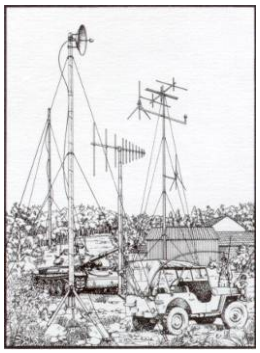


WHY OPT FOR A LERC TELESCOPIC MAST MANUFACTURED FROM COMPOSITE?

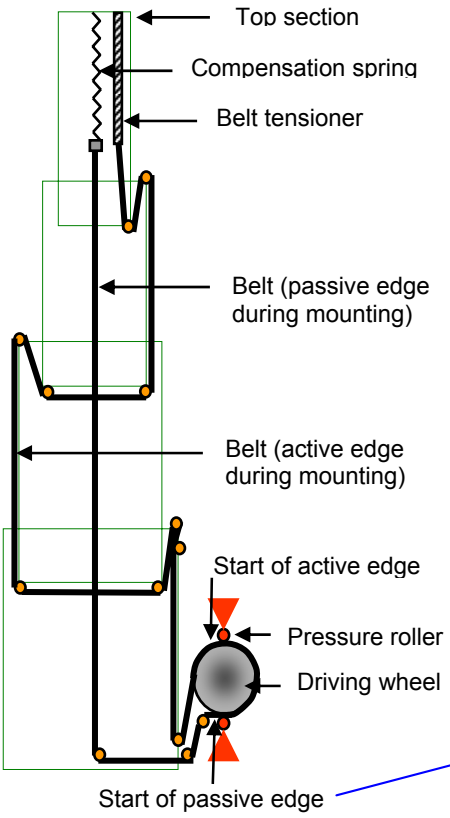
GENERAL DESCRIPTION OF THE MT MASTS

Design

The MT mast was originally designed for the French Army HADES Program. In order to meet the very severe requirements of this program concerning the deployment time, LERC has developed a telescopic mast with a belt drive system which controls the mast upwards **as well as downwards**. This is a unique feature for most of the telescopic masts get jammed during retraction. Moreover, this system does not need to be air-proof or waterproof as dust, sand and water are circulating through the mast and evacuated through the bottom cap.

Range of operation

The MT masts are designed for supporting heavy loads which need, sometime, pointing accuracy, at heights from 2.5 to 30m in severe winds conditions.



Material

In order to obtain the best compromise between weight and rigidity, the pillars are made of fibber reinforced Epoxy resin composite material which provides both lightness and high mechanical resistance. The fibber can be either carbon (graphite) or glass fibbers, depending on the application. All metallic parts are protected against corrosion.

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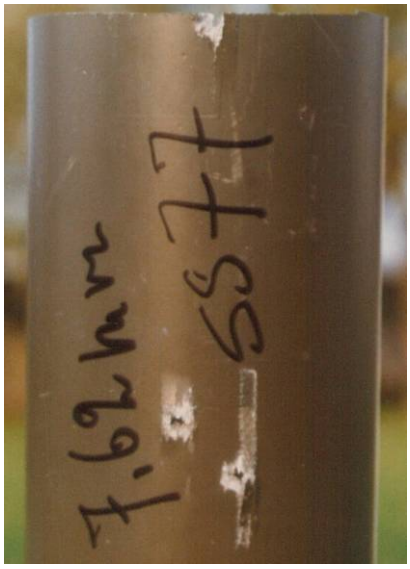
Main Advantages



- Resistance to bullet impacts: a bullet impact on a pneumatic mast manufactured from light alloy or pultruted composite will make a hole that will result in an air leak and in the mast collapse. It will also make a slight crack in the matrix likely to break the tube. In a belt drive telescopic mast, a bullet impact (see picture) will make a hole without affecting the mast height. Moreover, the woven and crossed structure (Filament Winding - FW) of the composite material prevents any crack in the tube.
- Height maintained at constant level when the mast is in erection for an extended time : a pneumatic mast tends to go flat and therefore to retract, which can result in a cutting off of the radio contact.
- Outstanding resistance to corrosion, chemical attacks and ageing ;
- Undeformability: the tube sections show no permanent deformation even after extensive use (strength maintained, no ovalizing);
- Best ratio between deployed and retracted heights
- Lightweight and outstanding mechanical resistance
- No maintenance other than wiping or brushing to clean and for the telescopic masts, replacement of the belt without dismounting tubes (can be performed on the field).
- Excellent resistance to environmental conditions (use of **Epoxy resin and FW process**): Sand, dirt, dust, snow, ice will not cause degradation of mast performance. On mast with the new belt system, the belt is fully inside the mast, protected against outside environment.
- No air tightness to ensure : no adjustments to make height maintained at constant level ;
- Manipulation with naked hands, even under cold or hot temperature ;
- Adaptability to the customer's needs : the mast structure is computer designed (SAMCEF method)
- LERC proven experience: close to 60 years in the field of composite materials, 30 years in the manufacturing of tactical masts and antennas.

