

A 3D rendering of a white offshore wind turbine platform with a blue stripe and the word "UNISON" on its side. The platform is positioned next to a large white wind turbine nacelle. The background shows a green field and a blue sky with a bright sun flare.

UNISON

U4 Platform

U136-4.2MW

U151-4.3MW

A Quantum Leap U4 -The new onshore Platform

A brand-new 4MW+ onshore wind turbine platform developed from scratch, UNISON's U4 platform is a work of art tailored towards the rapidly changing renewable energy market of the future.

Innovative solutions combined with proven, reliable technology in the 4MW class is a game-changer in the onshore wind energy business. Ensuring maximum return on investment, the U4 platform with its ingeniously modularized Nacelle can be transported and installed with existing equipment serving 2MW class turbines.

The first of a series of onshore 4MW turbines will be the U136-4.2MW with a class leading rotor swept area of 14,470m² for high wind. The U4 Platform will be supplemented in the near future with the U151 with an extended rotor diameter suited for low wind sites.



Technical Specifications

Operational data

	U136	U151
Rated power	4,200 kW	4,300 kW
Cut-in wind speed	3 m/s	3 m/s
Cut-out wind speed	22 m/s	22 m/s
Wind class	IEC IA	IEC S(III A+)
Operating temperature range	-15 °C ~ 40 °C	-15 °C ~ 40 °C
Max. sound power	105.9 dB(A)	107.9 dB(A)

Dimensions

Rotor diameter	136 m	151 m
Swept area	14,470 m ²	17,908 m ²
Nacelle (for transportation)	L14.7 m x W4.5 m x H4.2 m	L14.7 m x W4.5 m x H4.2 m
Hub (for transportation)	L4.5 m x W3.9 m x H4.2 m	L4.5 m x W3.9 m x H4.2 m
Blade	66.5 m	74.0 m
Tower	95 / 117 mhh	95 / 117 mhh

Electrical

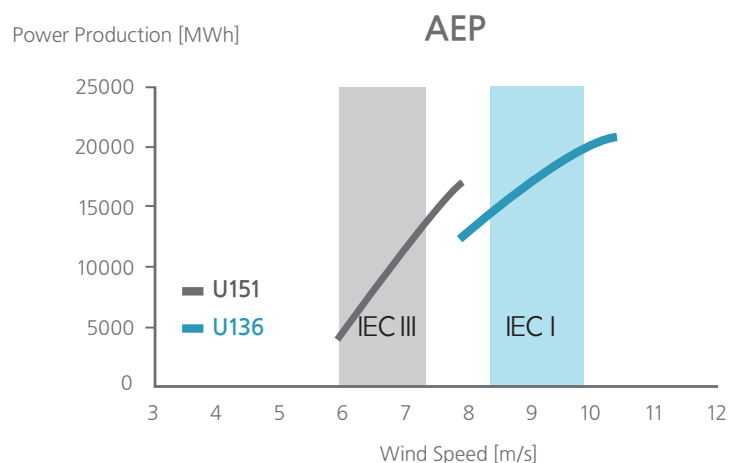
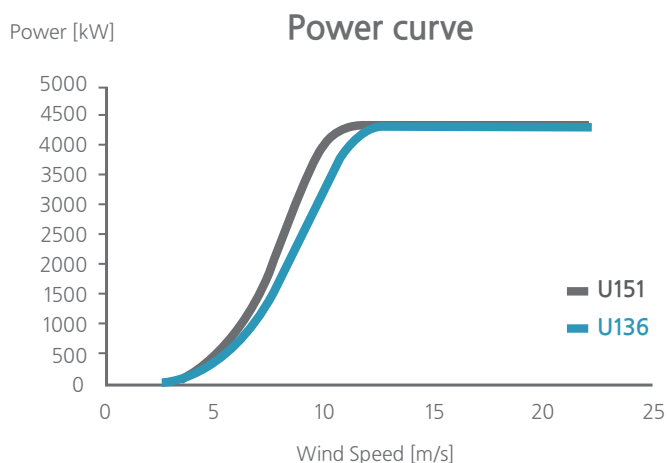
Frequency	50 / 60 Hz	50 / 60 Hz
Generator	Permanent magnet, Synchronous	Permanent magnet, Synchronous
Converter	Full capacity	Full capacity
Pitch system	Electric motor drive	Electric motor drive

Drivetrain

Main bearing	Dual, cylindrical and tapered roller	Dual, cylindrical and tapered roller
Gearbox	2 planetary + 1 helical stages	2 planetary + 1 helical stages

