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2. Denomination
Improving the efficiency of transpiration cooling at industrial heat power engineering systems
3. Specialty
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<p>The growth of actual interest towards methods of media transpiration cooling is directly connected with growing actuality of both power engineering and ecology problems. That is an important alternative to the vapor compression cooling installations as to ecological purity of transpiration methods and the possibility of significantly reduced power consumption rate.</p> <p>We elaborated the requirements to the new systems and general principles of their structure. Here the Indirect Transpiration Coolers (ITC) are designed as complex scheme project consisting of multi-channel nozzle with alternating “wet” and “dry”. As optimal ones for alternating systems we fixed heat-mass exchange installations of film class having cross-flow scheme of operative flows. Here simulative models of operation processes were effected.</p> <p>We proved experimentally that the optimal ratio between main and auxiliary air flows consumption is 0.5–0.55 under maximal consumption values. When ITC equipment used as element of Technological Cooling Systems for Radioelectronics these values can differ from the above given.</p> <p>We developed the Systems of comfortable and technological-purpose Air Conditioning (Technological Cooling Systems for Radioelectronics), that including several modifications which differ by the fan type and general structure, those providing for nominal cooling productivity 2.0 kWt. The Technological Cooling System for Radioelectronics is constantly-leveling the required rate of heat-moisture regime for the reason of radioeletronical equipment non-failure operation. The designed systems for comfortable and technological air conditioning are providing the stability of environment required parameters levels at the general power consumption decrease when compared to the present date operated vapor compression systems at 30-40 % at the same time being effective as to ecological purity of technological solutions applicable.</p> <p>Keywords: transpiration cooling, regular structure nozzle, indirect transpiration cooling, comfortable area, comfortable and technological air conditioning.</p>