



COMPUTING



BATTERIES



COMMUNICATIONS



ANTENNAS &
SUBSYSTEMS



ELECTRONIC
MONITORING



WEATHER RADAR CAPABILITY

Q-PAR Antennas USA, LLC is the exclusive
Distributor/Sales office for STEATITE Antennas in the USA



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About Steatite Antennas



Steatite Antennas, has been at the forefront of microwave antenna design and manufacture since 1973 and is a division of [Steatite Limited](#), which is part of Solid State PLC Group, quoted on the UK AIM market. The division is based in Leominster in the UK with design, manufacturing and test facilities on site.

Steatite Antennas excels in the research, design & manufacture of high specification Commercial-off-the-Shelf (COTS) & custom designed microwave antennas, subsystems and associated antenna subsystem microwave components typically operating from 100 MHz up to 500 GHz.

In-house microwave design and engineering capability, backed by antenna testing facilities, provides a comprehensive antenna and subsystem solution.

Steatite Antennas uses leading commercial electromagnetic design software CST Microwave along with dedicated in-house algorithms, enabling it to analyse and optimise a wide range of antenna and microwave component designs. Whilst mechanically, a mixture of design and analysis tools including SolidWorks, Cosmos and FEA are used.

The company has formal quality accreditation to ISO 9001:2015.



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In-House RF and Environmental testing



- [Anechoic Test Chamber](#)
- 5m x 7m x 6m anechoic chamber
- Full 3D beam pattern characteristics
- <math><0.5\text{GHz}</math> to 40 GHz
- VP85 Vibrator and Slip Table with TW3000 Amplifier with controller for classic shock pulse; swept sine and random vibration
- Votsch VC4100 Climatic Chamber; -40°C to $+180^{\circ}\text{C}$; 10% to 98% RH





National Weather Radar Renewal Project wins 2018 Award

First place in the 'Asset Management category', Annual Environment Agency Flood & Coast Project Excellence Awards 2018.

The radar renewal project has won a prestigious award at the annual Environment Agency Flood & Coast Project Excellence Awards 2018. The main organisations involved in the project and included in the nomination were the Met Office, Environment Agency, **Steatite Antennas**, LARS Communications Ltd, Raise Telecoms Ltd and I J Cannings & Son Ltd. The project won the 'Asset Management' category, one of only 11 categories or special awards and one of over 120 entries

The project involved the refurbishment and upgrade of the **16 weather radar systems** in the UK National Weather Radar Network. The new radars provide new capability and world-leading performance and were designed and built in-house by the project team, working closely with suppliers.

UK Meteorological Office

- C-band weather radar network upgrade from single polar to dual polar operation.
- Development of new Potter horn feed, pressure window, OMT and waveguide runs on existing and new reflectors.
- Ø3.7m prime focus reflector with Potter horn feed, OMT and waveguide signal feeds.
- Frequency of operation 5.6 to 5.65GHz
- Gain: >43dBi
- 3dB beamwidth (Horizontal and Vertical): 1.0°
- Beam squint <0.1°
- Sidelobe levels: <-27dB within ±10° from boresight, <-30dB outside of ±10°
- Power handling: >1MW in dry air conditions (wg can be pressurised to >3psi)
- Cross polar isolation: > 40dB within 3dB beamwidth
- Port-to-port isolation >60dB..



Weather Radar



- Design of a Ka band reflector and Cassegrain feed on a two axis positioner system with room to integrate customer equipment.
- Ø1.2m reflector with dual polarised Cassegrain feed.
- Frequency of operation 35.5GHz
- Gain >50dBi
- 3dB beamwidth 0.5° (horizontal and vertical)
- Cross polar isolation >40dB
- Power handling 30kW peak, 40W mean.
- Positioner: 360° continuous rotation in Az, ±90° from zenith in Elevation.

Weather Radar



X-Band Weather Radar

Weather Radar



Cloud Radar Positioner:

