

Setting Higher Standards



A member of the **Obelisk**
GROUP







WMI – One Stop Shop

Wind Measurement International are leaders in wind measurement and met mast technology.

We provide an international One Stop Shop service from our offices in Ireland, UK & South Africa.

- Systems available from Micro-Generation to large scale Wind Farms: Onshore & Offshore.
- Site specific designs & specifications of permanent masts for monitoring wind farms.
- Custom designs & specifications as required for both Onshore & Offshore applications.
- Meteorological instruments from the world's leading manufacturers.
- Certified climbing derrick system to service or decommission damaged tubular met masts to 70m.
- Full installation, maintenance, repair & upgrade service.
- Online data system coming soon.

WMI – Setting Higher Standards

Our team of designers, technicians, engineers and installers have unrivalled experience in providing leading edge solutions to capture wind data with the highest degree of accuracy.

- Tubular guyed met masts to 70m.
- Lattice guyed met masts to 100m+.
- Lattice free standing met masts to 100m+.
- All masts designed in accordance with BS8100 & BS5950.
- Mast, Boom & Instruments optimised in accordance with BS EN 61400 - 12 - 1.
- All steelwork galvanising to BS EN ISO 1461.
- Unrivalled instrument installation methodology and reporting.
- All installations carried out by trained and competent staff in accordance with the Obelisk Group Training Passport system.
- ISO 9001 accredited.

Please visit www.windmi.com for further information.





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WMI TYPE 1: TUBULAR MET MAST

Type: Temporary Met Mast - Guyed Tubular Construction

Standard heights: 30, 40 & 50m

We also offer our **WMI Type 1 HD** @ 60m & 70m.

The WMI Type 1 masts are designed for Wind Resource Assessment at the planning stage of wind energy sites from one off turbine sites to large scale wind farms.

Also suitable for power performance testing of wind turbines.

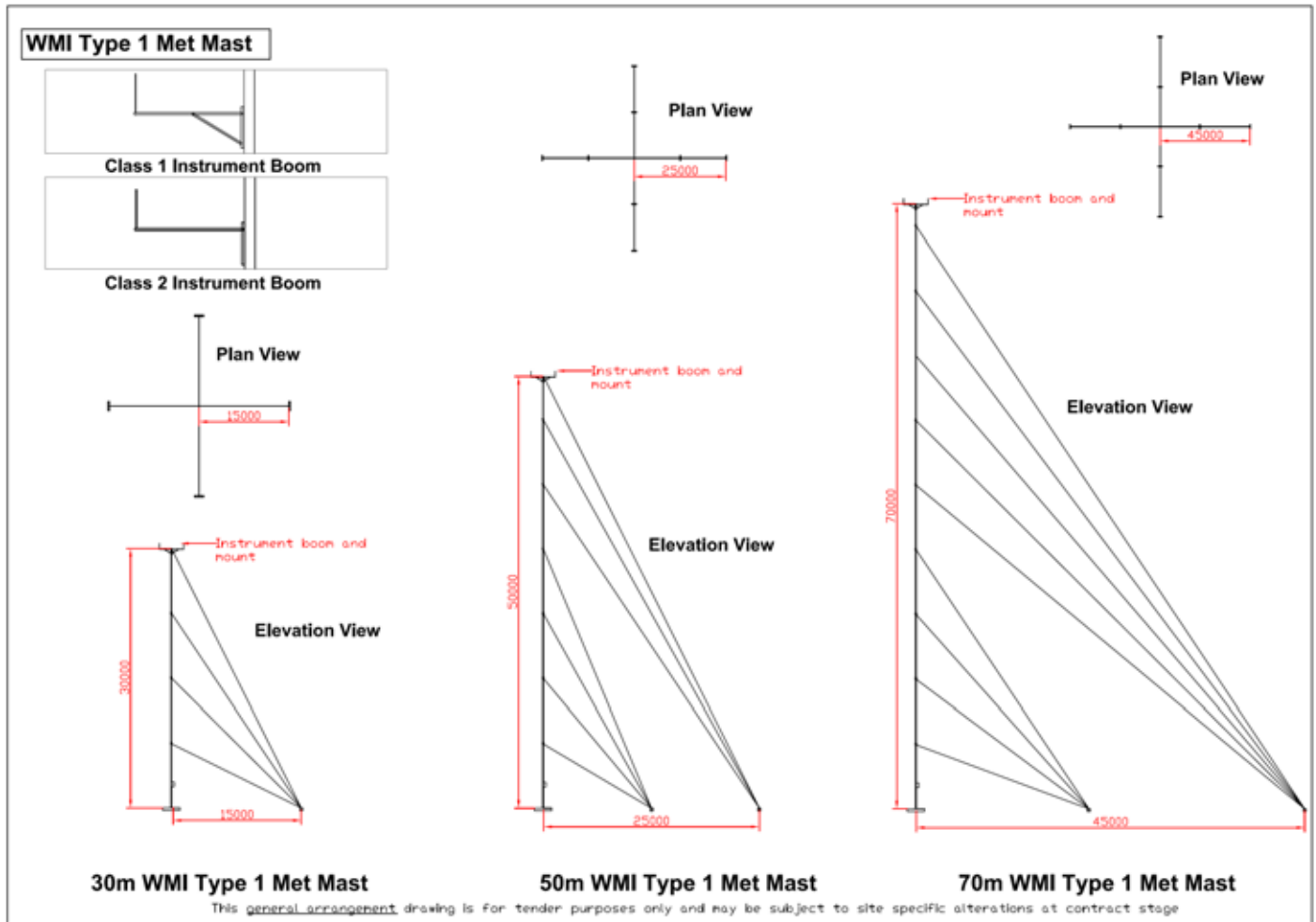
Class leading design offers improved airflow characteristics over our competitors' masts. The WMI Type 1 tube diameter at head end instruments is only 114mm.

