


Focus on CSIR

Advanced Radar Research Facilities



MECORT plays an important role as the research vehicle for advanced upgrades and algorithms on the Optronic Radar Tracker (ORT) on the Valour class Frigates. The system was already successfully utilised to support research into innovative multipath mitigation techniques and small boat detection techniques.

The CSIR has a proud history of co-development of specialised radar research laboratories. Examples include FYNKYK, a Ka-band monopulse tracking radar developed in the 1980's, development of advanced pulse-Doppler technology for the SA Navy in the 1990's and the development of the MECORT radar laboratory with advanced data acquisition and analysis systems utilised by our Radar research teams from 2005.

MECORT Tracking Radar Laboratory

MECORT is a transportable pulse-Doppler monopulse radar and optronic tracking, test and measurement system.

Primary uses of the system

- Development of advanced techniques and algorithms
 - Accurate angle measurements
 - Accurate angle tracking under multipath conditions
 - Advanced target detection
 - Non-cooperative target recognition
- Development of advanced electronic protection techniques
- To act as a threat tracking system for:
 - Electronic attack system development
 - Electronic attack technique development
 - Support electronic warfare force preparation exercises
- To act as reference tracker at an EW range



Features

- X-band monopulse antenna and receiver/exciter unit
- Traveling wave tube amplifier transmitter
- Modular Advanced Radar Signal processor (MARS1000) providing programmable waveform generation, digital pulse generation, intermediate frequency sampling, radio frequency path calibration and equalisation, digital pulse compression, Doppler filtering, envelope detection, constant false alarm rate detection, second detection processing through clustering & ambiguity resolution and target state vector processing.
- Advanced data capture and analysis system able to capture raw radar data synchronised with optronic video data
- Road transportable allowing deployments at remote locations

ZINGELA Tracking Radar Research Facility

ZINGELA is the next generation tracking radar research facility currently under development at the CSIR that will provide international peer defence research establishments with advanced measurement, test and evaluation capabilities.

The ZINGELA tracking radar research facility is a fieldable X-Band radar tracker fitted with an optronic sensor.

The system makes provision for real-time pulse Doppler processing over the full instrumented range as well as in the two available tracking gates, allowing simultaneous tracking of two targets in the radar beam. The data processor performs mode control, target data filtering, waveform selection, data acquisition and display.

Primary uses of the system

The system's main purpose is to provide the technology platform to conduct tracking radar research and evaluate new technologies.

- Act as single target tracker
- Act as sensor in integrative sensor research system
- Capture data to support radar related research
- Evaluate new radar software/algorithms
- Integrate and evaluate new radar hardware components

About the system

- An X-Band Radar tracker fitted with an optronic sensor mounted on the electro-optic sightline.
- A positioner capable of high angular velocities and accelerations, for good sector search and acquisition performance on a fixed platform.
- System mode control and communications.

- Multiple modes of tracking using both radar and optronic sensors.
- The optronic sensor functionality consisting of dual field of view daylight cameras, video data recording and video sensor output display
- The radar sensor functionality with double offset-paraboloid mono-pulse radar antenna, real-time pulse Doppler processing over the full instrumented range, simultaneous tracking of up to two targets in the radar beam, programmable radar waveform selection, radar data acquisition and radar data display (A-trace, R-trace and Range-Doppler-plot, etc.)
- The facility comprises air-conditioned shelters, a standby power generator, internal audio communications, operator and engineering consoles, designation input interface and track feed output interface and built-in test capabilities.

Contact details:

Pieter Goosen – Business Development
CSIR – Defence, Peace, Safety and Security

Tel: +27 12 841 2060

Fax: +27 12 841 2455

Cell: +27 83 272 6662

e-mail: pgoosen@csir.co.za

www.csir.co.za