ESSCO

SPECIALTY RADOMES & REFLECTORS

ESSCO manufactures a number of products other than ground-based radomes, including naval shipboard radomes, airborne radomes, submarine radomes and high-precision composite reflectors. Also available: sheds, barns, steeples and other architectural shapes for radome applications where the concealment of antennas is critical.

APPLICATIONS

All of these products include excellent electromagnetic performance for their intended applications, providing up to 98% transmission efficiency depending on frequency. Some typical examples include:

- Naval radomes are used in shipboard radar applications, high-data-rate communications systems, gunfire control and high-bandwidth data link terminals.
- Composite reflectors with surface tolerances of 0.5 mils (.005 in.) are used to optimize gain and reduce sidelobes in applications up to 44 GHz. Can be designed for ground-based, shipboard or airborne applications.
- Architectural radomes are used to protect antennas on building roofs from the weather.

CONSTRUCTION AND MATERIALS

ESSCO advanced composites and special products are made from reinforcements such as fiberglass, quartz, graphite and Kevlar® along with matrices such as polyester, epoxies and cyanate ester. We also use core materials such as honeycomb (e.g., fiberglass, aluminum and graphite) and foams (e.g., polyisocyanate and thermo-formable cores). Depending on the application, these parts are oven-cured at temperatures up to 400°F or in autoclaves, which require high-pressure cures at high temperatures.

Other materials are also available for special applications. Regardless of the application, we can select the right combination of reinforcement and matrix to meet your requirements.

KEY FEATURES

- Products are manufactured in environmentally controlled areas
- Finite element and structural analysis capabilities exist in-house
- Quality system is compliant to ISO9001:2000 and MIL-Q-9858 requirements

Radomes
and
Mobile
Telecommunications
Systems

L3

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ELECTROMAGNETIC PERFORMANCE

Each of these products requires the ability to accurately analyze its performance. We have developed sophisticated electromagnetic simulation capabilities that allow us to analyze the radome and the complex interaction of the enclosed antenna with the radome's electrically thick wall.

Our in-house codes can properly simulate the overall far-field radiation pattern of the antenna and radome as a coupled system, providing high-fidelity simulations of the far-field patterns, gain, boresight errors and other factors related to the use of the radome with the selected antenna system.

STANDARD SIZES

We can design advanced composite or special product structures to almost any configuration as well as low radar cross section (RCS) radomes and radomes utilizing frequency-selective surface (FSS) technology.

TYPICAL ADVANCED COMPOSITE/SPECIAL PRODUCTION SPECIFICATION

Each product that we provide in this area is different and requirements vary greatly. Please contact ESSCO to discuss your specific application.

Camouflaged 7-ft (2.1m) radome for military radar.
Application photo courtesy of Thales.

Subreflector undergoing testing

Low radar cross section radome.
Photo courtesy of Harris Corporation.

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L-3. Headquartered in New York City, L-3 Communications employs over 64,000 people worldwide and is a prime contractor in aircraft modernization and maintenance, C³ISR (Command, Control, Communications, Intelligence, Surveillance and Reconnaissance) systems and government services. L-3 is also a leading provider of high technology products, subsystems and systems.