Design in accordance with BS8100 & BS5950. Booms & installation in accordance with BS EN 61400-12-1.



WMI TYPE 1 TECHNICAL SPECIFICATION

Mast Height	30m	50m	70m
Guy Wire	6mm RHOL galvanised wire	6mm RHOL galvanised wire	8mm RHOL galvanised wire
Anchor Radius	15m	25m	45m
Design codes	Mast: BS8100 BS5850, Booms designed & installed: BS EN 61400-12-1		
Steelwork	S275 and S355		
Galvanising	BS EN ISO 1461 (85 micron – upgraded galvanising available for coastal sites)		



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WMI TYPE 2: TUBULAR MET MAST

Type: Temporary Met Mast - Guyed Tubular Construction

Standard heights: 10, 12, 15 & 18m

We also offer our **WMI Type 2 HD** @ 24m.

The WMI Type 2 masts are designed for Wind Resource Assessment at the planning stage of Micro Generation / Feed in Tariff sites.

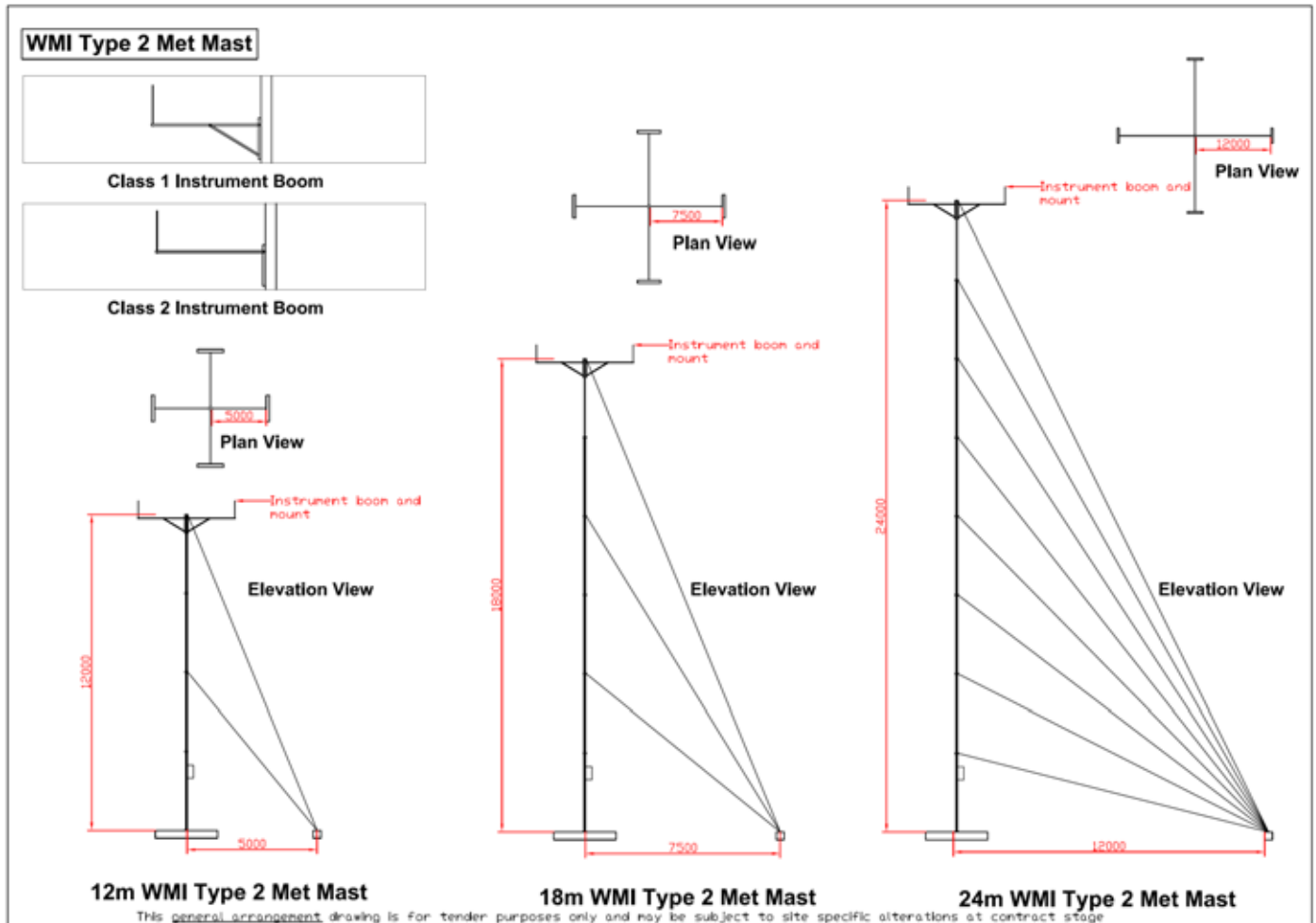
Also suitable for noise studies, monitoring smaller wind turbine performance and predictions on LiDAR sites.

