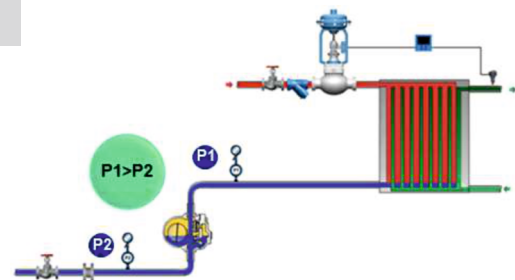


Primary reason for the above mentioned issues is improper evacuation / stalling of condensate

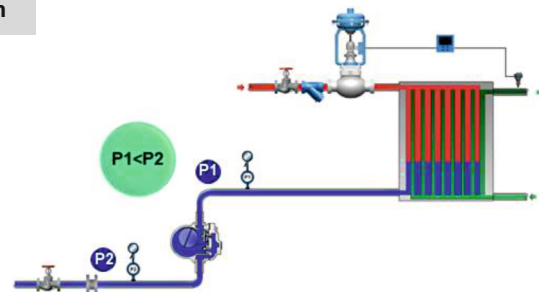
What is stall?

'Stall' is the inability to evacuate condensate effectively from the heat exchanging equipment. The expectation that the condensate should be evacuated from the heat exchanger as soon as it is formed is adversely impacted when the pressure in the heat exchanger is equal to, or less than, the total backpressure acting on the outlet of the steam trap installed on the heat exchanger.

Trapping Condition



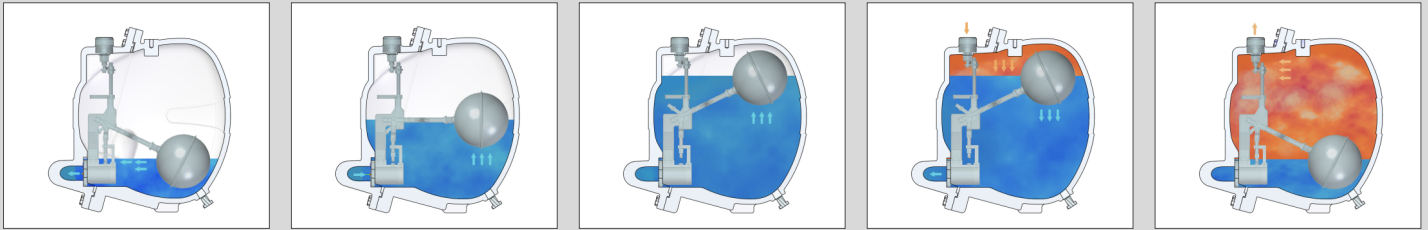
Stalling Condition



Stalling occurs due to,

- Low process temperature requirement (<100°C / 212°F)
- Reduced heat load leading to oversized heat exchanger area
- Throttling of steam with temperature control valve
- Low steam supply pressure
- High back pressure on steam trap
- Incorrectly selected steam trap

Principle of Operation



Stall occurs when the differential pressure across the steam trap becomes negative. During stall conditions, the steam operated pump trap uses external motive steam to create a positive pressure for evacuation of condensate. When differential pressure across the trap is positive, it evacuates condensate by functioning as a float trap using the two orifice mechanism that is capable of handling condensate, both at peak loads and very low running loads

