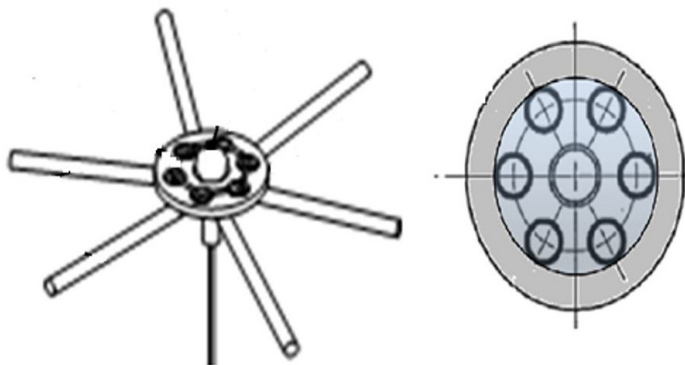


Annular Retro Reflective Target for shape measurements and alignment of Unfurllable Antenna

U R Rao Satellite Centre (URSC) of Indian Space Research Organization (ISRO) has developed Annular Retro Reflective Target for shape measurements and alignment of Unfurllable Antenna.

Shape measurement and alignment of large unfurllable antenna is very important which dictates its performance during orbit operations. Shape measurements of rigid surface is an established field and CMM or portable systems with hard body targets are used for this task. However, mesh surface cannot be measured with such methods.

New photogrammetry technique with new Annular type retroreflective target is developed to measure the shape and align large unfurllable antenna to Spacecraft.



Salient Features

- ✦ Annular type retro reflective target serves two purposes. First it acts as a node for weaving the cables of mesh and second the annular surface of mesh node is made retro reflective and carefully crafted such that it can be measured using photogrammetry. The centroid of node represents the point on the parabolic mesh surface.

- ✦ Hence by measuring node coordinates shape information of mesh surface is obtained.
- ✦ This mesh surface is then aligned to spacecraft using digital assembly and transformations of various reference frames attached to various joints.

Major Specifications

- ✦ Size of Unfurllable antenna aligned : 6m
- ✦ Accuracy of shape measurement : 0.1mm
- ✦ Size of Annular retroreflective target : $\Phi 18\text{mm}$
- ✦ Centroidal accuracy of annular retroreflective target : 0.007mm

Technology Transfer

URSC/ISRO offers to transfer this technology of developed Annular Retro Reflective Target for shape measurements and alignment of Unfurllable Antenna by URSC to industries in India with adequate experience and facilities. Industries interested in obtaining knowhow may write giving details of their present activities, infrastructure and facilities.

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