Design in accordance with BS8100 & BS5950. Booms & installation in accordance with BS EN ISO 61400-12-1.



WMI TYPE 2 TECHNICAL SPECIFICATION

Mast Height	12m	18m	24m
Guy Wire	4mm RHOL galvanised wire	4mm RHOL galvanised wire	4mm RHOL galvanised wire
Anchor Radius	5m	7.5m	12m
Design codes	Mast: BS8100 BS5850, Booms designed & installed: BS EN 61400-12-1		
Steelwork	S275 and S355		
Galvanising	BS EN ISO 1461 (85 micron – upgraded galvanising available for coastal sites)		



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WMI TYPE 3: LATTICE MET MAST

Type: Temporary Met Mast – Guyed Lattice Construction

Standard heights 30, 40, 50 & 60m - We also offer our **WMI Type 3 HD** at 70m & 80m.

The WMI Type 3 masts are designed for Wind Resource Assessment at the planning stage of wind energy sites from one off turbine sites to large scale wind farms.

Ideal for clients who require long term Wind Resource Assessment over a number of sites.

Climbing steps incorporated for ease of maintenance, repairs and upgrades.

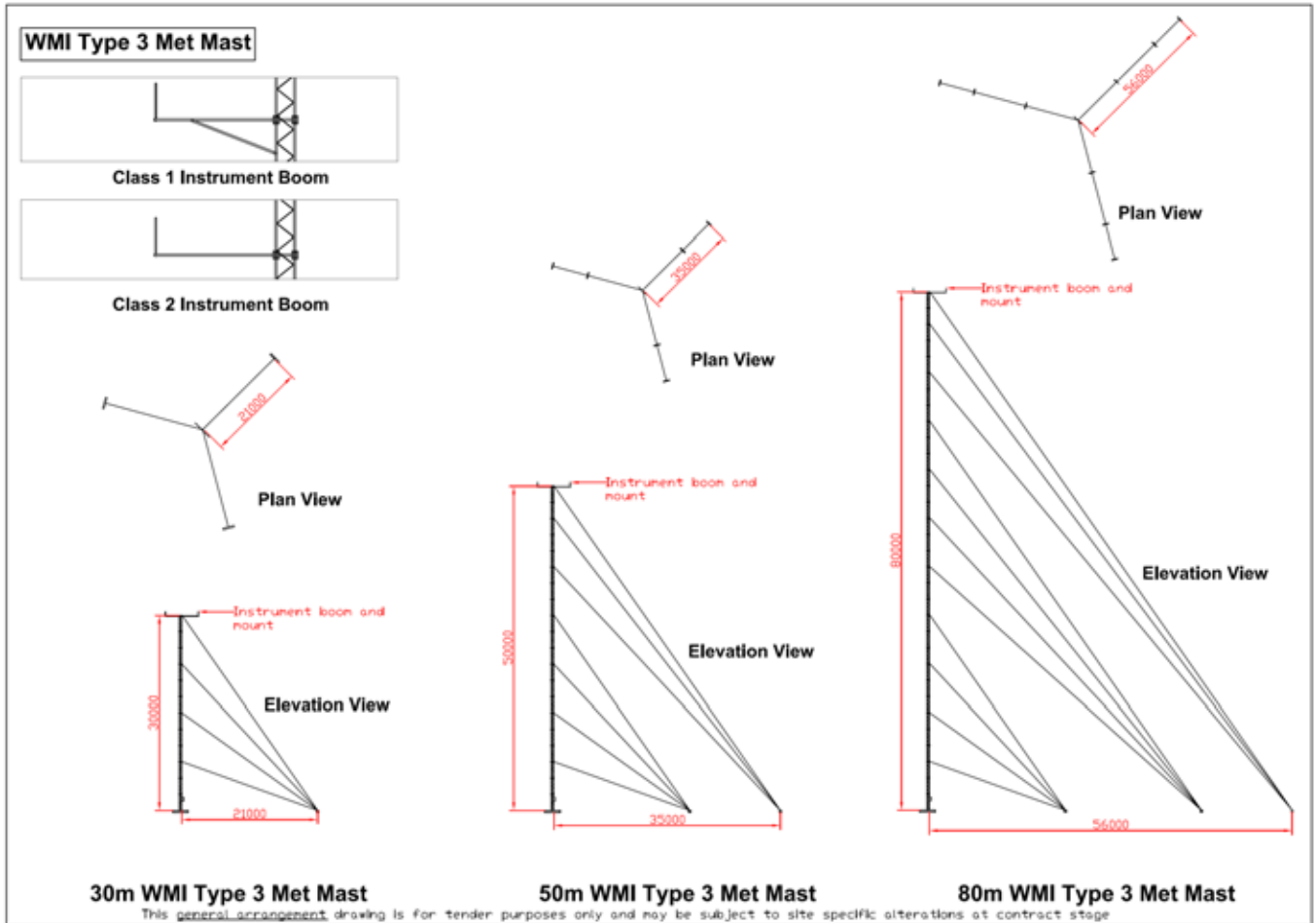
Class leading design offers improved airflow characteristics over our competitors' masts. The WMI Type 3 solidity ratio is only 0.273.