Module

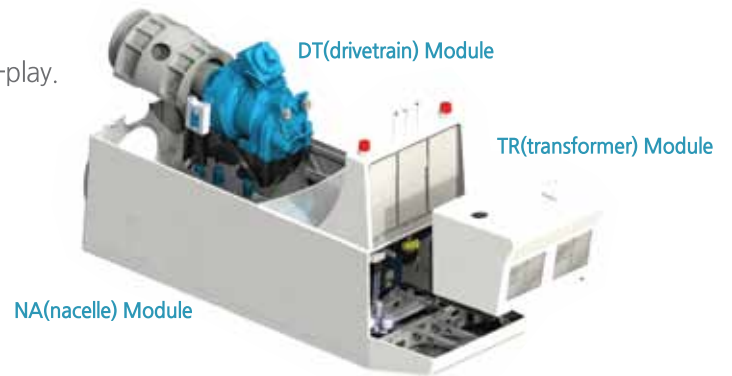
Max. weight (for transportation)	78 ton	78 ton
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The Modular Approach

The innovative modular platform enables easy transport and installation without costly special equipment. Each module is transported separately with its transport-ready weight and dimensions designed not to exceed 78 tons in weight, 4.5m in width and 4.2m in height.

Upon arrival on site, standard cranes used for 2MW-class turbine installation can handle the lifting and up-tower final assembly of the modules, where bolt connections make the assembly a matter of plug-and-play. A hydraulic inching device is temporarily attached to the gearbox which enables high torque inching of the hub for single blade installation. All in all, UNISON's 4.2MW U4 platform offers a solution where transport and installation is straightforward even in space restricted adverse site conditions.

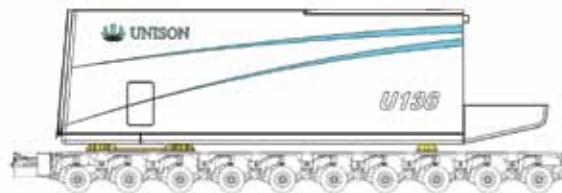


Drivetrain Module



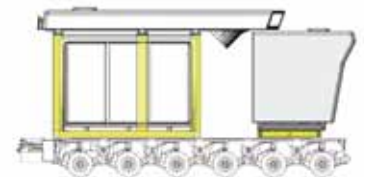
Dimension (Weight)
L7.2 m x W3.5 m x H3.8 m (78 ton)

Nacelle Module



Dimension (Weight)
L14.7 m x W4.5 m x H4.2 m (73 ton)

Transformer Module



Dimension (Weight)
L10.0 m x W4.5 m x H4.0 m (17 ton)

Maximizing value for the customer

Serviceability

was a prime criteria in determining the Nacelle layout. Sufficient workspace for service personnel to execute up-tower repair and maintenance has been designed into the Nacelle structure. An internal single-girder overhead crane enables the replacement of yaw and pitch drives and other components, while the generator can be replaced through a bottom opening without external crane usage.

Controller

software has been upgraded to reflect the latest technology with regards to load & power optimization. Safety related algorithms are enhanced and supplemented with proven top notch hardware.

SCADA

Web-based, all information is on-line accessible, while real time data analysis, production review, event views, alerts, alarms and more is incorporated into UNISON's SCADA system. User friendliness and flexibility to meet customer demand adds further value.

Blades

- Outstanding aerodynamic performance
- Vortex generator and T-spoiler applied
- Low noise through trailing edge serrations
- Robust lightning protection system (IEC level 1)

Pitch System

- Near maintenance free electrical pitch
- Dual independent blade angle detection
- Ultra capacitor back-up



● Main Bearing System

- Dual, cylindrical and tapered roller bearings
- Zero-play rigid structure
- Minimal non-torque bending moment

● Gearbox

- Wet-sump lubrication
- Active oil cooler
- Hydraulic damper support
- Electric inching drive for rotor maintenance



● Yaw System

- Pressure accumulator for fail safe function
- Lubricant leakage protection

● Tower

- Tubular steel construction
 - High corrosion protection level (C5-M)
- Stiff and soft towers

