Title (en)

Multi-impingement-surface for cooling a wall

Title (de)

Multi-Impingement-Verbund zum Kühlen einer Wand

Title (fr)

Structure d'un surface avec noyau de refroidissement par impact

Publication

EP 2199725 B1 20111012 (DE)

Application

EP 08021833 A 20081216

Priority

EP 08021833 A 20081216

Abstract (en)

[origin: EP2199725A1] The multi-impingement composite (1) for cooling a wall using a cooling liquid, comprises perforated sheet layers (2) with several passage holes (3) distributedly arranged over a surface of the perforated sheet layers and formed as perforated sheets, and web layers (6) that are alternatively stacked with the perforated sheet layers and have several webs (7), where the multi-impingement composite is contactable with a surface of the wall in a flat and heat-conducting manner and the webs are distributedly arranged over the surface of the perforated sheet layers. The multi-impingement composite (1) for cooling a wall using a cooling liquid, comprises perforated sheet layers (2) with several passage holes (3) distributedly arranged over a surface of the perforated sheet layers and formed as perforated sheets, and web layers (6) that are alternatively stacked with the perforated sheet layers and have several webs (7), where the multi-impingement composite is contactable with a surface of the wall in a flat and heat-conducting manner and the webs are distributedly arranged over the surface of the perforated sheet layers and bridge over the perforated sheet layers. Each web of the web layer is arranged in line with one of the webs of the other web layers. Each passage hole of the perforated sheet layers is displaceably arranged to the passage holes of the adjacent perforated sheet layers, so that when the multi-impingement composite is pressurized on its flat side with the cooling liquid, the cooling liquid flows through the perforated sheets and flushes through an intermediate space located between the webs and the perforated sheet layers, where the heat stream derived from the wall is supplyable into the webs with the cooling liquid. The longitudinal directions of the webs extend vertical to the perforated sheet layers. The webs are distributedly arranged in a rectangular raster permanently over the surface of the perforated sheet layers. The passage holes are arranged in same distances to four direct adjacent webs and the intermediate space formed between the four webs has one of the passage holes in one perforated sheet layers or in the other perforated sheet layer, so that the passage holes are gaps. The webs have a circular or lancet-shaped cross-section with two opposite blunt edges and two opposite pointed edges. The passage holes of the perforated sheet layer, through which the cooling liquid flows out into the intermediate space formed between the four webs when the multi-impingement composite is pressurized on its flat side with the cooling liquid, lie on lines crossing the pointed edges. The passage holes of the perforated sheet layer, through which the cooling liquid flows-in into the intermediate space formed between the four webs when the multi-impingement composite is pressurized on its flat side with the cooling liquid, lie on lines crossing the blunt edges. The perforated sheet layers are rounded-off at the passage holes. An independent claim is included for a method for producing a multi-impingement composite.

IPC 8 full level

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CPC (source: EP)

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