The way to measure wind

ZX Lidars

Wind speed at light speed

We are ZX Lidars

The way to measure wind

The safer, faster, better, cheaper way to measure wind. Operate in all climates including clean air, reduce wind measurement uncertainty and increase project and design value.

Manage your wind resource risk and optimise your assets by employing the original and single most validated wind industry Lidar available.

ZX Lidars are powerful tools in any wind measurement toolbox: in wind farm development, site construction, through to site and project operations, and in other applications where wind measurements are key.

Our product family - ZX 300e, ZX 300M and ZX TM – allows for accurate, accepted and affordable wind measurements onshore, offshore, and from existing structures such as wind turbines.

The ZX Customer Care Charter is our promise to support you throughout your Lidar ownership. Technical queries responded to within 24 hours, remote Lidar diagnostics, regular Care check-ins, and when you do need support on site, our ZX Trusted Technicians will be right there.

Our Team Values

Respect. This is the cornerstone in all we do. Respect for our environment, our customers, our partners, our company and most importantly ourselves and each other.

Sincerity. We want our customers to love what we do as much as we do. We do our best to make sure that we understand our customers and our customers understand us.

Enthusiasm. We love science, technology and market development – and making it all mean something for the benefit of our customers and of our team.

Sustainability. Planet, people and company. Without a planet we have no people. Without people we have no company. We must act in a sustainable way in all that we do and reduce our consumption, waste and footprint.

Emotional Intelligence. When innovation is at the heart of what you do, emotional intelligence comes hand in hand. We aim to work in the smartest of ways, always.

Ian Locker

Ian Locker
Managing Director &
Founder of ZX Lidars

Why Lidar

Safer

According to an independent study by Renewable Energy Systems (RES), substituting masts with Remote Sensing Devices, such as Lidars, leads to fewer accidents and near misses. Additionally Working at Height is limited.

There is now a documented lower chance of an accident or safety incident comparing the use of Remote Sensing Devices to met mast campaigns.

Faster

No planning application for tall structures is required and mobilisation of Lidars can be achieved in just a matter of hours.

Nacelle-based Lidars can be installed and removed rapidly for operational wind measurements.

Cheaper

Increasing turbine hub heights and rotor diameters demand representative wind measurements. Lidars are more cost effective for higher hub heights relative to met masts.

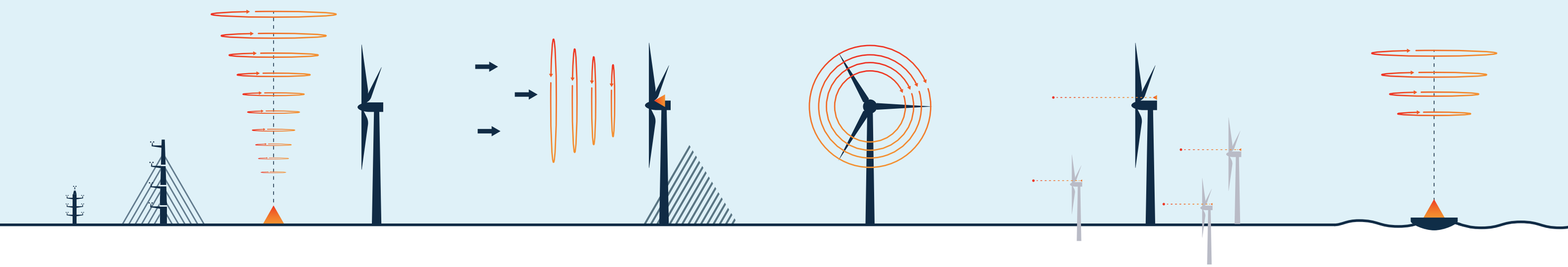
Through-life costs of Lidar are lower with minimal servicing, validation or calibration required.

In operation, coverage across the whole wind farm can be achieved with nacelle-based Lidars.

Better

Lidar measurements can be taken across the whole turbine rotor reducing project uncertainty and validating turbine performance. Lidars are mobile and measurements can be taken across large sites.

Layouts can be optimised, operations can be tailored.



