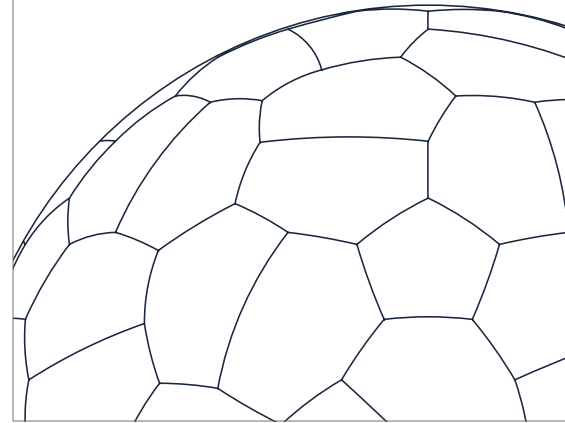


CPI Composite Ground-based Radomes

CPI composite radomes are a continuation of the ESSCO brand and its 40-year legacy of serving the ground-based radome market.

CPI composite ground-based radomes are rigid, self-supporting structures designed to provide outstanding electromagnetic performance for specific frequency bands.



Military vehicle image courtesy of Thales; shipboard radome image courtesy of L3Harris.

CONSTRUCTION AND MATERIALS

CPI's sandwich radomes are constructed of doubly curved polygonal panels that are bolted together from inside the radome to form a truncated sphere. Individual panels can be either four-sided or polygonal, depending on electromagnetic (EM) requirements. Panel connections are designed to provide structural continuity and weather tightness while minimizing transmission loss.

The sandwich shell is constructed using highly developed composite materials (e.g., sophisticated cloth weaves, resins and foams) to optimize panel consistency and strength. CPI exclusively uses pre-impregnated materials for the surface skins to control both skin thickness and resin content.

Each panel core, which most commonly consists of low dielectric foam for larger radomes, or honeycomb for smaller radomes, is fully enclosed by the surface skins to make the panel weather-tight. Varying the skin and core thickness allows for optimum performance at the desired operating frequencies.

The panels include reinforced panel edges that, when assembled,

KEY FEATURES

- Standard wind speed design is 150 mph (240 km/hr.)
- Optional designs withstanding up to 250 mph (400 km/hr.) are available
- Easy to install
- Hydrophobic coatings for enhanced high-frequency performance in rain
- Customized shapes for reduced tower loads or radar cross section

APPLICATIONS

Sophisticated 3-D air surveillance radar for military and commercial SATCOM and civilian air traffic control applications.

Other Applications:

- Weather radar
- Phased-array radar
- Secondary surveillance radar

form an overlapping joint with connecting fasteners acting in shear. The outside overlap flange design allows for panel assembly to take place inside the radome and easy panel removal for replacement or repair.

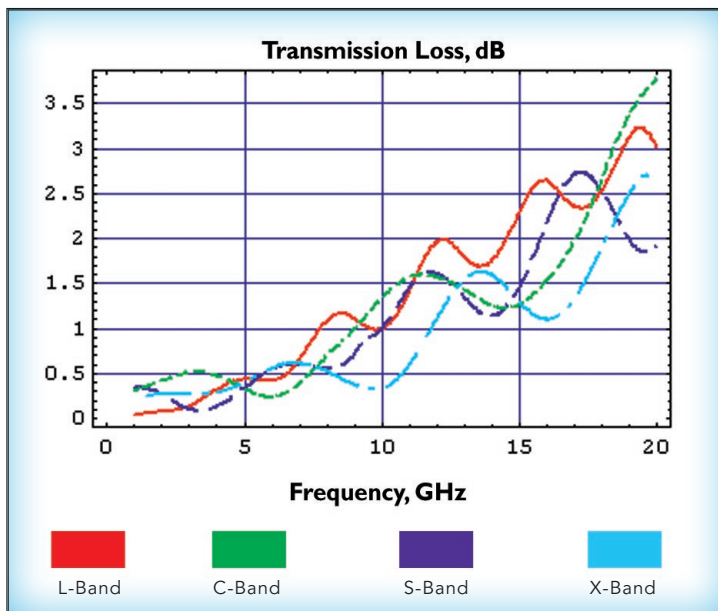
CPI Composite Ground-based Radomes

ELECTROMAGNETIC PERFORMANCE

CPI's sandwich radomes perform well over relatively narrow frequency bands or, potentially, at multiple discrete frequencies. The electromagnetic performance of a sandwich radome is made up of loss or scattering attributable to 1) the central part of the panel window area and 2) the panel flanges. Proper material selection and manufacturing techniques can largely address the first of these factors.

Loss and shift of phase due to the second factor (i.e., the panel flanges) can be nine times that of the panel window area. As a result, the flanges must be tuned or impedance matched to the window area. Using proprietary tuning techniques, CPI has been able to optimize performance of both the window area and the flange over specific frequency bands.

TYPICAL TRANSMISSION LOSS VS. FREQUENCY OF TUNED SANDWICH RADOMES.



STANDARD SIZES

Sizes range from 10 to 77 ft. (3.0 to 23.5m) in diameter.

Please contact CPI for detailed size information.



38 ft. (11.6m) diameter sandwich radome



77 ft. (23m) diameter sandwich radome

To learn more, email essco.sales@cpii.com or call +1 978-333-7223.



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For more detailed information, please refer to the corresponding CPI technical description if one has been published, or contact CPI. Specifications may change without notice as a result of additional data or product refinement. Please contact CPI before using this information for system design.

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