LIS

Laboratoire d'ingé
des systèmes de Vers

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THERMAL MODELISATION AND ANALYSIS OF HIGH-POWER LED FOR AUTOMOTIVE HEADLIGHT APPLICATIONS

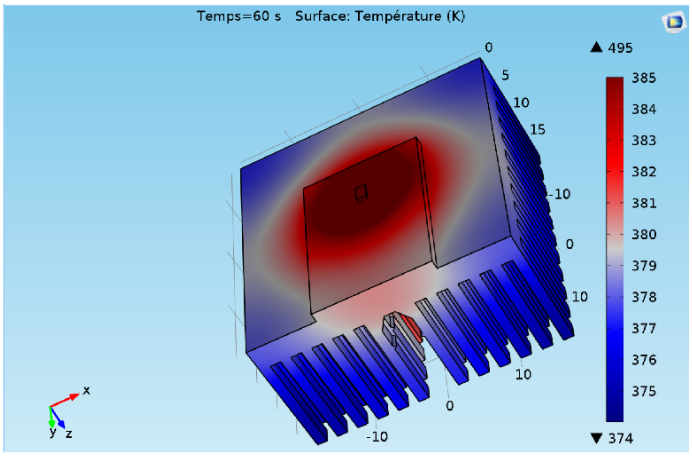
High-power LEDs are used in many areas today. Automobile headlamp is one of them. Electrical energy is converted into visible light with an efficiency of 10-25% range. The rest of this energy is mainly converted into heat.

The excellent thermal management plays a significant role in terms of efficiency,

reliability and durability. For example the light flux of the LED decreases significantly with the LED internal temperature. Thus, the good dissipation of the generated heat from the LED chip is a keystone.

In this work, we simulate and study the heat dissipation through finite element method (FEM) analysis.

In order to insure the validity of the simulation approaches we propose an experimental protocol based on heat dissipator key point temperature tracking with thermocouple on both real and virtual set up.



Heat simulation in COMSOL

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