Onshore **On turbines** **Across wind farms** **And Offshore**

The originators and innovators of todays wind Lidar industry and community

Our team of pioneering innovators and experts, our ZX family, are helping drive the transition to renewable energy globally. Our ground-breaking products have changed the way wind is measured, and in doing so accelerated the development of wind projects around the world.

We are proud of all and every member of our company, who continue to challenge and change the way the world is using wind data and are actively contributing to creating a greener world and mitigating climate change.

Together, we are responsible for:

- Europe's largest dedicated wind Lidar facility
- Operating the UK Remote Sensing Test Site
- A 'product-first' business, ZX Lidars
- A 'service-first' business, ZX Measurement Services
- 15,000+ system deployments in more than 100 countries globally

We are disruptive, we are change, we are a future.

ZX300e

Enhanced wind measurements from the world's most validated ground-based Lidar.

ZX 300e is the evolution of the trusted ZX 300, delivering enhanced performance, ultra-low power operation and the most comprehensive independent validation record in the industry. Fully IEC Classified from 21–200m, ZX 300e provides accurate, reliable and bankable wind data for onshore campaigns in both simple and complex terrain worldwide.

ZX 300e at a glance:

- Measure wind speed and exact wind direction remotely from 10–300m.
- Achieve proven, high data availability even at 300m and in clean air conditions.
- Reduce project costs with ultra-low power consumption, ideal for remote or extended sites.
- Ensure workforce safety with no need for climbing or working at height.
- Simplify planning with a compact, low-visual-impact design supporting permitting processes.
- Backed by a 5-year service interval, warranty, and proven global survivability record.

The evolution of the world's most validated wind Lidar, now proven to 300m

Deployed in more than 100 countries with over 20,000 deployments of ZX 300, ZX 300e builds on the world's most proven ground-based platform.

A rugged, field-hardened system that has already demonstrated a 10-year product life in practice, with units still performing more than a decade after deployment.

Bankable results accepted by major financial institutions, and consultants including DNV, UL, Wind Pioneers, Ramboll, Brightwind, Natural Power, Deutsche WindGuard... and more.

ZX 300e is the evolution of the globally deployed ZX 300 wind Lidar, delivering enhanced performance and the most comprehensive validation evidence base in the industry. Features include:

- Enhanced internal architecture. New-generation CW design improves accuracy, range, and wind direction sensing, with ultra-low power consumption (44 W at –25°C).
- Web-based user interface. A powerful local and remote platform supporting multi-user access, cyber security, and streamlined status checking.
- Rigorous performance verification. Independent mast campaigns up to 200 m confirmed slopes within ±1%, $R^2 > 0.985$, and availability consistently above 95%.
- Fleet-wide 300 m validations. At the UK Remote Sensing Test Site, ZX 300e units were verified to 300 m using Midar (Mast + mast-mounted Lidar) methods, achieving $R^2 > 0.985$ and availability above 94% at 300 m.
- Turbulence intensity. Machine-learning METICE approach delivers cup-equivalent TI validated at >17 sites worldwide, meeting CFARS KPIs.
- World-first classification. Classified to IEC 61400-50-2 across 21–200 m, with final accuracy class and standard uncertainty of 0% — the best and most comprehensive classification available.

ZX 300e is more than a product evolution — it is the culmination of two decades of Lidar expertise, 15 years of real-world deployments, and thousands of independent validations. From short-term prospecting to permanent met replacements, ZX 300e delivers consistent, bankable data across all terrains and conditions. With proven availability up to 300 m and and the most complete IEC classification ever published, ZX 300e retains the benchmark for finance-grade wind measurement worldwide.

With ZX 300e, we raise the benchmark again.

ZX 300e Specification

Measurements

Range	10 - 300 metres (Lidar measurement) 0 - 10 metres (onboard met weather station)
Probe length	± 0.07 metres @ 10 metres ± 7.70 metres @ 100 metres
Heights measured	10 User configurable 1 Additional met weather station measurement
Sampling rate	50Hz (up to 50 measurement points every second)
Averaging rate	True 1-second averaging 10-minute averaging
Wind speed accuracy	0.1 m/s*
Direction variation	< 0.5°*
Speed Range	< 1 m/s to 80 m/s
Data storage	6 years

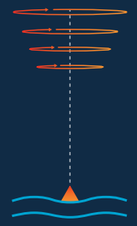
Product

Service interval	5 years from new
Size	0.9m x 0.9m x 1m
Weight	55kg
IP Rating	IP 67
Power consumption	44W
Power input	12V
Temperature range	-40 + 50°C
Warranty	5 years
Maintenance	No annual maintenance or calibration in this period
Laser	Class 1, Eye Safety (IEC 60825-1)

* as measured against a calibrated moving target

The faster way to measure wind.

