

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)  
Launch services, Missions, Operations and Facilities (2)

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COUPLED THERMAL ANALYSIS OF SATELLITE AND LAUNCH VEHICLE

**Abstract**

In the process of launch campaign, it is necessary to assess the thermal environment which the satellite may experience in preparation phase on ground, in flight phase until satellite and launch vehicle separation, it is required that the thermal analysis be provided by launch agency. This paper introduced 'coupled thermal analysis' (CTA) method to do the work. CTA can not only calculate the heat transfer between the satellite and the launch vehicle fairing or exterior environment, but also the internal thermal environment of satellite itself. The work of CTA need cooperation between satellite and launch agency. Firstly satellite agency should describe the reduced thermal mathematical model necessary to perform the thermal coupled analysis with the launcher, also give all the required inputs and constraints, then the launch agency assess the satellite thermal behavior during the analyses phases and provide improvements necessarily. In general, CTA is essential work in the launch campaign.