

Title (en)
REFRIGERATION SYSTEM

Title (de)
KÜHLSYSTEM

Title (fr)
SYSTEME REFRIGERANT

Publication
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Application
EP 05720357 A 20050309

Priority
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Abstract (en)
The low-side pressure of a refrigeration cycle and the refrigerant temperature at the exit of a gas cooler under reference operating conditions are employed as a reference low pressure and a reference refrigerant temperature, respectively, and the high-side pressure of the refrigeration cycle at which the COP of the refrigeration cycle reaches a maximum value under the reference operating conditions is employed as a reference high pressure. In this case, the volume v_2 of a first fluid chamber (72) in the expander (60) just after the closing off of fluid communication from its inlet channel and the volume v_3 of a second fluid chamber (82) in the expander (60) just before the provision of fluid communication with its outlet channel are set to $v_2 = \frac{1}{r} \frac{v_1}{\rho_2}$ and $v_3 = \frac{2}{\rho_3} v_2$, respectively, where ρ_1 is the density of saturated gas refrigerant at the reference low pressure, ρ_2 is the density of refrigerant at the reference high pressure and the reference refrigerant temperature, ρ_3 is the density of refrigerant adiabatically expanded from a condition of the reference high pressure and the reference refrigerant temperature into a condition of the reference low pressure, v_1 is the volume of the fluid chamber in the compressor just after the closing off of fluid communication from its suction channel, and r is the rotational speed ratio of the compressor to the expander.

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