

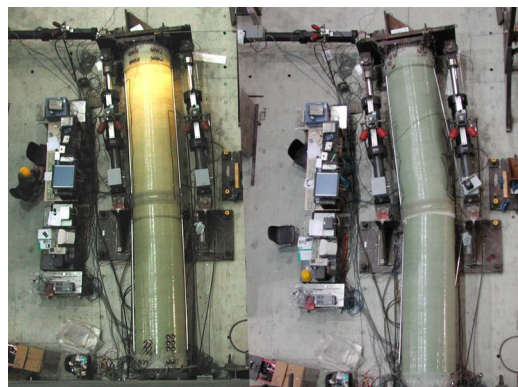
JRC Technology Profile

Support Column for a wind turbine or a bridge

Description

A new design concept for wind turbine towers or for bridge pillars using fibre-reinforced-composite materials (FRP) was developed. The invention offers new possibilities for on-site logistics and assembly and specifically contributes to the development of a compact, easily transportable, wind turbine system for erection in sites of difficult access such as mountainous terrains or offshore.

The new concept allows on-site manufacturing, thus motivating the feasibility of using the tower itself as the erection crane. To do this, lightweight composite formwork segments are shaped in order to allow on site assembly. The tower is erected as a series of hollow-section rings generating cylindrical or conical components. Each ring section can be filled with high-strength concrete to generate an optimum sandwich panel having the required structural, static, and dynamic characteristics. Assembly on-site increases the number of wind-tower appropriate sites, which makes tower erection in isolated locations easier than with conventional techniques. Moreover, the logistic burden is considerably reduced and less harm is done to the environment in case of offshore applications, the high chemical inertness of fibre-reinforced composites in saline environments is an additional advantage.



Innovative aspects and main advantages

- Reduced maintenance costs.
- Improved dynamic damping characteristics
- Extended fatigue life.
- Reduced environmental burden and transportation costs
- Higher resistance to saline environment.

Areas of application

- Construction sector
- Wind turbine design and construction
- Bridges

Stages of development

- Pilot tests performed

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Materials and Plasma