ZX300e



ZX 300M

Accurate and robust offshore wind measurements from vertical profiling Lidar

Integrated on all major commercial Floating Lidar Devices (FLDs) and designed for any offshore platform. Unmatched track-record in the harshest of offshore floating environments. All with the longest service and warranty period, as standard, of any Lidar. Full IEC Classification, the single largest body of evidence of met mast / Lidar validations at the UK Remote Sensing Test Site and gold-standard 'highest height' validations at 213m and 244m.

ZX 300M at a glance:

- 10 to 300 metre wind measurements from deck.
- Specifically designed for the offshore environment with enhanced marinisation.
- Extensive 3 year service period ensuring the lowest cost of ownership of any offshore Lidar available.
- Installed and proven for use on all market-ready floating Lidar platforms.
- Validated across multiple pre-commercial floating deployments and as mast replacements on fixed platforms.
- Collaborative agreements with leading Floating Lidar Device manufacturers for effective Turbulence measurements.
- ZX 300M is fully IEC Classified to IEC 61400-12-1: 2017.

Responsible for more than 90% of all new offshore wind measurements globally

Use the industry standard offshore Lidar for the most certain outcome.

Significantly reduce the cost of your measurement campaign offshore.

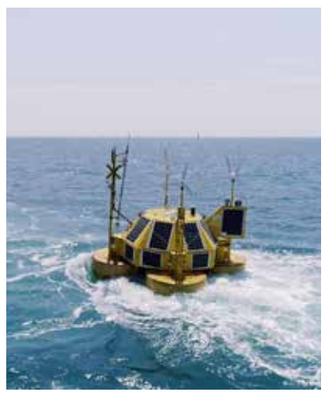
Reduce your measurement uncertainty by measuring higher than a met mast.

Reduce your measurement uncertainty further by mobilising measurements across a whole site by utilising Floating Lidar Devices.

Better manage health & safety requirements on site with no need to work at height.

ZX 300M features include:

- Our Continuous Wave laser measures the Line of Sight wind speed every 20 milliseconds to 'freeze' any motion encountered.
- Multi-layered, highly insulated, plastic moulded Lidar housing, with additives to provide high UV stability and improved marine growth resistance.
- Highest grade of marine connectors available for all peripheral items, 2000+hrs salt spray tested.
- Custom stainless steel frame to allow for ease of handling and efficient securing to any platform surface.
- Marine met station with improved yaw determination, for floating offshore platforms.
- Stainless steel window wiper system with silicone wiper blade.
- All External components tested to IEC60068-2-11.



ZX 300M Specification

Measurements

Range	10 - 300 metres (Lidar measurement) 0 - 10 metres (onboard met weather station)
Probe length	± 0.07 metres @ 10 metres ± 7.70 metres @ 100 metres
Heights measured	10 User configurable 1 Additional met weather station measurement
Sampling rate	50Hz (up to 50 measurement points every second)
Averaging rate	True 1-second averaging 10-minute averaging
Accuracy wind speed	0.1 m/s*
Direction variation	< 0.5°
Range	< 1 m/s to 80 m/s

Product

Service interval	36 months from new
Size	805 x 845 x 966mm
Weight	53.4kg
IP Rating	IP 68
Power consumption	45W
Power input	12V
Temperature range	-20 + 50°C
Warranty	3 years
Maintenance	No annual maintenance or calibration in this period
Laser	Class 1, Eye Safety (IEC 60825-1)

* as measured against calibrated moving target

The reliable way to measure wind.

