

IAF SPACE PROPULSION SYMPOSIUM (C4)
Liquid Propulsion (2) (2)

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QUALIFICATION OF A PROPULSION SYSTEM FOR ACTIVE DEORBIT

Abstract**Introduction:**

Space debris removal is a critical task especially with the high number of satellites currently already in orbit or to be launched in the near future. Pending on the orbit and satellite mass active or passive deorbiting has to be performed / supported by the onboard propulsion system. This paper describes the generic guidelines and gives a concrete example of the MetOp-SG (Meteorological Operational Satellite - Second Generation) satellite family that use an active deorbit system.

Discussion

The following points will be discussed in this paper:

- Generic Clean Space Requirements
- Propulsion system layout for demisibility, active and passive deorbiting
- Active deorbit: requirements for the propulsion system and the deorbit engine based on European Prime's needs
- Qualification results of an Ariane 5 launcher engine for MetOp-SG deorbiting
- Development and qualification of demisable tanks
- Status and system impacts using green propellants for deorbit purposes

Conclusion

In order to preserve Earth's orbital environment as a safe zone, free of debris a deorbit of satellites at the end of their service life is necessary. For satellites that do not naturally deorbit within 25 years this means that the deorbit has to be actively supported. For larger satellites with a high impact risk on ground an active deorbit into a dedicated drop zone has to be performed that requires a specific system layout. This paper gives an overview over clean space requirements and describes the generic impacts on system layout with the concrete example of the qualification of the propulsion system of the MetOp-SG satellite family.