

CASE STUDY

A major refinery in India



Problem

Steam traps are passive devices. They need positive differential pressure to evacuate the condensate.

In a lean amine heater, the process parameters are such that the differential pressure across the trap is usually negative. This causes stalling which in turn forces the bypass valve of the steam trap to remain open at all times and results in the passing of live steam along with condensate.

Objective

To eliminate steam and condensate losses and avoid water hammering in the condensate header.

Solution

The installation of a pump and trap combination system will ensure that the heat exchanger is always free from condensate while allowing 100% space to be used for heat transfer using steam.

Benefits

The steam operated pump trap maintains uniform heat transfer rate under all conditions

Increased productivity and reduced batch timing due to elimination of moisture which is a barrier to heat transfer

The bypass valve does not need to be opened, thus avoiding steam wastage

The steam operated pump trap saves condensate by returning it to the local condensate collection tank, which was earlier being drained due to negative differential pressure

Safety – no water hammering, no steam leaks or condensate spillage

Reduction in corrosion of heat exchanger by avoiding sub-cooled condensate