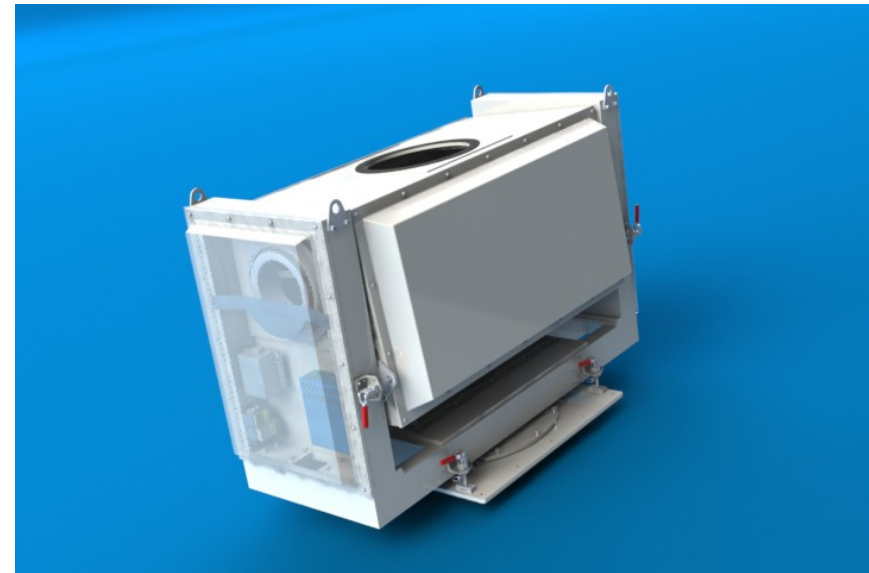
Can be fitted with a 1.2m reflector with Cassegrain feed.

Large space within positioner gimble for rackmount PC and radar transceiver equipment (24U, 125kg total).

Azimuth continuous 360° Rotation, Elevation $\pm 90^\circ$ from zenith.

Velocity 12°/s both axes.

Acceleration 50°/s² both axes.

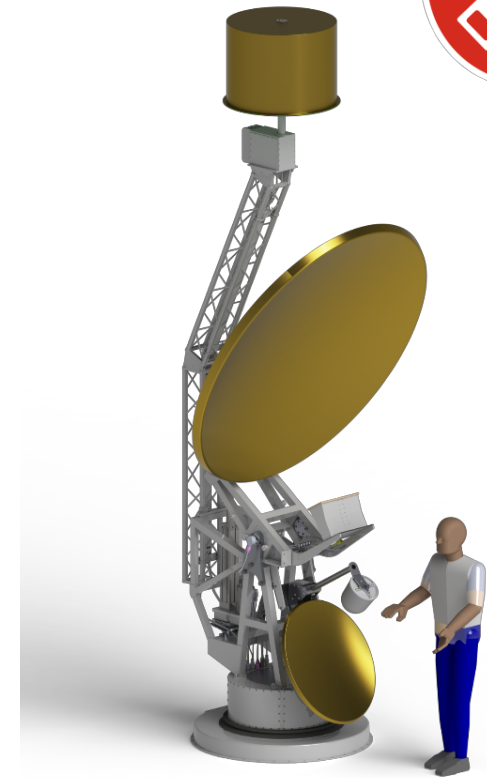


Antenna Positioner Systems



Large Antenna Positioning System:

	Azimuth	Elevation
Accuracy	<0.1°	<0.1°
Velocity	40.6°/s	5°/s
Acceleration	15°/s ²	5°/s ²
Rotation	±200°	-9° to +20°
Input Power	230V 50Hz 1.4A (without wind loading)	
Temperature	-40°C to +70°C (Operational)	
Humidity	3 to 100%	
Dimensions	Height 5m	
Wind loading	Operational in wind speeds to 15m/s Limited operation in wind speeds to 30m/s	



All connections via cable chain in azimuth and elevation

Antenna Positioner Systems



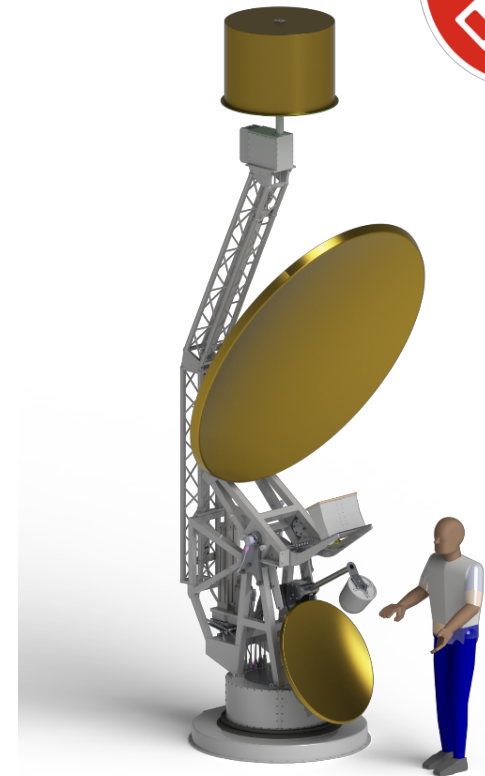
Large Antenna Positioning System:

