Polymer Composites as Construction Materials

Application Summary Sheet 28

Title: Telecommunication, Utility Poles and Antenna

Target Audience: Structural Engineers, Electricity Suppliers, Composite Manufacturers, Construction Contractors

Keywords: Durability, Light weight, Insulation, Radar transparency, Polymer composites

Overview of application / summary:

Composite pole sections have been around for many years. However, developments in manufacturing processes and UV stabilised resins have now made them a cost-effective solution for electricity distribution, utilities and domestic use. Composite utility poles offer substantial engineering advantages over their conventional timber and steel counterparts. Poles can be designed to exhibit high strength, stiffness and fatigue resistance in critical areas with preferential fibre orientation.

The dielectric properties of composites provide significant benefits to electricity supply companies as electric lines can be closer without the risk of electrical arcing, more circuits can be placed on existing corridors, bringing financial and environmental benefits. Composite poles aid conformance to environmental regulations and bring about a reduction in the use of toxic pesticides and wood preservatives utilised with equivalent timber products.

Financial benefits arise from reduced through life costs (they have a design life up to 80 years compared to 10 - 20 for wood and steel) low maintenance requirements and lower transportation and installation costs. Small helicopters can be used to locate the poles, there is no need to construct roads especially for transporting the poles to site as is the case with steel and timber because of their weight.

Impact of application

Engineering:

Financial:

Environmental:

Social

Robustness of research

Future developments

Where to get further information

Companies

Articles