Design in accordance with BS8100 & BS5950. Booms & installation in accordance with BS EN ISO 61400-12-1.



WMI TYPE 3 TECHNICAL SPECIFICATION

Mast Height	30m	50m	80m
Guy Wire	6mm RHOL galvanised wire	6mm RHOL galvanised wire	8mm RHOL galvanised wire
Anchor Radius	21m	42m	56m
Design codes	Mast: BS8100 BS5850, Booms designed & installed: BS EN 61400-12-1		
Steelwork	S275 and S355		
Galvanising	BS EN ISO 1461 (85 micron – upgraded galvanising available for coastal sites)		



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WMI TYPE 4: HEAVY DUTY LATTICE MET MAST

Type: Permanent Met Mast – Guyed lattice Construction

Site specific design to 80m

The WMI Type 4 masts are designed for reference wind speed measurement on working wind farms.

Permanent mast – minimum design use on site = 15 years.

Ideal for heavy payloads and high altitude sites.

Climbing steps incorporated for ease of maintenance, repairs and upgrades.

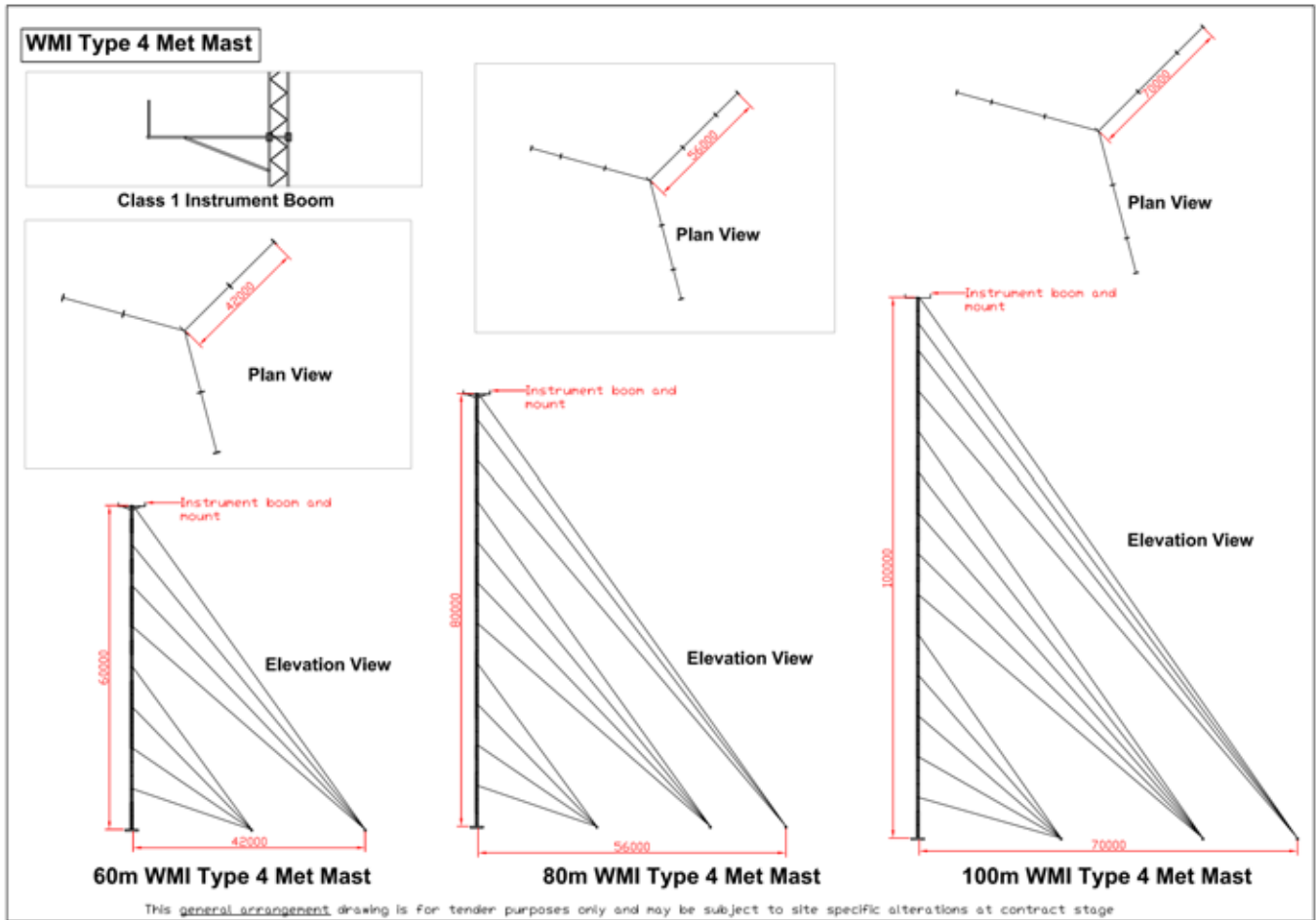
Class leading design offers improved airflow characteristics over our competitors' masts.

