

TLC-coated measured object: CCD camera: RGB image: Image processing: Image of measured temperatures:

Temperature T - hue H relation:

a. b. c.

a. TLC measured temperatures on a cylinder, heated electrically by a thin foil on its surface, in 63m/s axial air flow. b. The rear part. c. Temperature - hue relations.

d. e.

d. The cylinder (2), and a TLC-coated and electrically-heated thin plate (1). e. The isotherms on the thin plate (1 in Fig. d) indicate the separated flow.

f. g.

f. Isotherms on a steel gear $D=100$ mm cooled from 115°C by 30 m/s 20°C air crossflow. g. Surface isotherms ($^{\circ}\text{C}$) on a steel prism, in 20 m/s 20°C air crossflow from below.

Temperature measurements using thermochromic liquid crystals

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Thermochromic liquid crystals (TLC), change their reflected colors with their temperature, and are, with digital image processing, used for wireless temperature field measurements. The temperatures and the applied surface heat flux can also be used to determine convective heat transfer coefficients.