ZX300M

The nacelle-mounted Lidar for wind turbine Power Performance Measurements

Power Performance Measurements from the only Lidar that measures the full shear and veer wind profile of a wind turbine. Approved by leading OEMs for Power Performance Testing. Operates in all environmental conditions including clean air with market-leading Lidar sensitivity. Holistic wind data to explore future Lidar Assisted Control strategies.

ZX TM at a glance:

- IEC 61400-50-3 compliant power performance measurements to understand turbine performance in relation to OEM's power curve.
- Remotely measure the wind speed and direction at hub height, 550m ahead of a wind turbine.
- Uniquely measure the full shear and veer wind profile up to 300m ahead of a wind turbine.
- Benchmarking of specific turbine model performance to understand the product performance under both warranted and non-warranted conditions.
- Standard industry-accepted methodologies and measurements for: Power Curves, Nacelle Transfer Function calibration, including Yaw Alignment, and Wake Detection.
- Extensive 3 year service period ensuring the lowest cost of through-life ownership.
- Suitable for installation on all major turbine platforms.
- Approved by Siemens Gamesa Renewable Energy, GE Renewable Energy and other leading OEMs for Power Performance Testing including OEM-approved installation brackets.

Accurate power performance tests and detailed, operational power curve assessments

Execute Power Performance Measurements and Testing to IEC standards including IEC 61400-50-3:2022 within your Turbine Supply Agreement with Nacelle Based Lidar.

Monitor Operational Power Performance including yaw alignment, turbine degradation, and upgrade path verifications within inner and outer ranges (warranty and out of warranty conditions).

Assess the available wind resource post construction for accurate energy and load assessments for budget and life-time calculations, site repowering and wind driven grid-scheduling.

ZX TM features include:

- 17 Horizontal measurement ranges and up to 15 vertical slices at each range – the most comprehensive measurement capability of any Lidar, delivering Rotor Equivalent Wind Speed and slices for IEC Power Curves.
- High Lidar directional positional accuracy on turbine essential for any set point changes relative to rotor alignment using unique patented auto-alignment technique in addition to roll / inclination sensors on board.
- Extensive 3 year service life as standard.
- High availability with all laser energy focused at each measurement range, with low susceptibility to turbine blades due to short measurement integration time (50Hz).
- “Application mode” software helping you to define Key Performance Indicators, campaign duration and to include turbine parameters, in addition to the initial installation and easy configuration of the Lidar.

ZXTM Specification

Measurements

Configurations	3” Lidar optical head, 15 or 30 degree half-angle scan 17 horizontal ranges with configurable dwell times 15 vertical slices at each range across the rotor disk
Wind characteristics	Wind speed, shear, veer, wind yaw misalignment, turbulence, rotor equivalent wind speed (REWS), windlflow complexity
Scan & Data sample rate	Full rotor scan for REWS measurement up to 300m ahead 50Hz / 20ms measurements
Speed range	0.5 - 45 m/s (wind loading survivability up to 70 m/s)
Accuracy	Wind speed, 0.1 m/s Wind direction, 0.5°
Measurement range	10m - 550m

Product

Weight	Lidar Optical Head (LOH): 20 kg Lidar Control Unit (LCU): 29 kg Turbine Integration Kit (TIK): 35kg
Size	LOH: 356 x 285 x 823 mm LCU: 209 x 513 x 630 mm Cable length: 10 m (or 15m option)
IP Rating	LOH: IP 66 LCU: IP 65 Marine atmosphere compliant (IEC 60068-2-52) Operating humidity 0 to 100% RH
Ambient temperature range	LOH: -30 to 50˚C LCU: -40 to 60˚C
Warranty / Maintenance	3 year warranty as standard No factory maintenance or calibration required during 3 year service period
AC Power	Nominal: 96 W Hot / cold conditions: Up to 275 W Maximum rating: 400 W
Compliance	Class 1 Eye Safe Infrared Laser, IEC60825-1
Mounting	Wind turbine nacelle, platform or ground mounted

Access

User Interface	Web-based interface via laptop, mobile or tablet
Data Interfaces	Ethernet via M12 to RJ45 (adaptor cable) WLAN 802.11 a, b, g, n, d Cellular POE Modem (Optional)
Comms protocols	Web based GUI for configuration, measurements and status monitoring Modbus (TCP) Web API Local Data Broadcast (UDP) File transfer protocol (FTP) Push and Pull
Data storage	24 months
Timestamp	GPS (with optional local time offset) or NTP

Compliance

CE	2014/35/EU (Low Voltage), 2014/30/EU (EMC), 2014/53/EU (Radio Equipment), 2011/65/EU (ROHS)
EMC	IEC 61010-1 (Safety), 61000-6-2 (Immunity), 61000-6-4 (Emissions)
Laser	BS EN 80625-1:2014 Class 1

The accurate way to measure wind.