Environmental qualification (all in accordance with MIL-STD-810G):

- Exposure to Blowing Dust, Method 510.5, Procedure 1
- Exposure to Blowing Sand, Method 510.5, Procedure II
- Exposure to Salt Fog, Method 509.5
- Exposure to Blowing Rain, Method 506.5, Procedure I

EMC testing of the complete finished unit carried out:

- EN61000-4-4:2012 Electrical Fast Transient Immunity
- EN61000-4-5:2014 Voltage Surge Immunity



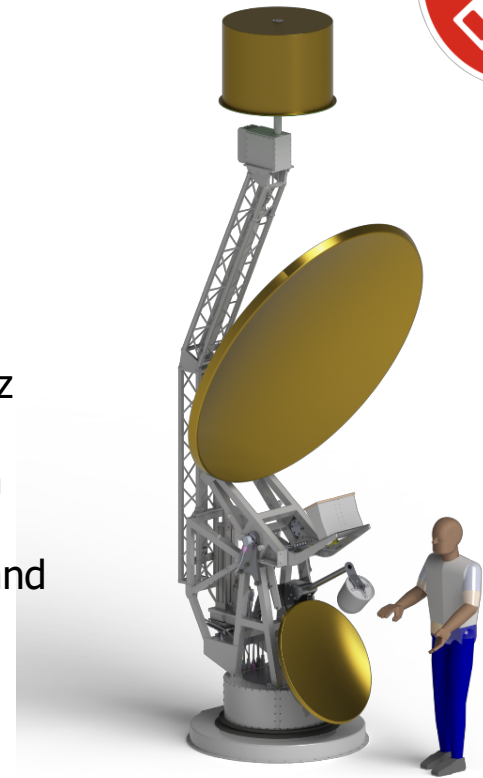
Antenna Positioner Systems



Large Antenna Positioning System:

MIL-STD-461E:

- CE102 Conducted Emissions, Power Leads, 10 kHz to 10 MHz (nominal)
- CS101 Conducted Susceptibility, Power Leads, 30 Hz to 150 kHz
- CS114 Conducted Susceptibility, Bulk Cable Injection, 10 kHz to 200 MHz
- CS115 Conducted Susceptibility, Bulk Cable Injection, Impulse Excitation
- CS116 Conducted Susceptibility, Damped Sinusoidal Transients, Cables and Power Leads, 10 kHz to 100 MHz
- RE102 Radiated Emissions, Electric Field, 10 kHz to 18 GHz (nominal)
- RS103 Radiated Susceptibility, Electric Field, 2 MHz to 18 GHz – Anechoic Chamber Method



Antenna Positioner Systems



Multifrequency Solar Radio Telescope

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Multiple Antenna Positioner

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3m Elevation Over Azimuth Positioner:

	Azimuth	Elevation
Accuracy	0.1°	0.1°
Velocity	1°/s	1°/s
Acceleration	8°/s ²	10°/s ²
Rotation	±90° *	+25° to -10°
Weight	209.4kg positioner 159.3kg antenna	

*Azimuth ±90° (up to ±170° is possible for non continuous rotation, continuous 360° rotation could be achieved with the addition of a rotary joint)



Antenna Positioner Systems



3m Elevation Over Azimuth Positioner:

	Operational	Survivable
Wind Speed	15 m/s	60 m/s
Temperature	-10 to 45 °C	-30 to 50 °C
Altitude	1000m	
Relative Humidity	95 % @ 25°C	
Solar Insolation	1200 W/m2	
Incident precipitation	Rain	50 mm/hr
	Snow	50 mm/hr
	Hail	10 mm
Wind blown particles (eg sand)	3.5 kg/m ³	
Radial Ice Accretion (max)	20mm	
Vibration	transported by trailer	



Antenna Positioner Systems



High Gain Spinning Antenna:

0.4 – 40 GHz antenna (set of 5 horn antennas with RF switch)

	Azimuth	Elevation
Accuracy	<0.1°	<0.1°
Velocity	0-540°/s	0-30°/s
Acceleration	50°/s ²	50°/s ²
Rotation	>360°	0° to +90°
Input Power	230VAC ± 10% 50Hz + Auxiliary 24V DC 1A	
Temperature	-15°C to +30°C (Operational)	

RF rotary joint for ach axis – slip ring for power and communications on azimuth – cable chain for power and communications on elevation

Antenna system installed in a radome with heating and air-conditioning



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ELINT Systems

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STEATITE ANTENNAS WORKS WITH OUR CUSTOMERS
FROM SPECIFICATION TO SYSTEM DELIVERY

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