

Experimental Investigation and Modelling of Ejection Refrigeration Systems

Dariusz Butrymowicz^{C, S}, Kamil Smierciew and Jaroslaw Karwacki
Institute of Fluid-Flow Machinery, Polish Academy of Sciences, Gdansk, Poland

This paper deals with modelling and experimentation on one-phase vapour ejector in application to refrigeration systems. Particularly very interesting is the case with a low temperature motive heat source which may be applied to solar air-conditioning units. The testing rig, selected test results obtained with refrigerant R-123 and isobutane as well as numerical modelling results of vapour ejector have been presented in the paper showing reasonably good agreement. Our own approach for modelling of the ejection cycle has been proposed. This approach is based on formulation of performance of the ejector and system performance characteristics lines. The operation point of the ejection refrigeration device is predicted as intercept of these two lines. Exemplary calculations based on this approach have been presented.