TICRA

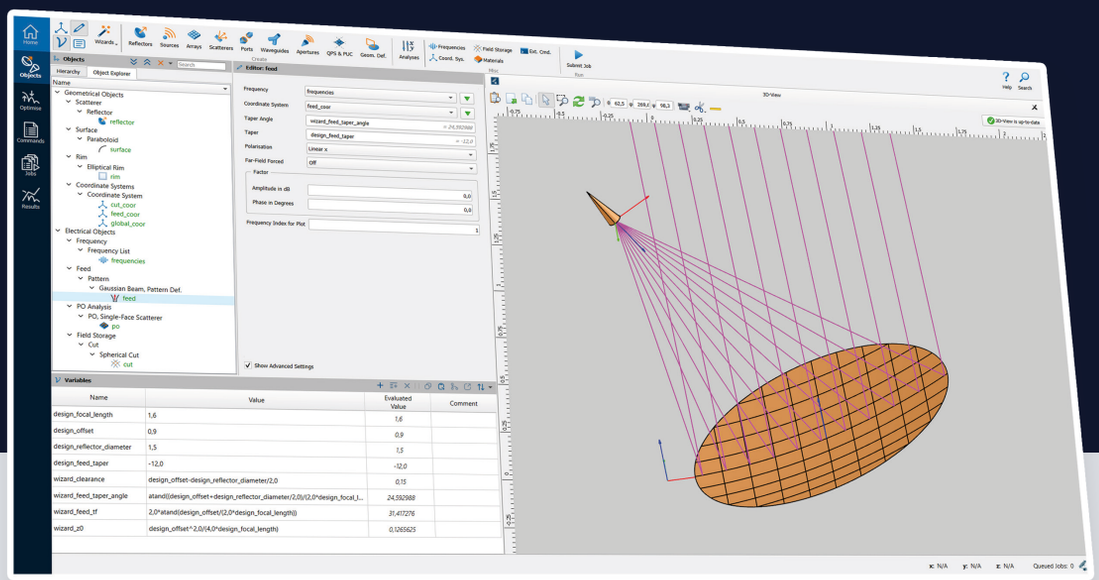
GRASP

The industry standard for high-accuracy reflector-antenna analysis: Efficient analysis of electrically large systems using specialised high-frequency methods.



www.ticra.com | info@ticra.com

Photo credit: G.P. Vargiu – INAF



Design and Validate Reflector Antennas with Confidence

Reflector-antenna systems are used across satellite communications, radar, Earth observation, radio astronomy, and ground-segment applications. As reflector systems increase in size and complexity, accurate electromagnetic analysis becomes critical for achieving required beam performance, sidelobe control, and polarization purity.

GRASP is TICRA's dedicated software for reflector antenna analysis, developed and refined for more than 50 years in close collaboration with institutional and industrial customers. It combines highly efficient Physical Optics (PO), Physical Theory of Diffraction (PTD), Geometrical Optics (GO), and Geometrical Theory of Diffraction (GTD) methods for accurate and computationally efficient analysis of electrically large reflector systems.

GRASP enables engineers to analyse and optimise large reflector systems, from early trade-off studies to final validation against measurements.

Reflector workflows for complex antenna systems

PRODUCT CAPABILITIES

- Analyse electrically large reflector-antenna systems efficiently
- Model shaped reflectors, beam waveguides, struts, radomes, and surface distortions
- Combine PO/PTD, GO/GTD and BoR-MoM methods within a single analysis environment
- Work directly with measured feed patterns and imported surface shapes
- Perform near-field and far-field analysis with high accuracy

