

EXPERIMENTAL DETERMINATION OF EMISSIVITY VARIATION OF A BRAKE DISC BY IMAGE ANALYSIS

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Abstract. *The paper approaches the possibility of determining the temperature repartition of a brake disc by thermography. The repartition was obtained for an intensive brake of a vehicle in real conditions on road. To make a right evaluation of the value and variation of the brake disc material emissivity during the brake, the authors proposed an experimental simulation methodology of thermal flux dynamics during the disc heating. Emissivity variation was made by an analysis of image histograms for brake disc, images taken simultaneously by a thermal and CCD cameras. For better results was used a contact thermometer.*

Keywords: Automotive engineering, disk brake, thermography, image analysis, experimental simulation

1. Introduction

At an intensive brake form high speed, a big quantity of thermal energy is given out by conduction, convection and radiation. Brake disc temperature reaches high values, variable on its surface making possible to appear damages of disc material.

To determine the possible areas with high potential risk is important to know the temperature repartition on the brake disc surface, heat that is store inside its volume (figure 1).

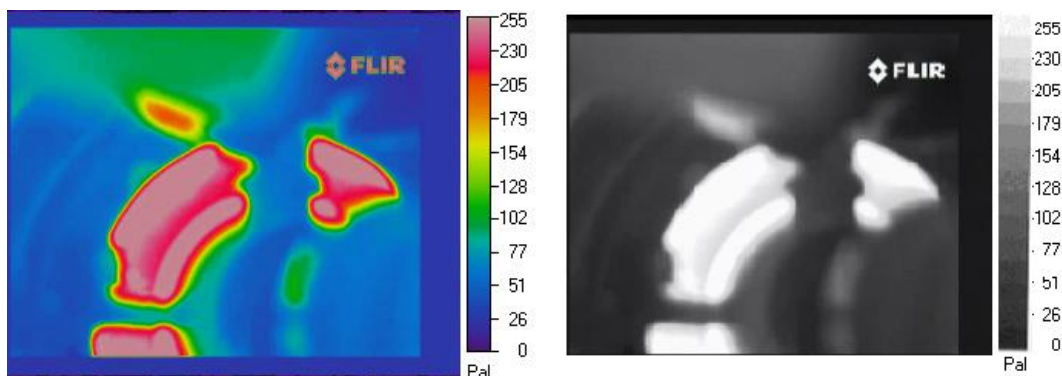


Fig. 1. Temperature distribution (in color units – left, or gray units – right) on brake disc surface.

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