

Title (en)

COMPACT GAS-GAS HEAT EXCHANGE TUBE AND MANUFACTURING AND USE METHODS THEREFOR

Title (de)

KOMPAKTES GAS-GAS-WÄRMETAUSCHERROHR UND HERSTELLUNG UND VERWENDUNG DAVON

Title (fr)

TUBE D'ÉCHANGE DE CHALEUR GAZ-GAZ COMPACT ET PROCÉDÉS DE FABRICATION ET D'UTILISATION ASSOCIÉS

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Application

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Abstract (en)

The present invention provides a compact gas-gas heat exchange tube. The heat exchange tube includes a heat transfer tube which is configured to separate an in-tube fluid from an out-tube fluid, and achieve, through convection and heat conduction manners, heat transfer between the in-tube fluid and the out-tube fluid; an inner fin set which is configured to expand a heat exchange surface on an inner side of the heat transfer tube, form a micro-channel to separate the in-tube fluid to make the same to axially flow along the heat transfer tube, and produce a turbulence effect and enhance heat convection as well; an outer fin set which is configured to expand a heat exchange surface on an outer side of the heat transfer tube, form a micro-channel to restrict the out-tube fluid from axially and reversely flowing along the heat transfer tube, and produce a turbulence effect and enhance heat convection as well, wherein a hole is provided on each fin of the inner fin set or/and the outer fin set. The present invention further provides methods for manufacturing and using the compact gas-gas heat exchange tube. The present invention realizes complete reverse flow and efficient heat transfer in a limited space and under a heat exchange working condition of a small tube number mean temperature difference, saves a spatial dimension of the apparatus, and reduces a weight of each area as well so as to reduce a total weight and a manufacturing cost.

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