

Actual measurement of heat transfer from a vertical cylinder^{*}

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Abstract

Most of recent engineering calculations are modeling processes and simulation through a variety of programs for modeling and simulation. Among these processes is heat transfer, which many of researchers have encountered. In this paper, an apparatus designed at University of Damascus, is used specifically to measure the heat transfer by convection and radiation from cylinder surface, used in domestic water heating, as well as the heat transfer process by convection from the surface of the cylinder can be seen, that by measuring the thermal gradient between the cylinder and the air surrounding it through an array of temperature sensors towards the transition temperature. Then, through an electronic circuit, data is converted and transferred to a computer to be processed to calculate heat convection factor the errors of measurement and draw curves of the heat transfer and view it on the computer screen. As a result, the heat transfer experiments of free convection have achieved within the laboratories of the Faculty of Mechanical and Electrical Engineering. The device can also measure the heat transfer by forced convection from surfaces, after adjusting matrix sensors and data processing software conveniently with heat transfer of forced convection.

Key words: heat transfer, heat convection, heat transfer from a vertical cylinder, heat transfer equations

^{*} For the paper in Arabic see pages (107-126).

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