ZX Measurement Services

Our experienced team is a global leader in the design, installation and turnkey management of wind measurement systems including Lidars, meteorological masts and Sodars, and all necessary power and communication ancillaries.

At ZX Measurement Services we ensure all measurement campaigns are designed and delivered to exactly meet our customers needs to provide comprehensive data sets to the highest industry standards.

Measurement services for renewable energy

We provide the following extensive field and back office support services:

- Wind measurement campaign design and optimisation for bankable, IEC-Compliant data from development through to repowering.
- Remote sensing solutions including ZX 300e and ZX 300 wind Lidar and sodar rental with full-service fleet management and remote monitoring.
- Field services covering installation, commissioning, maintenance, and decommissioning of remote sensing devices.
- Integrated measurement systems including met masts, solar resource equipment, and noise monitoring for comprehensive site data.
- Data management and reporting delivered via the ZX Data Portal.
- Off-grid power supply systems design and supply.
- Technical support and training.

Our promise to our customers is simple. Excellence in measurements and project data.

Combining ZX Lidars' position as industry leaders in the development and supply of Lidars globally with our experience in the design, application and management of turnkey measurement campaigns offers the unique opportunity for Project Developers, Asset Managers and Owner / Operators to maximise data quality and availability whilst minimising measurement uncertainty and cost.

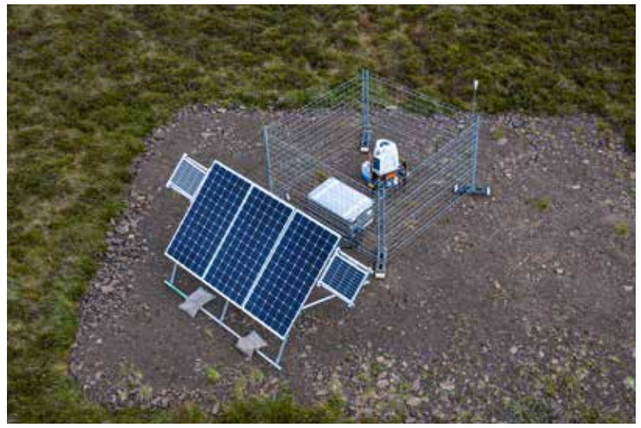
Our customer's objectives become our own objectives

The availability of high quality data has always been the cornerstone of any energy project. Whether it is wind resource data for the purpose of project development, operational data used in the optimisation of existing power plant or power performance data used in the verification and acceptance testing of existing or newly installed individual turbines. The need for low cost, accurate and reliable measurements has never been more important.

At ZX Measurement Services, our primary focus is the acquisition of the highest quality data with the lowest measurement uncertainty. Our team has over 70 years combined experience in the design, installation and management of measurement systems, ensuring all measurement campaigns are designed and delivered to exactly meet our customers needs whilst optimising new and existing technologies to provide comprehensive data sets.

We only use the best wind monitoring sensors and we supply robust methanol fuel cell based modular remote power supplies, designed and proven to operate in the harshest of environments, all to ensure maximum data availability.

Our focus is always ensuring that projects have the data necessary to succeed.

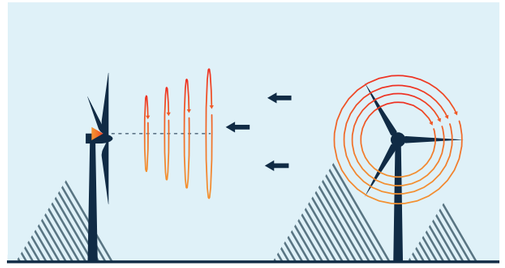


The easier way to measure wind.