Design in accordance with BS8100 & BS5950. Booms & installation in accordance with BS EN ISO 61400-12-1.



WMI TYPE 4 TECHNICAL SPECIFICATION

Mast Height	60m	80m	100m
Guy Wire	8mm RHOL galvanised wire	8mm RHOL galvanised wire	8mm RHOL galvanised wire
Anchor Radius	42m	56m	70m
Design codes	Mast: BS8100 BS5850 (site specific), Booms designed & installed: BS EN 61400-12-1		
Steelwork	S275 and S355		
Galvanising	BS EN ISO 1461 (85 micron – upgraded galvanising available for coastal sites)		



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WMI TYPE 5: LATTICE MET MAST

Type: Permanent Met Mast – Free standing lattice Construction

Site specific design to 80m

The WMI Type 5 masts are designed for reference wind speed measurement on working wind farms.

Permanent mast – minimum design use on site = 15 years.

Ideal for heavy payloads and high altitude sites.

Climbing steps incorporated for ease of maintenance, repairs and upgrades.

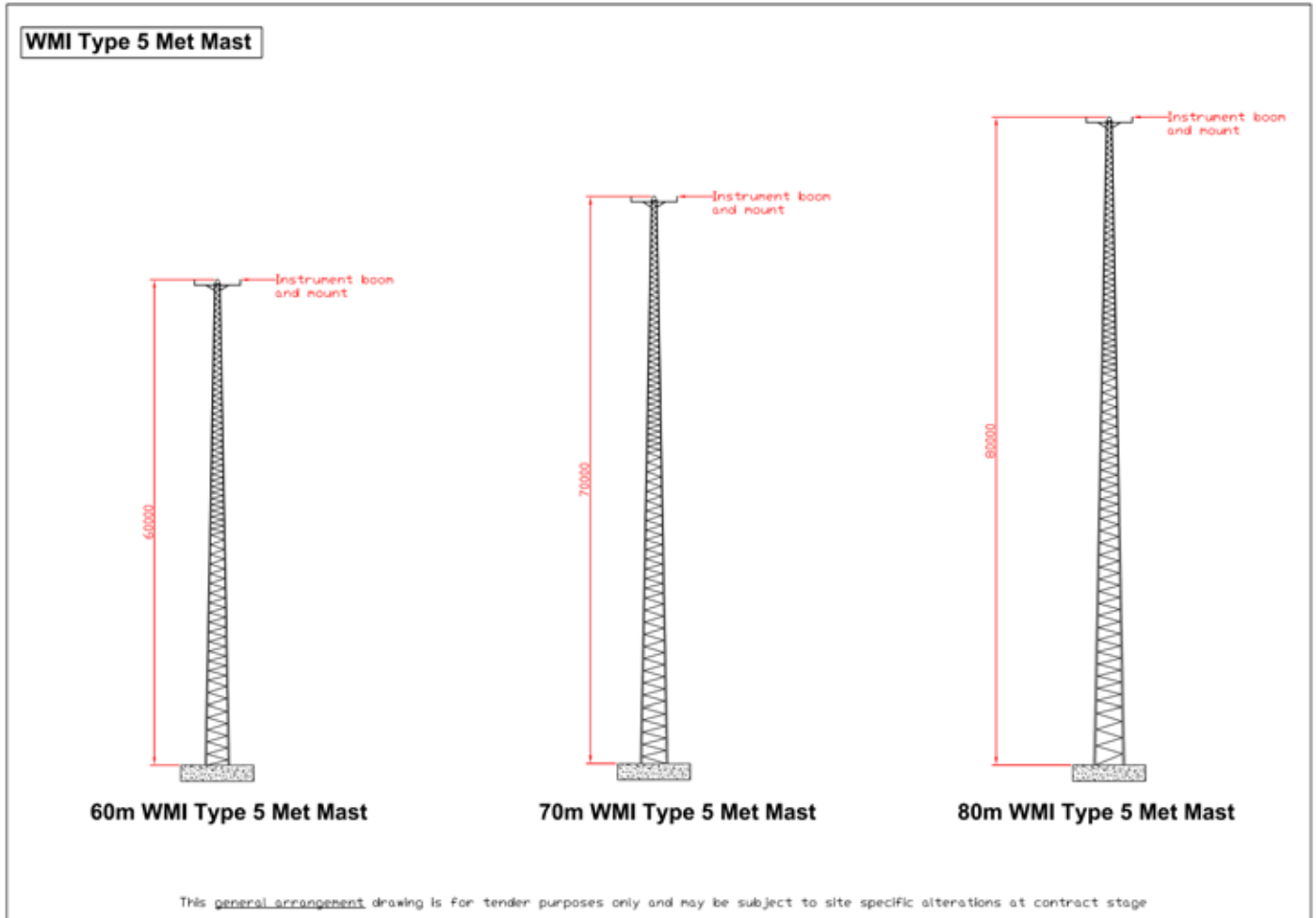
Class leading design offers improved airflow characteristics over our competitors' masts.

