

Overview

The Ex(p)-Radome is a self-regulating system designed primarily for X-band radar, both with respect to physical dimensions and frequency but may be used for all kinds of surveillance equipment needing an Ex(p) protected enclosure for harsh weather conditions.



Benefits

- Ideally suits housing sensitive equipment (radars, etc.) in potentially explosive atmospheres.
- Allows radar use during gas leakages.
- Protects equipment from harsh weather conditions.
- Increases equipment lifetime and durability.
- Does not affect electromagnetic equipment performance.
- Allows remote monitoring of temperature, pressure, and operational status of the system.

Areas of use:

- Oil platform, FPSO / FSO surveillance radar systems
- Ship surveillance radars
- Oil field surveillance vessels
- Harbour radar / radio surveillance
- Coastal zone radar surveillance
- VTMS - Vessel Traffic Management Systems.

How the radome works

1. Initialization phase

When the power is turned on the Radome flushing / purging starts. This is used to expel gas that might have intruded the Radome if it has been without power or out of use. Air is normally purged at 1470 litres per minute.

2. Ready for turn on the equipment inside the Radome.

Once the purging is finished the vent closes and the radar equipment is powered on.

3. Operation phase

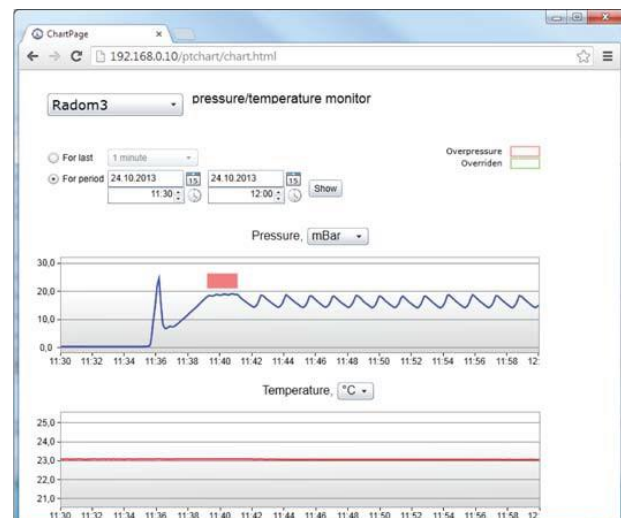
Feedback from pressure and temperature sensors controls a maintenance vent. This operates at no more than 37 litres per minute.

4. Shut down

Normal operating pressure is between 13mBar and 17mBar. Lower than 8mBar the power is cut to the equipment inside.

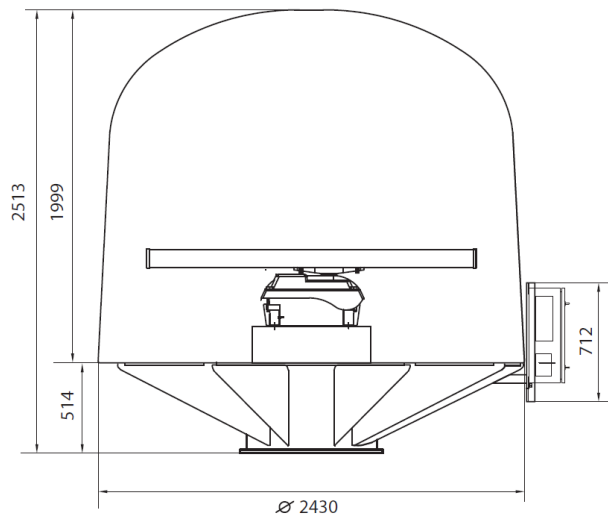
Remote monitoring system

Pressure, temperature, and operational status parameters are logged in a database. The data is accessible through a web browser either locally or remotely. This performance history is available for 12 months.



Radars Dome specification

Radars	Sperry Marine VisionMaster, model 65925WAR 6 ft antenna, model 65606/A
Volume	7000 litres
Weight	930 kg
Material dome	gas and dust-proof fiberglass optimized for 9,4GHz
Material support frame	stainless steel
Mounting	20 bolts M33, standard 24" ANSI flange
Wind tolerance	designed for 350 km/hr (225mph)
Seal tolerance (ATEX)	air tight, max leakage 37 lit/min
Interfaces	radar video: 75 Ohm coaxial cable radar pre-trig: 75 Ohm coaxial cable power: 230VAC/10A radar control: 8×2×0.75 mm ² cable air: ½"
Optional	internal ex-heaters microwave absorption kit shielding panel kit
Compressed air	dry air pressurized @ 6 Bar at radar dome released air 1470 lit/min (24.5 lit/sec) oil and particles class 2



Radars specification

Transceiver specifications

Magnetron frequency	9410 MHz
Magnetron peak power	25 kW
Pulse length/PRF	0.05 µs/1800 Hz (short) 0.25 µs/1800 Hz (medium) 0.75 µs/785 Hz (long)
Pulse generator	solid-state with pulse forming network driving the magnetron

Receiver specifications

Type	logarithmic, with low noise front end
Tuning	AFC/manual
IF (intermediate frequency)	centered at 60 MHz
IF bandwidth	20 MHz (short/medium pulses) 3 MHz (long pulse)
Noise factor	5.0 dB

Antenna specifications

Frequency	9430 MHz (X-band)
Antenna aperture length (L)	6 ft (1.8m)
Horizontal beamwidth	1.2° max
Vertical beamwidth	24° nom
Sidelobes within 10° (min)	-23 dB
Sidelobes outside 10° (min)	-30 dB
Gain (nominal)	30 dB
Polarization	horizontal
Rotation rate (standard/high)	28/45rpm

Non-ex version of Radar Dome

Radome in non-ex version is used for protection of nearby personnel from being accidentally struck by quickly rotating antennas and for protection of equipment from harsh weather conditions: wind, ice, freezing rain, UV rays etc.

Certificates and standards

EN 50014, EN50016, EN50018, EN50019
ATEX Ex II 2G Ex db e ia [ia] mb pxb IIB T4 Gb
ISO 8573-1:2001(E)