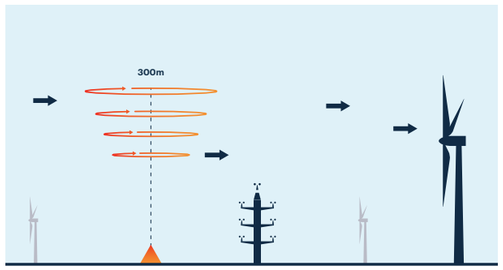
ZX Measurement Services

Use Cases

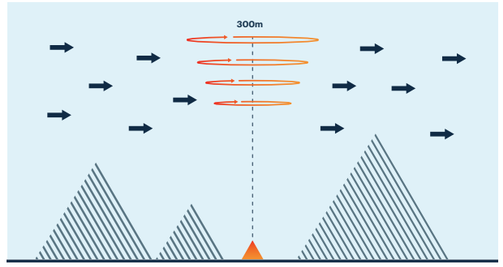
Lidar · Wind · Lidar beam



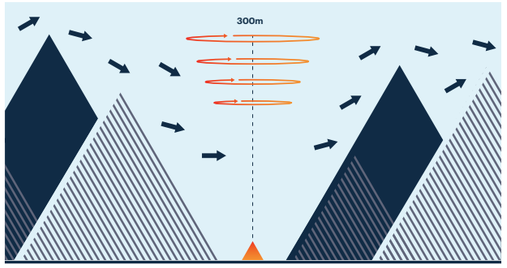
Power Curve Measurements from the turbine, including IEC 61400-50-3



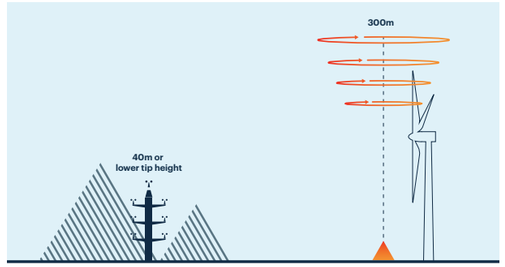
Power Curve Measurements to IEC 61400-12-1: 2017



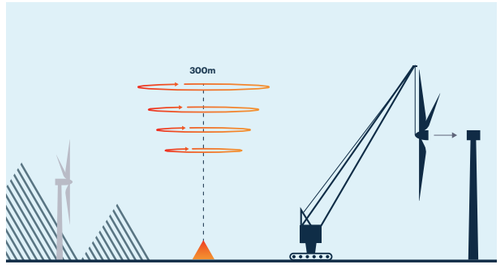
Stand alone wind measurements



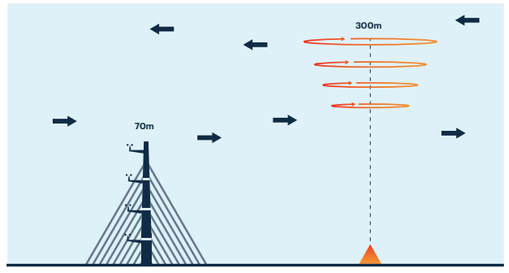
Working in complex flow



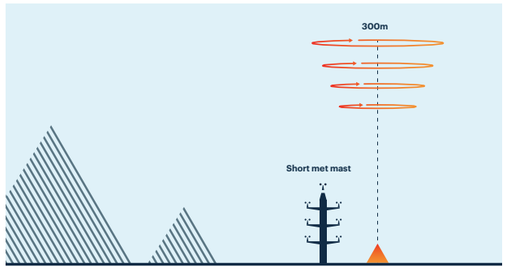
Site Calibration to IEC 61400-12-1: 2017 Annex C



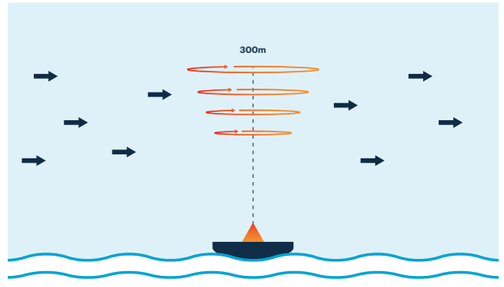
Crane lift monitoring



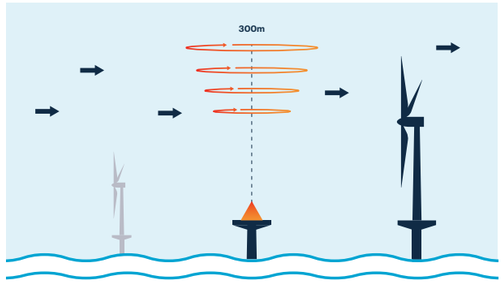
Complement and go beyond your met mast measurements



