
Analysis of errors in heat flow measurement when testing designs heated by radiation

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The authors review contactless and contact methods of measurements of heat flow, show results of comparative analysis and state the benefits of contact methods based on the solution of inverse heat conduction problems. It is shown that the correctness of the results of the thermophysical experiment largely depends on the accuracy of the heat flux determination. The advantage of the methods based on the solution of inverse heat conduction problems is the ability to create small-sized sensors, structurally designed as elements of the system. This allows controlling the local values of the heat flow directly into the process of heating, and in practice in some cases it is sufficient to measure the change of the temperature in one of sensor's points. Results of research of an error of measurement of temperature of a sensitive element of the sensor intended for definition of a thermal stream at intensive radiation impact on heated object are given.

Keywords: *radiant heating, calorimetric sensors, errors, thermocouples, inverse heat conduction problem.*

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