Steam Operated Pump Trap (SOPT™) Variants

Various models that meet the expected discharge capacity

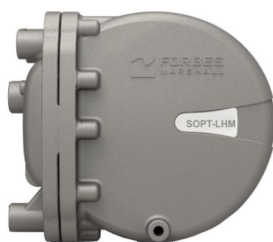
SOPT -LHX



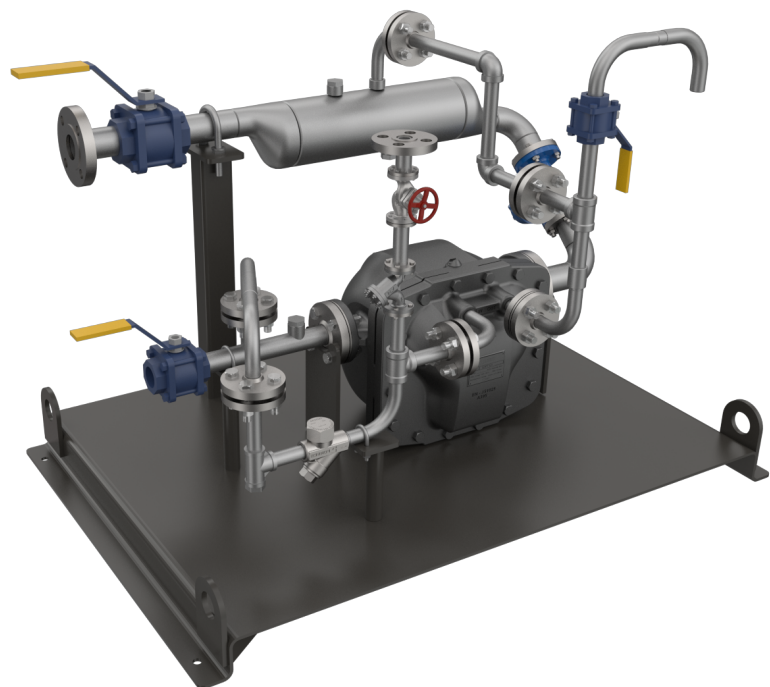
SOPT -LH
(Patented)



SOPT -LHM
(Patented)



Skid Mounted SOPT



Features

Two orifice mechanism for handling condensate evacuation under peak and low running loads (patented)

Low installation head

Minimal operating costs

Benefits



No opening of trap bypass valve during stall, resulting in steam and condensate savings



Stall free process enables maintaining of temperature gradients and product quality



Improved batch time and productivity by keeping the process stall free



Improved equipment uptime

Industries We Cater To



Beverage



Brewery



Chemicals



Dairy



Pharmaceuticals - API



Pharmaceuticals - Formulation



Rice



Solvent Extraction

Customer Speak

We have installed the Forbes Marshall Steam Operated Pump Trap in our brewing process on the wort kettle. It has solved the problem of stall and has resulted in a savings of 350 kg (772 lbs) of steam per batch.

Global Brewing Company

The steam operated pump trap installed on our paddy dryer has helped reduce the overall steam consumption by 6%. It has also helped avoid problems of stall, such as excess batch time and trap bypass valve opening. Due to installation of a proper trapping system our batch time has reduced by 2 hrs.

Leading Rice Mill

Forbes Marshall recommended the installation of a steam operated pump trap (SOPT™) on the heater to avoid temperature variation due to water logging. The installation of the SOPT™ has helped us achieve and maintain the process temperature at 90 °C (194 °F) without opening of trap bypass.

Leading Solvent Extraction Plant

Forbes Marshall recommended the installation of 2 nos. steam operated pump traps (SOPT™) and temperature control valves on our bottle washer. This solution has resulted in consistent bath temperatures and efficient condensate evacuation without opening of the trap bypass valves. Our Condensate Recovery Factor (CRF) has improved by 11%.

Global Beverage Company

Our Services

At the equipment level our digital services focus on sustaining uptime at >95% levels. Equipment specific data is analysed to remotely monitor health and diagnose issues, enabling proactive maintenance and reducing downtime.

Forbes Marshall Surveys



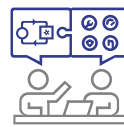
Plant surveys to map opportunities

Forbes Marshall Energy Audits



Take your plant to benchmark performance

Forbes Marshall Design Consultancy



Design for benchmark performance

Forbes Marshall Care



Sustained performance of your steam assets

Forbes Marshall Digital Sustenance Services



Beyond connectivity



www.forbesmarshall.com

Forbes Marshall
Krohne Marshall
Forbes Marshall Arca
Codel International
Forbes Vyncke
Forbes Marshall Steam Systems

Forbes Marshall Pvt. Ltd.

Opp. 106th Milestone, CTS No. 2220,
Mumbai-Pune Road, Kasarwadi,
Pune – 411034 INDIA
Tel : +91(0)20-68138555
Fax : +91(0)20-68138402

Email : enquiries@forbesmarshall.com

Forbes Marshall International Pte. Ltd.

16A, Tuas Avenue 1,
#05-21, JTC Space @Tuas
Singapore - 639533
Tel: +65 6219 3890

© All rights reserved. Any reproduction or distribution in part or as a whole without written permission of Forbes Marshall Pvt Ltd, its associate companies or its subsidiaries ("FM Group") is prohibited.

Information, designs or specifications in this document are subject to change without notice. Responsibility for suitability, selection, installation, use, operation or maintenance of the product(s) rests solely with the purchaser and/or user. The contents of this document are presented for informational purposes only. FM Group disclaims liabilities or losses that may be incurred as a consequence of the use of this information.