

Title (en)

SUPERCRITICAL CYCLIC PROCESS COMPRISING ISOTHERMAL EXPANSION AND FREE-PISTON HEAT ENGINE COMPRISING HYDRAULIC EXTRACTING OF ENERGY FOR SAID CYCLIC PROCESS

Title (de)

ÜBERKRITISCHER KREISPROZESS MIT ISOTHERMER EXPANSION UND FREIKOLBEN-WÄRMEKRAFTMASCHINE MIT HYDRAULISCHER ENERGIEAUSKOPPLUNG FÜR DIESEN KREISPROZESS

Title (fr)

PROCÉDÉ À CYCLE FERMÉ SUPERCRITIQUE À DÉTENTE ISOTHERME ET MACHINE THERMIQUE À PISTON LIBRE À DÉCOUPLAGE ÉNERGÉTIQUE HYDRAULIQUE POUR CE PROCÉDÉ À CYCLE FERMÉ

Publication

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Application

EP 16723930 A 20160408

Priority

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Abstract (en)

[origin: WO2016165687A1] Supercritical cyclic process, which enables an almost complete conversion of heat into mechanical energy, and reciprocating piston device in order to convert same. The isothermal expansion of the gaseous working medium is carried out by supplying heat via the cylinder wall and an oscillator piston which has turbulator slots, which oscillator piston oscillates in a linear manner in the expanding working chamber. The external heat is almost entirely supplied during the isothermal expansion at a slow stroke frequency, while all other steps – isochoric pressure build-up, isobaric expansion and isobaric reliquefaction – are almost completely carried out by means of the internal recuperator. The working piston is designed as a hollow free piston having sealing rings on the cold end and, just as the oscillator piston drive, follows the stroke profile of control piston, which is driven by the external master drive. All external piston drives are operated in a largely force-neutral manner with hydraulic pressure equalisation and require only little mechanical supply of energy as a result of the process. Owing to the elongated design, the device has a high thermal resistance in the direction of the hydraulic pressure chambers and/or cold poles and requires relatively little external cooling as a result of the process.

IPC 8 full level

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CPC (source: EP)

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