Condensate Recovery Solutions

Recover Energy and Not Just Condensate
Condensate and flash steam account for over 20% of the total energy in fuel. Recovery of condensate back to the boiler house reduces both energy and water treatment costs.

Condensate recovery results in elevated feed water temperature which offers secondary benefits of reduced thermal shocks and superior response time for boilers. Forbes Marshall condensate recovery solutions help improve the Condensate Recovery Factor (CRF) across industry segments.

The payback for the condensate systems is between 6 to 12 months depending upon the cost of fuel.

The Forbes Marshall Pressure Powered Pump Package Unit is a positive displacement pump which is operated by steam, compressed air or pressurised gas. It is fully automatic and requires no separate utility for operation.
Recovering Heat and Maximising Efficiency

Flash Vessel

Compact Pressure Powered Pump Package Unit

Standard, Multi-valve Pressure Powered Pump Package Unit

Duplex Pressure Powered Pump Package Unit

High Capacity High Back Pressure Powered Pump Package Unit

FLASHJET™ Pump
Complete Solutions for Flash and Condensate

- Condensate Recovery Meter
- Feedwater Level Control System
- Deaerator Head

- Thermocompressor System

- Condensate Contamination Detection System
### Benefits of a Robust Flash Steam and Condensate Recovery System

- 100% flash steam recovery
- Condensate returned at high temperature $\geq 100 \, ^\circ C$
- Electricity not required for operation
- Requires less make up water
- Low chemical treatment cost
- Deaerator head ensures proper mixing of condensate, flash steam and make-up water
- Higher resultant feedwater temperature
- Increased steam to fuel ratio
- Reduced boiler blowdown

### Solutions to Bridge Gaps

<table>
<thead>
<tr>
<th>Industry</th>
<th>Best CRF*</th>
<th>Average CRF*</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edible Oil &amp; Solvent Extraction</td>
<td>65%</td>
<td>40%</td>
<td>Right design of condensate and flash system by separating high and low pressure condensate</td>
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<tr>
<td></td>
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<td>Use of thermocompressor system to recover flash system</td>
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<td>Textiles</td>
<td>75%</td>
<td>50%</td>
<td>Equipment and blockwise condensate recovery</td>
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<td>Utility automation modules integral to the trapping system to recover condensate from jet dyeing machines</td>
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<td>Condensate recovery from MEE</td>
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<td>Beverages</td>
<td>95%</td>
<td>65%</td>
<td>Right steam system for bottle washer, pet warmer and syrup section - steam operated pump trap for condensate evacuation in stall</td>
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<tr>
<td></td>
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<td>Condensate recovery from CIP section</td>
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<tr>
<td>Breweries</td>
<td>95%</td>
<td>75%</td>
<td>Right steam system for wort, mash and adjunct kettles and bottle washer section - steam operated pump trap for condensate evacuation in stall</td>
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<td>Right sizing of feedwater tank</td>
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<td>Pharmaceuticals &amp; Chemicals</td>
<td>90%</td>
<td>45%</td>
<td>Utility automation modules integral to the trapping system to recover condensate from multi utility reactors</td>
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<td>Condensate contamination detection system for condensate recovery from solvent recovery plant</td>
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<td></td>
<td>Block-wise condensate recovery</td>
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<td>Tyre</td>
<td>60%</td>
<td>40%</td>
<td>Trenchwise pump and flash recovery system with condensate line design and layout for minimum back pressure</td>
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<td></td>
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<td>Use of flash steam for feedwater heating</td>
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<tr>
<td>Paper</td>
<td>95%</td>
<td>80%</td>
<td>Design of condensate recovery system and lines without intermediate hold-up</td>
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<td></td>
<td>Maintaining traps and arresting leaks</td>
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<tr>
<td>Oil &amp; Petrochemicals</td>
<td>80%</td>
<td>45%</td>
<td>Energy and mass balance mapping and local utilization of flash</td>
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<tr>
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<td>Maintenance of traps and arresting leaks</td>
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</tbody>
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*CRF: Condensate Recovery Factor*
Installed Base

10,000+

Pumps condensate at

≥100°C

Condensate Recovered

250 to
50,000 kg/hr

“Forbes Marshall Condensate Recovery System is most efficient for energy conservation and has enabled us to recover 30 MT of condensate per day, improving the feed water temperature from 25 °C to 75 °C.”

Leading Manufacturer of Knitted Garments

“Improvement in Condensate Recovery Factor by installation of condensate recovery pumps from Forbes Marshall has resulted in reduction of coal consumption of 2.5 MT/day.”

India’s Largest, Fully Integrated Textile Company

“We are saving 15% fuel and 26 million litres of water annually with unhampered production through smooth functioning of the Forbes Marshall condensate recovery system.”

Leading Pharmaceutical Company

“Right design and supply of condensate recovery solution from Forbes Marshall has enabled us achieve 95% condensate recovery factor. Our plant has the lowest specific fuel consumption, making us the most energy efficient plant in our group.”

India’s Largest Brewery Group

“Condensate recovery and management solutions from Forbes Marshall have helped us save over 64 million litres of water annually.”

India’s Leading Oil and Petrochemical Plant

“We have achieved a CRF improvement from 67% to 76% with 100% flash recovery. Productivity up by 11% from 1.8 kg of product / kg of biomass to 2.1 kg of product / kg of biomass.”

World’s Second Largest Confectionery Company