Design in accordance with BS8100 & BS5950. Booms & installation in accordance with BS EN ISO 61400-12-1.



WMI TYPE 5 TECHNICAL SPECIFICATION

Mast Height	60m	70m	80m
Design codes	Mast: BS8100 BS5850, Booms designed & installed: BS EN 61400-12-1		
Steelwork	S275 and S355		
Galvanising	BS EN ISO 1461 (85 micron – upgraded galvanising available for coastal sites)		



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WMI TYPE 6: LATTICE MET MAST

Type: Permanent Met Mast – Free standing lattice Construction

Site specific design to 100m

The WMI Type 6 masts are designed for reference wind speed measurement on working wind farms.

Permanent mast – minimum design use on site = 15 years.

Ideal for heavy payloads and high altitude sites.

Climbing steps incorporated for ease of maintenance, repairs and upgrades.

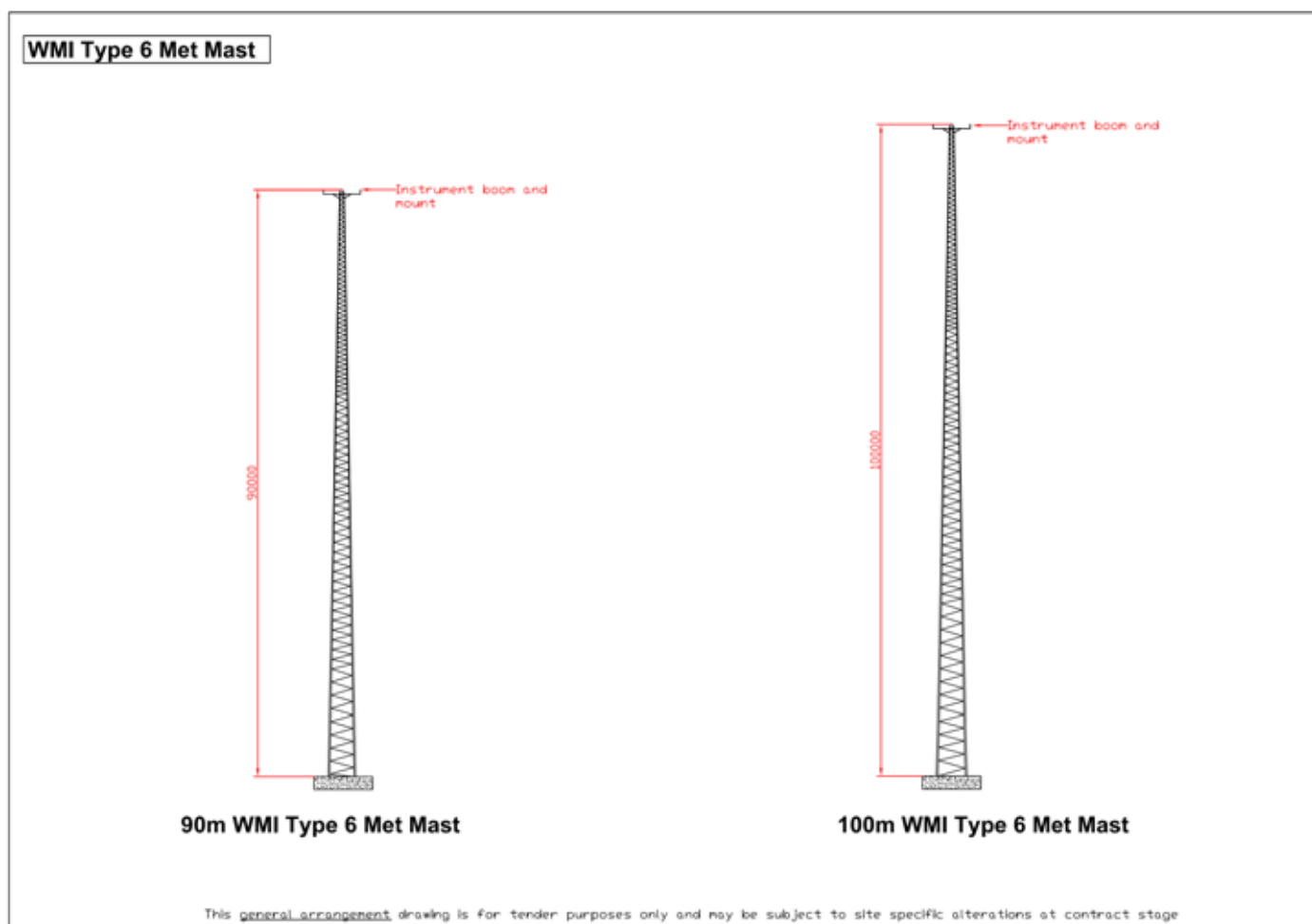
Class leading design offers improved airflow characteristics over our competitors' masts.