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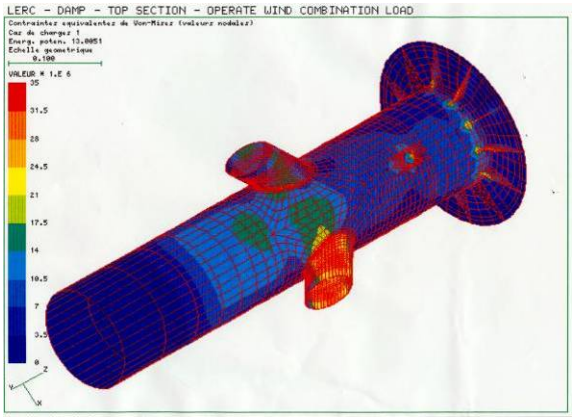
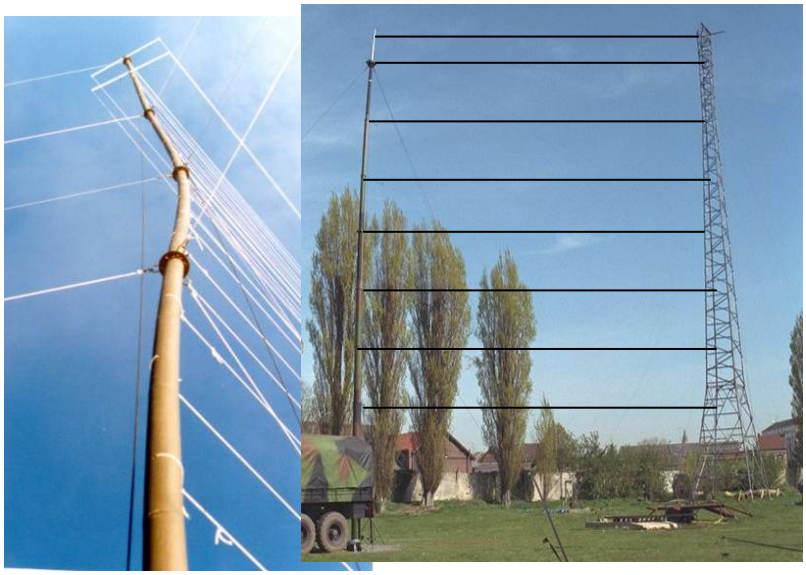
Mast Structure Calculation

In order to make sure that our masts are fully operational and safe, we carry out computer analyses, using the SAMCEF Finite Elements method. This calculations also checks if the mast complies with the required performances, such as:

Pointing accuracy, elevation and azimuth - In certain configurations, LERC can guarantee a pointing accuracy up to ±0.3°.



Resistance to winds



The design can be checked with a field test using the LERC wind simulator and according to standards TIA/EIA222-F or NV-85 (depending on the customer's country). The wind is simulated by weights installed on cables running from mast elements to a 34m tower. LERC is able to control the mast resistance (survival wind), the pointing accuracy (operational wind) and the deployment/retraction wind.

Automated Masts

The mast can be manual, or can be provided with several levels of automated controls, depending upon customer's requirements.

A manual safety operation is possible in all configurations

Full automated control is like an elevator: the operator just chooses the pre-programmed height by pushing a button (level 1, level 2…).

End-travel limits can also be automatic (by switches) or visual (change of colour of the belt).

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EXAMPLES OF INTEGRATIONS

30m mast on trailer, for LOS system (headload 50kg)

16m mast on LAV, for E.W. system
(headload 300kg)

5m mast integrated inside armoured vehicle
(headload 170kg)

12m mast on Shelter for L16 links

8m mast supporting 120kg (EW system)

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