

## A Simple Thermal Control Technique for the First Egyptian Pico Satellite

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**Abstract :** One of the main prospectives on the demand of space exploration is to reduce the costs and efforts for satellite design. Concerning this issue satellite down scaling attracts space scientists and engineers. Picosatellite is the smallest category of satellites. The overall mass is less than 1 kg and dimensions are 10x10x3 cm<sup>3</sup>. Thermal control target is to keep the Pico-satellite board temperature within the permissible limits of temperature. Thermal design is completely passive which relies mainly on the enhancement of the thermo-optical properties of aluminum using anodization. Transient analysis is given for two different orbits, ISS orbit and 600 km altitude orbit. Results show that board temperature lies within 3 oC to 22 oC using black anodization which is a permissible limit for the satellite internal electronic board.

**Keywords :** satellite thermal control, small satellites, thermooptical properties ,transient orbit analysis

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