

SPACE PROPULSION SYMPOSIUM (C4)
Missions Enabled by new Propulsion Technology and Systems (6)

Author: Mr. Zvika Zuckerman
Rafael Advanced Defense Systems Ltd., Israel, zvikaz@rafael.co.il

THE EVOLUTION OF MONO PROPELLANT & ELECTRICAL PROPULSION SYSTEMS
SUPPORTS THE DEVELOPING "PLUG & PLAY" NEEDS, WHILE CREATING A NEW BUSINESS
CASE BY: ZVIKA ZUCKERMAN (ZUCKI), SHIMSON ADLER, GILLON SHEAR

Abstract

In all Satellites Architecture the propulsion system as a single point of failure and one of the main satellite building blocks has become a dominant factor to accomplish a successful Mission. It was demonstrated that advanced AOCS design is critical for achieving the program schedule. A modular heritage Propulsion System is an essential power multiplier in the satellite maturity and availability. The ability to count not only on a conservative propulsion approach, but to use Hybrid propulsion systems based on monopropellant system side by side to Electrical Propulsion system can achieve high performances in space. Newly developed technologies for Low Thrust Hall effect EP thrusters combined with the traditional Mono-prop hydrazine based thrusters gives the AOCS the required operational flexibility, and by using a Plug--Play concept for the All-In-One propulsion Systems assembled on the same Base Plate to be incorporated as a self sustained module to the satellite. This approach can shorten the Satellite design phases and to be used as cost saving driver for the propulsion and AOCS systems. Where is the future? The near future leads to modern and compact Propulsion Systems with high operational flexibility and high performances that shall imply a simple integration effort to the Satellite and finally shall lead to much easier task and lower risk in completing mission. A well developed Propulsion Systems could be easily adapted to many platforms hence sold in big quantities to cover the high costs of development. The presentation/paper will bring examples of new trends and Propulsion Systems which accomplish the needs of the 21st century.