

Multi-stage steam jet vacuum pumps

in metal construction with mixing condensers

DESIGN AND MODE OF OPERATION

FIVE-STAGE STEAM JET VACUUM PUMP WITH MIXING CONDENSERS FOR 1 mbar (FIG. 1)

STAGE 1: extracts the vapours and gases from the process to be kept under vacuum; final vacuum e.g. 2 mbar

STAGE 2: compresses both the motive steam and the extracted vapours and gases of the 1st stage to a pressure of approx. 55 mbar

MIXING CONDENSER I: is designed for a condensation pressure level which is as low as possible to keep the steam consumption as low as possible. The suction flow load of the downstream-arranged stages and their steam requirements are thereby reduced.

STAGE 3: extracts all gases and vapours which were not condensed in the upstream mixing condenser I for compression to a pressure of 160 mbar

MIXING CONDENSER II: reduces the suction flow in order to relieve the downstream arranged stages

STAGE 4: compresses to a pressure of 400 mbar

MIXING CONDENSER III: condenses the remaining suction flow and the motive steam of the upstream arranged stage

STAGE 5: compresses to atmospheric pressure for discharge to the ambient air via a scrubber or a mixing condenser

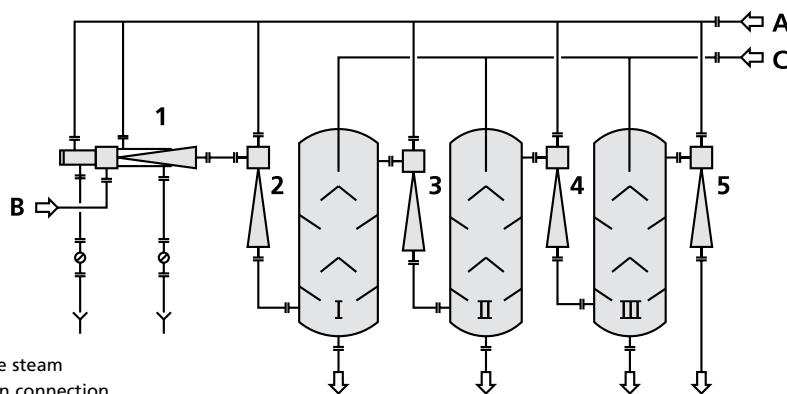
Mixing condensers are internally fitted with baffles or nozzles to enhance water distribution. They are shaped such that fouling problems are minimized. The cooling water is best drained off through barometric legs.

See also "Planning a steam jet vacuum pump", 7 | gdp3.



Suction capacity: 17 kg/h from 1 mbar, corresponding to 7230 m³/h and 3.6 kg/h from 2 mbar, corresponding to 1500 m³/h

FIG. 1



- A Motive steam
- B Suction connection
- C Cooling water

1–5 Steam jet vacuum pumps, stages 1 to 5
I–III Mixing condensers

5-stage steam jet vacuum pump with mixing condenser



Fig. 2
3-stage steam jet vacuum pump with mixing condensers
Suction capacity: 3380 kg/h steam and 225 kg/h of inert gas from 60 mbar



Fig. 3
3-stage steam jet vacuum pump with mixing condenser and liquid jet vacuum pump in a polyester production plant