

【陸域 40 公尺可移動式測風塔】

應用於近岸陸域量測的 40 公尺可移動式測風塔，進行離岸風場陸域側邊界的資料蒐集，此 40 公尺高氣象塔暨氣象儀器之規畫與設計依照設計法規依循包括：

1. 建築技術規則。
2. 建築物耐震設計規範
3. 建築物風力規範
4. 鋼構造建築物鋼結構設計技術規範
5. 相關之鋼管鐵塔製作基準
6. 航空障礙物標誌與障礙燈設置標準。

氣象塔為 40 公尺高之三角拉索式塔架，共有三層橫向可調整儀器支撐桿(Boom)，材質為熱浸鍍鋅鋼管材質，塔架基礎為可拆卸式之鋼板結構，利用鋼釘固定於地面上，拉索基礎利用預鑄水泥埋置於地下，塔架設置兩處航空障礙燈，材質為熱浸鍍鋅鋼管材質，可承受風荷重 40 m/s 風速風壓，風剖面風切指數 $\alpha=0.2$ 設計，設計的安全係數以 4 倍為基準，負責辦理圖樣之結構技師簽證及其結構計算書。



圓管三角桁構拉索設計，受風面積小，同樣重量可達耐較強風壓力，結構強度相對高，符合 IEC61400-12-1 標準設計，可快速組裝易於拆卸，易防蝕保養，可適用於多種測風地形(如砂質地、一般泥地、山坡地)，可收納於移動式儀器房內隨時遷移至下一處測風點，如遇劇烈氣候可立即收納於移動式儀器房內安全不受損傷。氣象儀器規劃與設計共有 3 層測風儀器，佈設符合 IEC61400-12-1 規定。為調查與確認風場的特性，本中心之氣象塔，每層包括水平風向風速計、垂直風速計、溫濕度計、氣壓計等，蒐集每秒鐘及每分鐘、每 10 分鐘平均共 3 種氣象資料。

【Onshore 40-meter transportable meteorological mast】

Boundary layer of onshore wind can be measured by 40-meter transportable mast. It is designed by the corresponding regulation and specification as:

- 1.Regulation of fixture technique
- 2.Criteria for seismic resistance of fixture
- 3.Criteria for the building wind model
- 4.Design rules for rigid fixture and building
- 5.Standard for the process of iron pipe mast
- 6.Standard for aeronautical obstacle avoidance of light

Transportable meteorological mast is a 40-meter tripod fixture bonded by steel rope with three booms at corresponding levels (10, 30 and 40m). The basis of the mast is a detachable steel plate made by hot-dipped galvanized steel fixed by stainless nails into the ground. The steel rope stretch to the ground horizontally by prepared concrete placed below ground. It equips with two aeronautical obstacle avoidance of lights and persists 40 m/s wind and vertical wind profile with parameter $\alpha = 0.2$ and safety factor 4.



Tripod of circular pipe can persist more server wind and pressure for the shape and cross section and high structure tension to meet the criteria of IEC 61400-12-1. The advantages includes transportability, corrosion, flexibility and easy-handling for new installation site. The protective policy can be considered to pack all related parts within a cargo container for the minimum risk. The sensors are designed to collect the data of wind speed, wind direction, temperature, humidity and air pressure with high sampling rate (per second, minute and 10-minute).