

ABSTRACT

MULTISTAGE DISTILLATION SYSTEM, METHOD FOR OPERATING SAME

The invention relates to a multi-stage distillation system (1) having stages S_i , where $i=1, \dots, n$, wherein during operation, each stage S_i works in a higher pressure and temperature range (P_i , T_i) than the following stages S_{i+1} , wherein each stage S_i comprises an evaporator E_i and a condenser C_i , wherein each evaporator E_i and each condenser C_i comprises a pressure-tight container (2) having a steam chamber (6), wherein the steam chamber (6) of each evaporator E_i is in pressure-connection with the steam chamber (6) of the condenser E_i of the same stage S_i via a steam pipe (7) having a large cross-section. Each outlet (5) of each evaporator E_i is connected to a spray inlet (3) of the next evaporator E_{i+1} , and the outlet (5) of the last evaporator E_n is connected to the spray inlet (3) of the first evaporator E_1 with a respective fluid line (8) to form an evaporator circuit, and each outlet (5) of each condenser C_i is connected to the spray inlet (3) of the previous condenser C_{i-1} , and the outlet (5) of the first condenser C_1 is connected to the spray inlet of the last condenser C_n with a fluid line (9) to form a condenser circuit. According to the invention, at least one steam line (10) is connected by a first end to one of the fluid lines (9) between condensers C_{i+1} and C_i or to the fluid line (8) between the evaporators E_n and E_1 , and is connected by a second end to a steam chamber, which, during operation, has a higher pressure P than the pressure P_i in the steam chamber (6) of the condenser C_i or than the pressure P_1 in the steam chamber (6) of the evaporator E_1 . The invention also relates to a method for carrying out a distillation in a system according to the invention, as well as a controller.

Fig 2