Design in accordance with BS8100 & BS5950. Booms & installation in accordance with BS EN ISO 61400-12-1.



WMI TYPE 6 TECHNICAL SPECIFICATION

Mast Height	90m	100m
Design codes	Mast: BS8100 BS5850, Booms designed & installed: BS EN 61400-12-1	
Steelwork	S275 and S355	
Galvanising	BS EN ISO 1461 (85 micron – upgraded galvanising available for coastal sites)	



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WMI OFFSHORE METEOROLOGICAL MASTS

WMI offers comprehensive offshore met mast and maintenance services along with innovative hybrid power solutions to the rapidly expanding offshore wind market sector.

WMI designs, supplies & erects offshore met mast towers all in full compliance with British Standard EN 61400-12-1:2006, BS 8100 & CP3 providing optimum wind data availability with very low solidity ratios & wind distortion effects by way of smart design & wind flow analysis. WMI also supply a full range of ancillary equipment on new and existing meteorological masts:

- o Meteorological masts/towers & all ancillary steelwork
- o Bespoke design solutions & structural engineering services to latest standards
- o Dynamic, fatigue & spectral analysis for independent design verification
- o Stress/fatigue analysis & remedial works
- o Anemometry supply, installation, testing & commissioning
- o Wind Measurement, Monitoring, Data Collation & Reporting
- o Davit jib cranes for hoisting & emergency rescue
- o Preventative & reactive maintenance support services incl. painting
- o Metocean (subsea) monitoring equipment
- o Autonomous Power solutions (hybrid)
- o Navigational Aids- incl. AIS & fog horns & obstruction lighting
- o Remote end transmission links
- o Communications (satellite, GSM)
- o CCTV & remote monitoring (webcams)
- o Battery back-up & replacement
- o Fall Arrest System
- o Offshore personal survival trained personnel
- o Work at height incl. IRATA level 3 trained specialist rope access technician



WMI OFFSHORE

Case study of WMI offshore experience:

Arklow Bank met mast maintenance upgrade including instrumentation replacement & upgrading data logger.



Location of Arklow Bank, Ireland



WMI carries out regular planned & reactive maintenance on the wind measurement instrumentation and the permanent met mast itself on instruction from the client.

For further information please contact:

Offshore Business Development Manager

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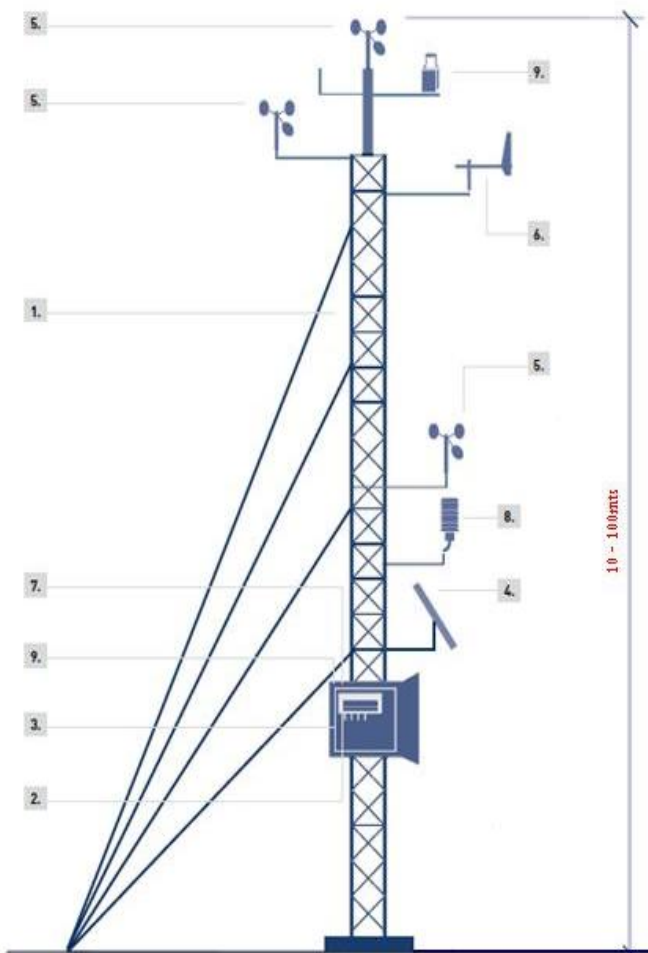


windmeasurementinternational

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DATA LOGGERS & METEOROLOGICAL MEASUREMENT EQUIPMENT

WMI is a partner with **Ammonit** in providing full service packages for a successful measurement campaign, through construction of the mast / measuring system to operation & maintenance.



