

IAF MATERIALS AND STRUCTURES SYMPOSIUM (C2)

Space Structures II - Development and Verification (Deployable and Dimensionally Stable Structures) (2)

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5.0 METER TRUNCATED SOLID SHELL REFLECTOR : ARIANEGROUP ALTERNATIVE TO
EXPENSIVE DEPLOYABLE MESH REFLECTORS

Abstract

ArianeGroup (Les Mureaux) is the European leader in deployable antenna reflectors from 2 meters diameter up to 3.5 meter and covering the whole spectrum from C band up to QV band.

In the frame of the increasing demand of data bandwidth, ArianeGroup has developed a set of solution dedicated to Very High Throughput Satellite. It includes a 3.5 meter solid shell KA band reflector. The design can be scale up to a 5m truncated solid shell reflector

The overall design is based on the Ultra-Light reflector (ULR) architecture. It was adopted for its capability to answer to the shell surface accuracy required compared to mesh reflector. It consists in a thin sandwich shell linked to an independent stiff backing structure, offering a low mass and great modularity. An enhanced backing structure has been engineered to achieve improved accuracy, thermal stability without thermal sunshield and robustness with regards to stringent mechanical environment.

The paper will present , the heritage from the qualified 3.5m version, the design principles for the 5 m reflector derivative and the benefits of rigid shell versus mesh solution.

Advanced concept will also be presented for the new generation of large solid shell reflectors aiming at reducing drastically the cost