

EXEL COMPOSITES

Frangible carbon composite glide path towers

Maximized operation safety with unique structure

Exel Composites Plc has developed a unique range of composite lattice towers, which have been delivered to over a thousand airport installations since 1988.

A new composite GP tower design has been developed to provide the user with outstanding benefits:

- ♦ Very lightweight structure with carbon fiber composite material
- ♦ Frangible lattice structure and frangible guy rods
- ♦ Slim outlook

The stability and displacement requirements of the tower are guaranteed with composite guy rods and very stiff carbon composite lattice structure.

ICAO'S frangibility ruling:

AERODROME DESIGN MANUAL PART 6, Frangibility First Edition, 2006 states that:

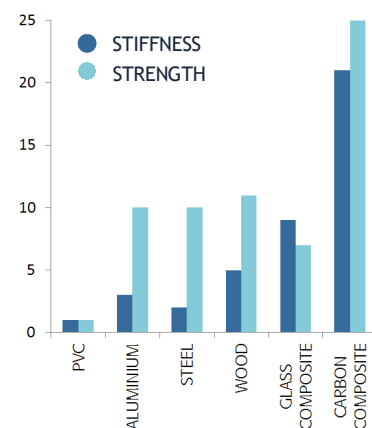
...certain airport equipment and installations, because of their function, must be in an operational area. All such equipment and installations as well as their supports should be of minimum mass and frangible to ensure that impact does not result in loss of control of the aircraft. Among this equipment are for example:

ILS Glide Path Equipment

...structures located within the grated portion of the runway strip not meeting the frangibility requirement, such as an existing non-frangible ILS glide path antenna, should be replaced by a frangible structure, if practicable, and relocated within the non-grated portion of the runway strip.



Specific strength and stiffness normalized [compared to PVC = 1]



Aerodrome design manual 6:

4.9 Design criteria for frangibility

4.9.31 ILS/MLS installations present special cases.

The requirements of 4.9.24 to 4.9.30 are applicable for ILS MLS structures, but the design criteria associated with a 3000-kg airplane cannot be applied in all instances for the following reasons:

... Considering the unique nature of the tower structure the ILS glide path antenna, frangibility criteria have not yet been developed.

Specifications

GP-TOWER	15 m (50ft.) TOWER
Basic form and size	600 mm x 600 mm lattice section
Modular design	Three sections, lengths adjusted acc. to antenna heights
Survival Wind Speed	60 m/s
Antenna deflection at 40 m/s	antenna 3: < 45 mm antenna 2: < 25 mm antenna 1: < 15 mm

The GP-tower is supplied in three lattice sections, which can be customized to meet installation requirements.

- ♦ The tower can be easily assembled on the ground, including the antennas.
- ♦ Foundation bolts and casting template can be delivered in advance.
- ♦ Fully assembled tower can be raised with or without a crane

GP-tower delivery includes:

- ♦ Foundation bolts and casting template
- ♦ Lattice sections for on-site assembly of tower sections
- ♦ Antenna brackets that allow adjustment of antennas in three directions
- ♦ Frangible guy rods
- ♦ Cable conduits
- ♦ Obstruction light

