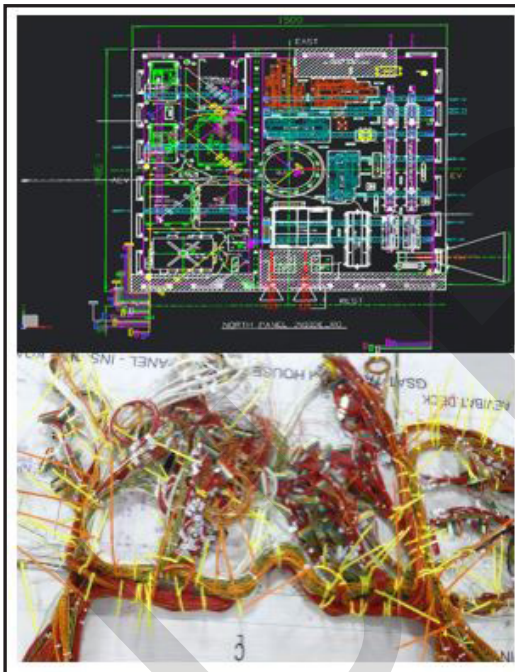


Spacecraft Flight Harness Realization Technology

U R Rao Satellite Centre (URSC) of Indian Space Research Organization (ISRO) has developed Spacecraft Flight Harness realisation technology. The Spacecraft harness is a complex entity involving 20,000 – 30,000 cable interface connections, 500-1000 connectors, 20-30 different types of connectors and various types of cables.

ISRO's expertise in spacecraft harness realization, evolved from decades of experience and forms the background. It encompasses the salient features on the know-how of the Spacecraft harness technology concerning EMI/EMC aspects, Power loss / dissipation factors Thermal effect / degradation issues, Spacecraft Layout design constraints, serviceability.



Salient Features

- ✦ The electrical data pack comprises of interface database including inter-panel terminations, worksheets of individual connector with fabrication details, and connector data cards for validation.
- ✦ The mechanical aspects are mainly provided in 3D models of harness routing as form-board drawings for individual panel/decks, depicting 1:1 length for harness inter-connections certifying harness bend radius, the nomenclature of subsystem & inter panel patch connectors and entire know-how for harness routing & formation.

Major Specifications / Software Features

- ✦ Type of Harness : DC cabling, MIL-STD-1553, LVDS, Space wire
- ✦ Connector Types : D-Sub, Circular, Micro-D, Power combo etc.
- ✦ Wire/Cable Types : Kapton, Spec-55, Mil-1553 Twinax, Atox etc.
- ✦ No. of connectors /Spacecraft : upto 1200
- ✦ No. of crimp units /Spacecraft : upto 25000 terminals
- ✦ Harness Fabrication Standards : As per ISRO-PAX-300
- ✦ Harness Qualification : Continuity/Cross-continuity, Alcohol Wetprobe
- ✦ EMI/ESD compliance : Shielding, bundle segregation and routing of interfaces
- ✦ Facility Requirement : Min 10m x 10m Lab with controlled environment with temp $22 \pm 2^{\circ}\text{C}$ and relative humidity 55 ± 5 RH, with associated tooling and skilled manpower.

Technology Transfer

URSC-ISRO offers to transfer this technology of developed Spacecraft Flight Harness Realization technology 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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🌐 <https://www.ursc.gov.in/industry/index.jsp>