WMI DESIGN, SUPPLY AND INSTALL THE FOLLOWING:

- 1) Masts; tubular & lattice
- 2) Data loggers: Ammonit, Campbell Scientific, Nomad & NRG
- 3) Enclosures: IP66 as standard
- 4) Autonomous power supplies
- 5) Anemometers: Thies, Vector, Risoe, NRG
- 6) Wind Vanes: Thies, Vector, NRG
- 7) Barometric Pressure sensor: Ammonit, Vaisala, Setra
- 8) Temperature & Relative Humidity sensor: Galltec, RM Young, Campbell, Hygroclip
- 9) Additional components; precipitation sensor, pyranometer, surge protection, obstacle lights, anti climb etc

TECHNICAL SPECIFICATIONS:

Data Loggers:

Ammonit Meteo 32



Alternative data loggers available depending on your requirements (Campbell Scientific, Nomad, NRG etc)

METEOROLOGICAL MEASUREMENT EQUIPMENT:

Anemometers:

Thies First Class Advanced



Manufacturer: Thies
 Classified according to: IEC 61400-12-1 (2005-12), MEASNET, CLASSCUP, ISO 17713-1
 This sensor is the best sensor on the market, according to the ACCUWIND study
 Highly accurate anemometer, class: S 0.5 / A 0.9 / B 3.0
 Measuring range: 0.3....75 m/s
 Resolution: 0.05 m/s

Vector A100L



Manufacturer: Vector Instruments
 Classified according to IEC Standards
 Optoelectronic wind speed sensor
 Class: 1 / A 1.8 / B 4.5
 Measuring range: 0.2 to 75 m/s
 Resolution: 0.05 m/s

Risoe P2546



Manufacturer: Risoe
 Classified according to CLASSCUP. Very reliable anemometer
 Class: 1 / A 1.9 / B 8.0
 Measuring range: 0....70 m/s

NRG #40C



Manufacturer: NRG Systems
 Low cost magnetic anemometer – the current frequency will depend on the wind speed.
 Measuring range 1 to 96 m/s

Wind Vanes:

Thies Wind Vane



Manufacturer: Thies
 Robust high quality wind vane. Potentiometric wind direction sensor
 Measuring Range: 0 to 360°, no north gap
 Accuracy: ± 2°
 Resolution: 1°

Thies Wind Vane Compact



Manufacturer: Thies
 Potentiometric wind direction sensor
 Measuring Range: 0 to 360°, no north gap
 Accuracy: ± 2°
 Resolution: 0.5°

Vector Wind Vane W200P



Manufacturer: Vector Instrument
 Potentiometric wind direction sensor
 Measuring Range: 0 to 360°, 2.3° north gap
 Accuracy: ± 3°

NRG Wind Vane #200P



Manufacturer: Vector Instrument
 Potentiometric wind direction sensor
 Measuring Range: 0 to 360°, 4° - 8° dead band
 Accuracy: potentiometer linearity within 1%

WMI offer a full range of meteorological equipment from the world's leading manufacturers.

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WMI RIGGING SERVICES

• Mast Installation

Tubular & lattice mast expertise

Fall arrest system installation and certification

Remote winching equipment

Helicopter / Quad Bike / Muskeg experienced

Accurate instrument installation to +/-10mm

All Anchors Load tested

In house software developed for analysis of structures

Quality Approved Subcontractors & Suppliers



• Mast & Equipment Inspections

Inspection / Climb-down Report

Fall Arrest System Inspection / Re-certification

Upgrade, Refurb & Recalibrate Anemometry

Scheduled & Reactive Maintenance Services Available

THE NEED FOR REGULAR MAST INSPECTIONS:

BEFORE

AFTER



BEFORE

AFTER



WMI RIGGING SERVICES

- **Certified Climbing Derrick**

Certified to BS8100 & BS5950 - SWL 100Kg – up to 70m

Suitable for deployment where impracticable or unsafe to use tilt- up/down methods

Allows replacement of instruments without displacing existing equipment & checking existing equipment

Can utilise existing anchor points



- **Health & Safety - Obelisk Group Training Passport**

Staff Skills assessed & certified as per the Obelisk Group Training Passport – Continual up skilling of staff

ISO 18001 Health & Safety management, ISO 9001 Management systems & ISO 14001 environmental systems certified

Received NISO award 2010 – Best Specialist contractor in the North East



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