PCM-HSD design, Assembly and Flight Testing

Summary report

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ABSTRACT:

In the frame of the HEXAFLY-INT project, a Phase Change Material Heat Storage Device (PCM-HSD) is developed. According to the requirements, a configuration has been chosen and developed. The Summary Report presents the main outcomes of the study.

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Summary

The objective of the Project **PCM-HSD design, Assembly and Flight Testing** was to develop a PCM-HSD for a practical application, a hypersonic glider.

It is possible now:

- to detail the design of a PCM-HSD able to fulfill the requirements of a highly demanding mission with heavy mechanical loads and plurality of equipment (10);
- to manufacture and test a PCM-HSD model to verify manufacturing processes and to qualify the technology;
- to be able to predict the thermal performance.

The studied case involves a dissipation of 80 W and the use of octadecane.

The vibration behavior has also been tested and results in a first eigen frequency higher than 535 Hertz.

The thermal modelisation is conservative, which is what is expected as it is used to design a new device PCM-HSD. Some margins are still present before the flight.

The results underline the good sizing and dimensioning of the PCM-HSD.