

## **DEVELOPMENT OF PULSATING HEAT PIPE WITH A CENTRAL HEATING ZONE**

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### **Abstract**

In order to develop a cooling system for a LED lighting, a pulsating heat pipe (PHP) has been built and tested. The PHP was composed of a copper capillary tube 1.25 mm inside diameter with 16 branches 200 mm long. The tube was filled with acetone with a 50% filling ratio. Tests have been performed injecting an electrical power of 10 to 100 W with imposed cooling temperature 40, 60 and 80°C. The inclination was varied from vertical to horizontal position. The influence of the open or closed loop was tested. Temperatures, inside pressure, electrical power and inclination were recorded and results in term of thermal resistance established. A classical configuration with the heating section at one end of the PHP and the cooling section at the other end was tested. For design and better operation purpose, another configuration with the heating section located in the central region of the PHP was tested successfully, it is less sensitive to orientation and to the open loop configuration.