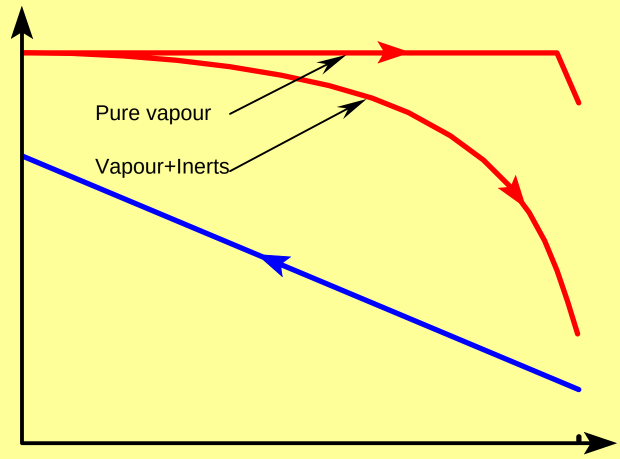

Fig. 03. Vapour with inerts.

The saturation temperature of the vapour-gas mixture as well as the heat transfer coefficient drops rapidly as the condensation proceeds.

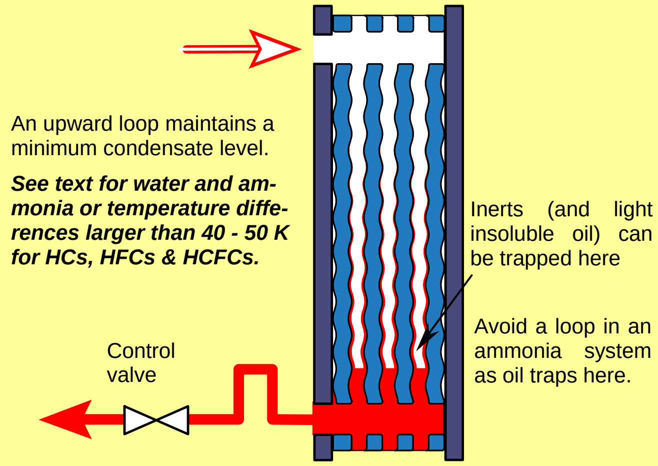

Fig. 04. Condensate subcooling.

Inerts and insoluble decomposition products accumulate above the condensate surface and are easily trapped there with a resulting decrease of the K-value.

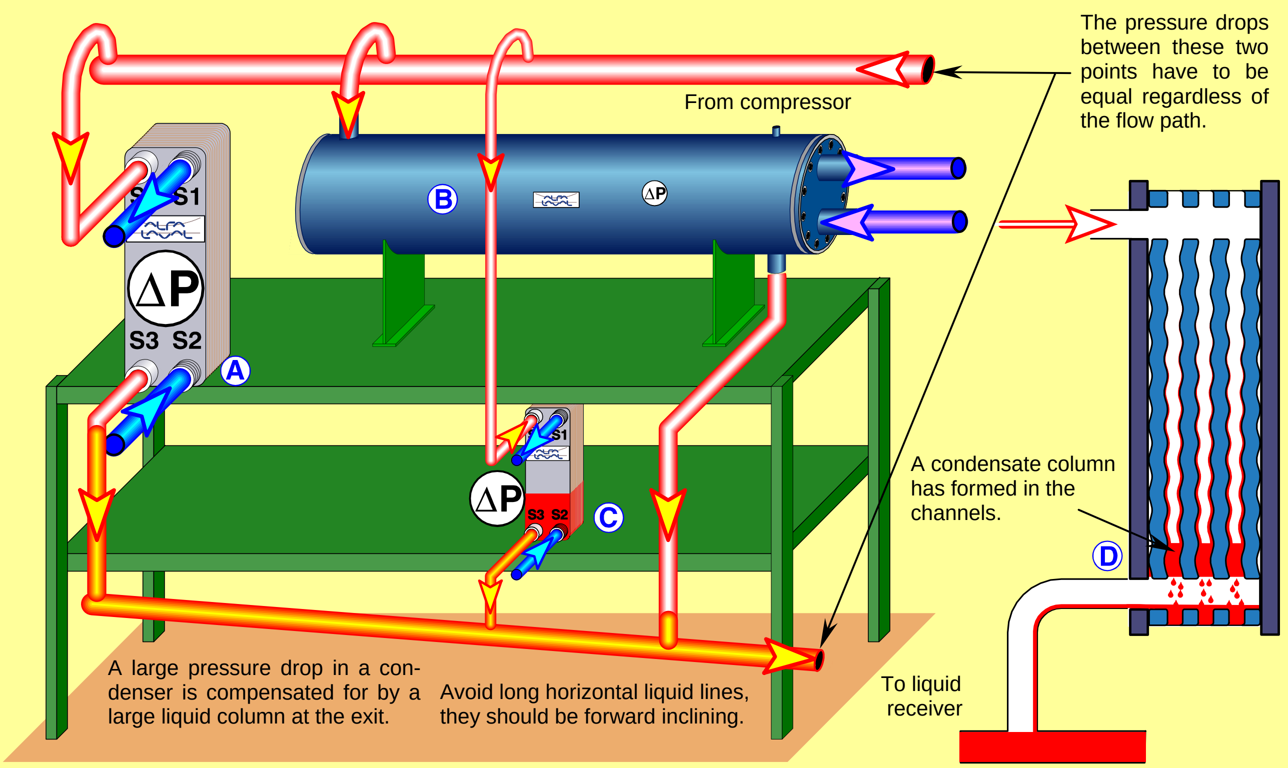

Fig. 05. Parallel-connected condensers

The three condensers have different ΔPs. However, the total ΔP has to be equal, whichever path we follow from the compressor discharge line to the liquid receiver.

At start-up, the vapour distributes automatically between the condensers and the ΔPs become equal. To achieve this some of the vapour from A & C diverts to B .

If B can handle the increased load, equilibrium is reached. Chances are though, that vapour leaves uncondensed and enters the receiver. The increased pressure in this blocks the condensate flow from A & C, and liquid columns build up in the condensate lines. These columns help to evacuate the liquid from A & C and more vapour enters into these. Finally a new equilibrium is reached, where the higher ΔPs in A & C is offset by the suction action from the condensate column.

If the height difference between a condenser and the liquid column is not great enough, the condensate can block a part of the heating surface, with a loss of capacity as a consequence. This is what happens with C.

If the condensate line is too large to maintain a stable liquid column, the column forms in the channels, see D. This is an unstable situation, a column forms, suddenly drains, forms again, etc., and in any case there is a loss of capacity as condensate blocks part of the surface.