

# **Numerical Analysis of Exergy for Air-Conditioning Influenced by Ambient Temperature**

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Received 06 February 2014; received in revised form 07 March 2014; accepted 21 March 2014

## **Abstract**

The article presents numerical analysis of exergy for air-conditioning influenced by ambient temperature. The model of numerical simulation uses an integrated air conditioning system exposed in varied ambient temperature to observe change of the four main devices, the compressor, the condenser, the capillary, and the evaporator in correspondence to ambient temperature. The analysis devices of the four devices's exergy influenced by the varied ambient temperature and found that the capillary has unusual increasing exergy loss vs. increasing ambient temperature in comparison to the other devices. The result shows that reducing exergy loss of the capillary influenced by the ambient temperature is the key for improving working efficiency of an air-conditioning system when influence of the ambient temperature is considered. The higher ambient temperature causes the larger pressure drop of capillary and more exergy loss.

**Keywords:** exergy, ambient temperature, exergy loss, working efficiency.

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