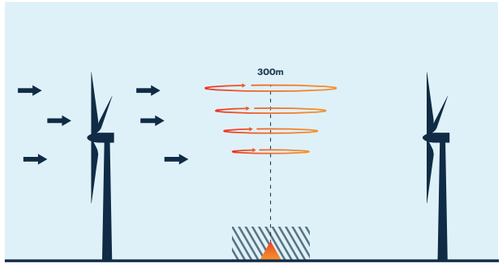
Combine fixed short met masts with roaming Lidar



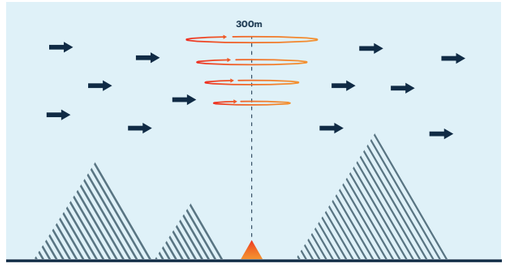
Stand alone wind measurements



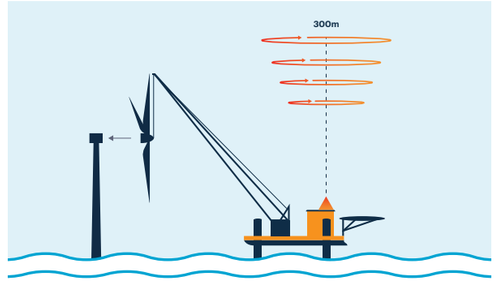
Offshore Permanent Met Lidar



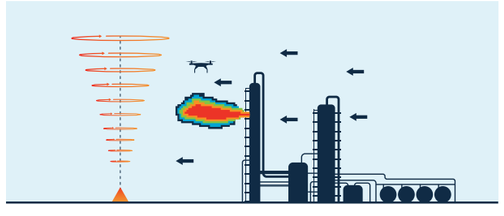
Permanent Met Lidar



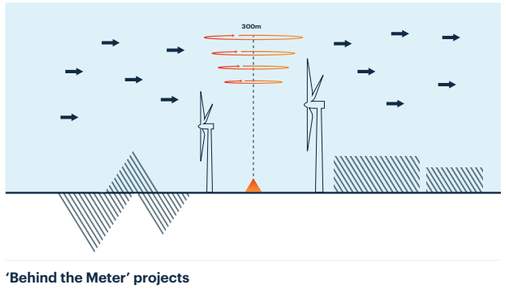
Lidar Weather Station



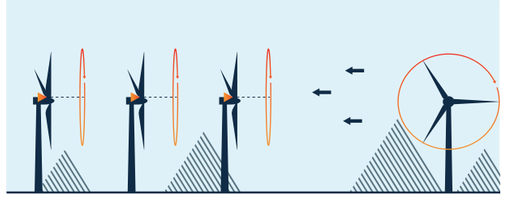
Offshore construction and operations & maintenance wind monitoring



Methane emissions monitoring

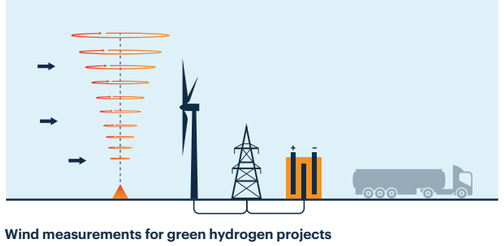


'Behind the Meter' projects



Lidar Assisted Control

Wind monitoring for droneports, spaceports and airports



Wind measurements for green hydrogen projects

Your Lidar adventure starts today by speaking to ZX Lidars.

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ZX Lidars
ZX Measurement Services