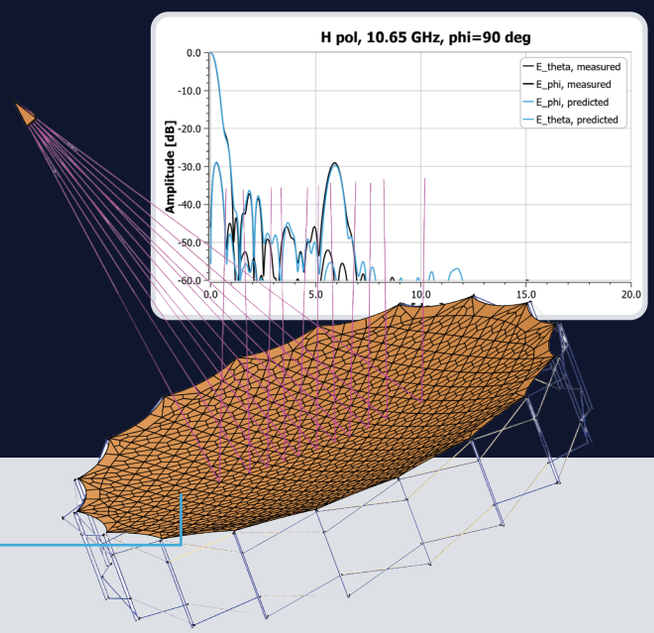
KEY TECHNICAL HIGHLIGHTS

- Specialised physical optics analysis for reflector systems
- Efficient ray-based techniques for large-scale antenna analysis
- Surface distortion modelling & tolerance studies
- Support for mesh reflectors and quasi-optical systems
- Proven agreement between simulation and measurement
- Flexible reflector geometry definition and CAD import

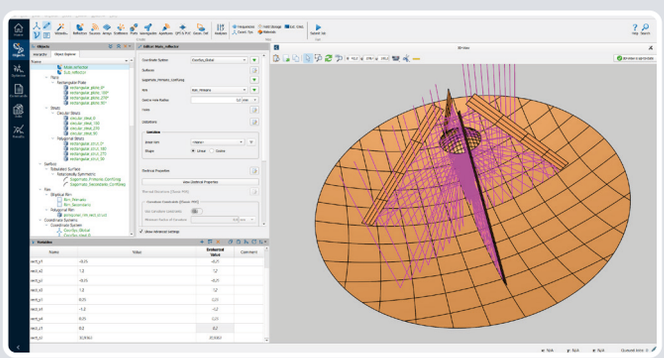
Why GRASP and TICRA?

Purpose-built for reflector-antenna analysis and refined with organisations including ESA and leading satellite and defence companies for more than 50 years.

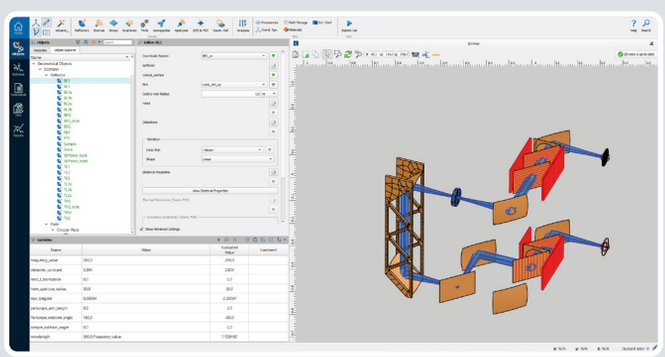
GRASP is widely recognised as the industry standard for reflector antenna analysis and is used by engineers working on mission-critical antenna systems worldwide.



Mesh reflector modelled in GRASP. Analysis time 41.80 seconds on an Intel Core I9-14900K processor.



Analysis of the INAF Sardinia Radio Telescope (64 m) at 22 GHz, including scattering from struts: 6 min 34 sec on Intel® Core™ i9-14900K.



Quasi-optical scatterometer analysed and optimised in GRASP.

Technical highlights

REFLECTOR MODELLING & ANALYSIS

- High-efficiency Physical Optics and diffraction methods
- Reflector shaping and optimisation workflows
- Multi-reflector system analysis
- Beam shaping and sidelobe optimisation
- Support for ideal, measured and imported geometries

REAL-WORLD SYSTEM MODELLING

- Surface distortions and manufacturing tolerances
- Feed support structures and radomes
- Measured feed integration
- Large deployable reflector analysis
- Compact antenna test range modelling

ADVANCED APPLICATIONS

- Satellite communications
- Radar systems
- Earth observation
- Radio astronomy
- Ground segment systems
- Quasi-optical systems

Integration with TICRA Tools

Combine GRASP with CHAMP 3D for feed chain and waveguide analysis, QUPES for frequency-selective sub reflector design, ESTEAM for detailed scattering and installed-performance, ARRAY for phased-array-fed reflector antenna design and UQ for uncertainty quantification of the geometrical and electrical tolerances.

The result is a seamless reflector antenna design environment, supporting a consistent workflow from feed chain design to full-system analysis, optimization, and validation.

Get in touch

Advance your reflector antenna analysis capabilities.

Discover how GRASP enables accurate and computationally efficient analysis of complex reflector systems.

Request a demo or discuss your application with a TICRA engineer.

www.ticra.com/software/grasp/
info@ticra.com

TICRA

www.ticra.com | info@ticra.com