Generator

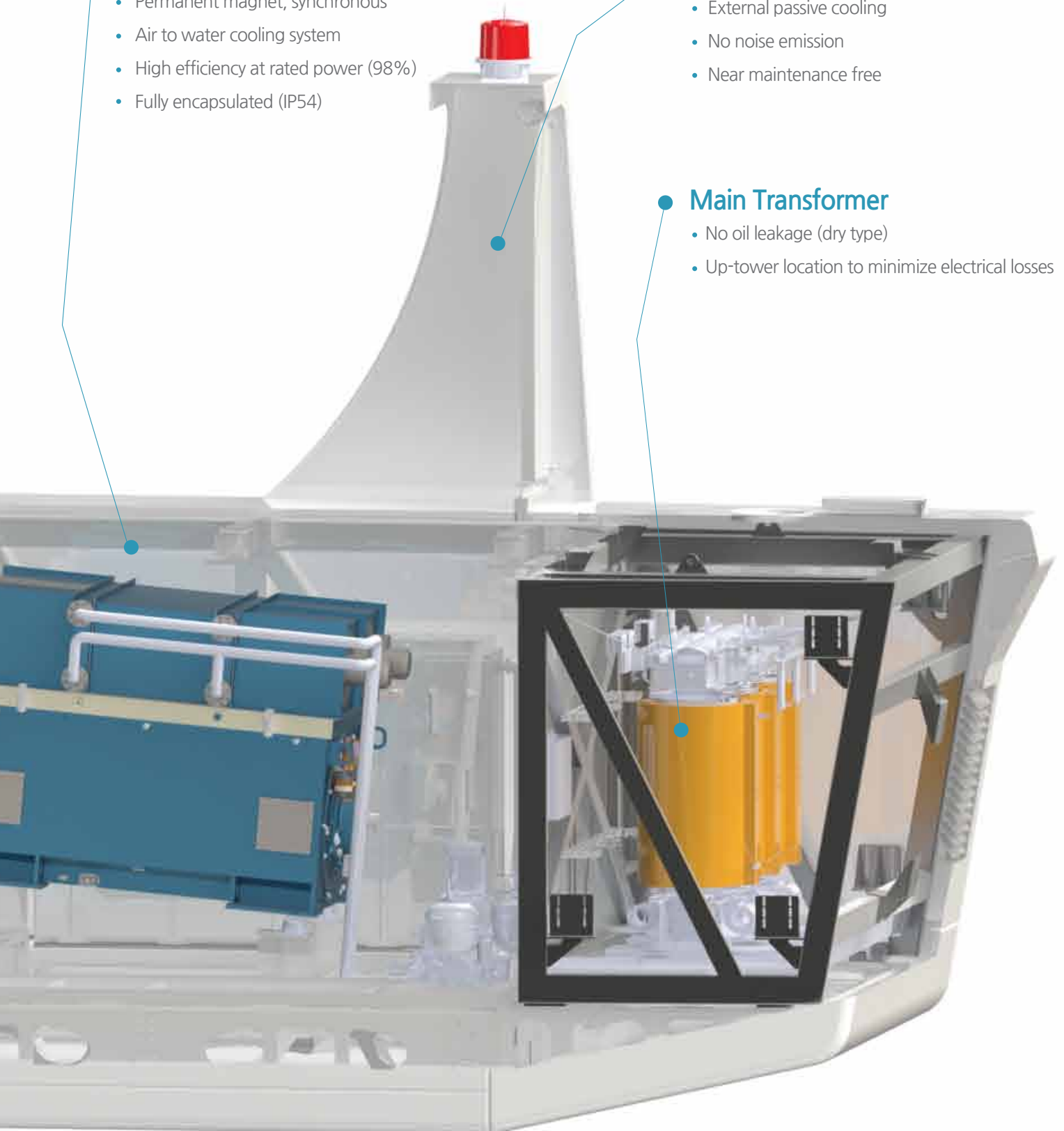
- Permanent magnet, synchronous
- Air to water cooling system
- High efficiency at rated power (98%)
- Fully encapsulated (IP54)

Cooling System

- External passive cooling
- No noise emission
- Near maintenance free

Main Transformer

- No oil leakage (dry type)
- Up-tower location to minimize electrical losses



Electrical System

- Full AC/DC/AC conversion decoupled from grid
- Compliant to various international grid code requirements
- Optimal grid integration through support features
- LVRT and droop control available

Affordable Wind Power. Striving for a Cleaner Future.

Making wind power affordable - this is our ultimate goal.

Global climate change can only be effectively counteracted through clean and affordable renewable energy.

Pioneering wind energy development in KOREA, UNISON's wind park development was seminal in spreading awareness of wind energy in KOREA.

Through the development of 7 wind turbines across 2 platforms of 750kW and 2MW +, type certified by internationally accredited institutions, UNISON has an accumulative market share of 21% of the Korean market.



● U4 Platform

U136-4.2MW, IEC IA

U151-4.3MW, IEC S(IIIA+)



● U2 Platform

U88-2.0MW, IEC IA / IIA

U93-2.0MW, IEC IIIA

U113-2.3MW, IEC S(IIIA+)

U120-2.3MW, IEC S(IIIB+)



● U1 Platform

U50-0.75MW, IEC IA

U54-0.75MW, IEC IIA

U57-0.75MW, IEC IIIA

* Disclaimer: The contents of this Brochure is for information only and can change without prior notice

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