Compact Module Thermodynamic Trap

The Ideal Solution for Mainline Trapping
Compact Module Thermodynamic Trap

The Forbes Marshall compact module thermodynamic trap reduces plant downtime, maintenance costs and ensures zero leakage, while conforming to pertinent environment and pollution norms.

The standard version of the Compact Module Thermodynamic Trap, CMTD42M-S, is a compact thermodynamic trap module designed with an in built upstream isolation and bypass piston valve. It has a diffuser at the outlet that reduces the noise level and ensures smooth discharge of condensate.

The full version of the Compact Module Thermodynamic Trap, CMTD42M-F, has additional features such as piston valves for trap test, depressurisation and outlet isolation.

The thermodynamic trap consists of a maintainable and replaceable disc and seat and an in-built strainer, that ensures ease of maintenance and reduces the overall cost of ownership. The isotub, provided with both the models, ensures uniform frequency of discharge under varying load conditions.

Variants

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<th>CMTD42M-F</th>
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Principle of Operation

The compact module thermodynamic trap operates on thermodynamic principle using Bernoulli's Theorem, i.e. total pressure (static+dynamc) energy of a moving fluid is same at all points.

Condensate enters the trap and pushes the disc upwards after passing through the integral strainer screen in the trap. As the condensate flows through the outlet, there is an increase in velocity (dynamic pressure) of steam and a consequential drop in static pressure resulting in the disc being drawn downwards to the concentric seat rings.

Flash steam then passes between the edge of the disc and the inner face of the top cover of the trap, occupying the space on the top surface of the disc.

The flash steam exerts pressure on the larger area on the top surface area of the disc and overcomes the inlet pressure acting on a smaller area at the bottom of the disc. The disc snaps shut against the concentric body seat rings and prevents further flow.

This position of the disc is maintained until the flash steam starts condensing due to the radiating of heat from the top cover. Post the condensation of flash steam, the pressure acting on top of the disc is relieved and the cycle is repeated.
Common Issues Faced in Mainline Trapping

- Live steam loss through leaking traps and isolation valves
- Water hammering, pipeline scaling, choked mainline drip legs
- Frequent failure / water logged traps need continuous monitoring
- Noisy operation of traps
- Problems in replacing / maintaining failed traps
- Low uptime / poor reliability of traps
- Is condensate formed in the mainlines recoverable?

Problems Faced During Maintenance of Mainline Traps

- Incorrect system design - accessibility / isolation / wrong drain pockets / no flushing provision leading to choking of drip legs and jamming of isolation valves / traps
- Incorrect / improper installation of main line traps leading to malfunctioning of steam traps
- No plan to replace traps that have gone beyond service life
- Unavailability of shut down due to hassles in online / in line maintenance
- Non-availability of critical spares

The Compact Module Thermodynamic Trap is an ideal solution for addressing problems related to mainline trapping.

Compact Module Thermodynamic Trap

**Variant Installations**

**CMTD42M-S (Standard Version)**
Recommended for open to atmosphere installations

**CMTD42M-F (Full Version)**
Recommended for closed loop installations

Features

- Robust and compact construction
- Inbuilt strainer, bypass valve, trap test valve, trap vent valve, diffuser and isotub
- Integral piston valves for isolation ensure zero in line loss and no loss from gland
- Diffuser enables reduction in noise level and smooth discharge of condensate
- Isotub ensures uniform frequency of discharge under varying loads
- Replaceable trap internals (both disc and seat)

Benefits

- Ease of installation
- Low cost of ownership due to less inventory
- Reliable performance guarantees improved uptime and reduced safety hassles
- Reduced noise level and erosion for applications with open to atmosphere discharge
- Quick and easy inline / online maintenance
- Less wear and tear
Customer Speak

We have installed compact modules from Forbes Marshall which are in operation since the last three years. We have found the maintenance and safety features of trap test and vent valves very useful.

**World's Largest Petrochemical Refinery**

Our mainline traps uptime was 75% and with the help of Steam Asset Management we were able to improve the uptime by installing Forbes Marshall Compact Module Thermodynamic Trap.

**Manufacturer of Starch Products and its Derivatives**

Compact Modules for mainline trapping from Forbes Marshall have enabled us retain the distribution losses, for a two kilometer steam distribution network, below 2%.

**Leading Tyre Manufacturer**

The uptime of the distribution traps was improved from 6% to 100% by replacing faulty leaking traps with Forbes Marshall Compact Module Thermodynamic Traps (16 nos.). We are also able to recover condensate from the distribution line after installing the CMTD42M trap.

**Manufacturer of Home Furnishing Fabrics**

Contact a Forbes Marshall depot for direct and rapid supply of products and genuine spares. Write in to fmdepotenquiry@forbesmarshall.com