

1.5 MW

Wind Turbines

2.1 MW



We believe in the Power of Nature

Total Solutions

IMPSA is a global company dedicated to providing total solutions for power generation from renewable resources. Over 100 years of experience guarantee the successful development and management of large and complex projects. Thanks to its value-oriented strategy, IMPSA has generated thousands of megawatts around the world. It contributes to sustainable growth by promoting the use of clean energy.

To be involved in the whole value chain as a complete solution provider means to be focused on every need of the customer: Project Development, EPC (Engineering, Procurement & Construction), Turnkey Supply, Wind Turbines, Core Competences, O&M (Operation & Maintenance), Life Cycle Services. IMPSA Wind and IMPSA Energy offer total solutions for wind power generation:

Research and development - UNIPOWER®

Engineering

Wind turbine design, manufacture and supply

Equipment assembly and startup

Civil works (access roads and foundations)

Power systems design and integration

Procurement.

SCADA and monitoring systems

Life cycle services

Operation and maintenance



Benefits



High efficiency and reliability - UNIPOWER®

A single component serves both as electrical generator rotor and as turbine hub, thus minimizing the equipment's size and weight.

Fewer moving parts reduce noise and losses.

The salient-pole synchronous generator is coupled directly to the turbine (no gearbox or power slip rings).

The aerodynamic nacelle reduces loads and vibrations.

The automatic lubrication system reduces downtime for maintenance work.

Maximum energy production

Blade's pitch control and operation at variable speed. This ensures safe and efficient operation over the full range of wind speeds maximizing energy production and increasing the total value of wind farms.

High power supply performance

Power filter ensures low emission of harmonics.

Ability to withstand frequency variations in the grid.

Tolerance to voltage dips and other types of disturbances.

Injection of reactive power from an external or internal set-point, makes it possible to control voltage at the connection point.

Online operation monitoring

An excellent tool used as a base for predictive maintenance enhances availability reducing the O&M cost.

Total solutions: One supplier for the entire project

From greenfield to sale of energy with only one supplier.

Site selection, wind resource assessment, engineering and project finance, turnkey supply of equipment, complete EPC for wind farms, and O&M.

Better flexibility

A wide variety of options includes elevator, customization for harsh environments, vibration monitoring system, fire-extinguishing system and more.

Durability

A simple design reduces the number of mechanical components and dynamic behavior analysis guarantees an extended life cycle.

Lightning safety

The nacelle is protected with a metal mesh (Faraday cage) and the blades have lightning protection.

Operational safety

Emergency braking system fed by ultra capacitors.

Mechanical locking system for maintenance work.

Spacious nacelle for easier, faster and safer maintenance.

Overall Concept

The vision of providing comprehensive, competitive and innovative solutions in renewable energy projects has led to the development of a new concept in wind generation equipment which stands out from other products currently available in the world market.



UNIPOWER® Concept

Synchronous generator with permanent magnets.

No gear box.

IMPISA's innovative design combines the generator and the rotor hub in a single component, thus reducing the problems of the traditional configuration of direct-drive generators (size and weight).

Nacelle

Fiberglass reinforced polyester.

Embedded metal mesh for lightning protection.

Blades

Designed to maximize energy production.

Proprietary design and manufacturing.

Fiberglass reinforced polyester.

Equipped with a lightning protection system.

Pitch Control System

Variable pitch.

Independent pitch actuators (servomotor drives).

Independent back-up energy storage units (ultracapacitors).

Tower

Tubular steel or concrete-steel tower.

Internal stairway with a safety system.

Elevator (optional).

Safety platforms at regular distances.

Control System

PLC-based autonomous control (programmable logic controller).

Manual functions for maintenance.

Variable speed operation to maximize power production at below-rated wind speeds.

Frequency Converter

Possibility of motorization for maintenance purposes.

Black start capability.

Variable power factor.

Over 25 safety functions.

Low harmonic emission level.

Conditions monitoring.



Technical Features

IMPSA IWP 70 / 83 / 93

General data

Rated power	1.5 MW - 2.1 MW
Rated speed	13 m/s
Survival speed	70 m/s (I-A); 59.5 m/s (II-A); 52.5 m/s (III-A)
Design standards	IEC WT-01; IEC 61400-1
Class type	I-A; II-A; III-A

Rotor

Diameter	70 m; 83 m; 93 m
Swept area	3,848 m ² ; 5,410 m ² ; 6,793 m ²
Direction of rotation	Clockwise
Number of blades	3
Blade length	32.3 m (D=70 m); 38.8 m (D=83 m); 43.9 m (D= 93 m)
Blade material	Fiberglass and resin with protection against ultraviolet radiation and lightning
Power control	Variable pitch Electrical torque control

Tower

Type	Tubular steel or concrete/steel tower
Hub height (approx.)	72 m; 85 m; 100 m
Sections (for transport)	4 (H=70 m, 85 m); 5 (H=100 m)
Anticorrosive protection	Epoxy

Generator

Type	DDPM Direct-drive permanent magnet
Rated power	1,500 kW 2,100 kW
Design	UNIPOWER®
Voltage	690 Vac (1.5 MW) / 789 Vac (2.1 MW)
Cooling	A ar. IP 23 (EN-60529)
Insulation class	F

Yaw system

Type	Active System
Design concept	Electric servo motors
Bearing	Internal gear
Number of mechanisms	4
Rated yaw speed	0.3 °/s
Operating range	360°

Pitch control

Design concept	Independent servomotor drives
Back-up energy	Ultracapacitors



Control system

Function	Microprocessed monitoring and control
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Brake Systems

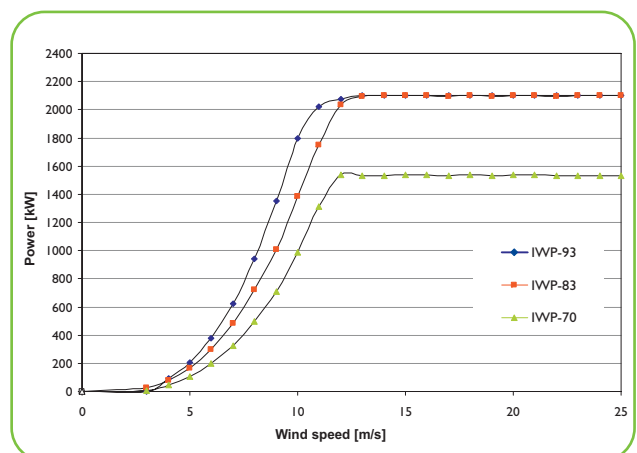
Aerodynamic braking	Three independent pitch control actuators
Mechanical brake	Hydraulic, for rotor parking
Rotor lock	Manual

Frequency Converter

Type	Bridge rectifier / 4Q AC-DC-AC (Back-to-back Full-power IGBT Inverter Bridges)
Line side frequency	45 - 65 Hz
Generator side voltage	690 Vac (1.5 MW) / 789 Vac (2.1 MW)
Power filter with THD (Total Harmonic Distortion)	≤5%

Others	<ul style="list-style-type: none"> - LVRT- Low Voltage Ride Through - Variable power factor - EMI filter to minimize electromagnetic emissions - Generator side and line side circuit breakers
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Power Curve



All specifications are subject to change without prior notice.

IMPSA

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