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Abstract

This document describes the technical characteristics of a wind farm consisting of 21 Vestas V52 turbines, currently installed and operational in Italy. The turbines are used but in excellent condition.

Each turbine is complete with the main components required for operation, including the tower, frequency converter, electrical control panels, hydraulic systems, medium voltage equipment and auxiliary parts such as PLCs and various cables. Bolts and anchor cages are not included.

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Nomenclature

AC	Alternating Current
AVR	Automatic Voltage Regulator

DC	Direct Current
DCS	Distributed Control System
EPC	Engineering, Procurement and Construction
HMI	Human-Machine Interface
I/O	Input / Output
ISO	International Organization for Standardization
LHV	Lower Heating Value
LV	Low Voltage
MCC	Motor Control Cubicle
MV	Medium Voltage
HV	High Voltage
N/A	not applicable / not available
OEM	Original Equipment Manufacturer
P&ID	Process & Instrumentation Diagram
PC	Personal Computer
PFD	Process Flow Diagram
PLC	Programmable Logic Controller
WTG	Wind Turbine Generator
TBD	To be determined / To be defined

1. Introduction

Complete wind turbines available for relocation, this document describes the various characteristics of the turbines and their current status. The subject of the opportunity is as follows: 21 Vestas V52 wind turbines, each with a capacity of 850 kW.

General Data	
Manufacturer	Vestas
Model	V52
Quantity	21
Power	850 kW
Available from	January 2026
Country	Italy
Condition	New
Year of construction	2001

2. Description of Supply

2.1 Wind Turbine Vestas V52 850 kW

The Vestas V52-850 kW is a three-bladed, upwind wind turbine with collective variable pitch and a variable-speed rotor, developed by Vestas Wind Systems. The turbine operates according to the OptiSpeed™ concept, which allows variable rotor speed to optimize energy production, reduce mechanical loads, and limit noise emissions under varying wind conditions.

The fiberglass-reinforced blades, manufactured from epoxy-based composite material, consist of two bonded shells mounted on a structural support beam. The blades are connected to blade extensions via special steel root joints, while the extensions are bolted to the hub through four-point ball bearings. Mechanical power from the rotor is transmitted by the low-speed shaft to a combined planetary–helical gearbox, and from there to the generator through a maintenance-free composite coupling.

The turbine is equipped with a four-pole asynchronous generator with a wound rotor, rated at 850 kW, enabling variable-speed operation and precise control of active and reactive power through the OptiSpeed™ (Vestas Converter System). All turbine functions are monitored and controlled by microprocessor-based control units located in the nacelle.

Blade pitch adjustment is performed by a hydraulic system, which also supplies pressure to the braking system. The primary braking system is aerodynamic and is achieved by feathering the blades, while an emergency hydraulic disc brake is mounted on the gearbox high-speed shaft. In emergency conditions, the turbine is stopped by the combined action of aerodynamic and mechanical braking systems.

Yawing is carried out by two electric yaw geared motors driving pinions that engage a toothed yaw ring mounted at the top of the tower. The yaw bearing system is of the sliding type with an integrated clutch, ensuring safe nacelle alignment with the wind direction.

The nacelle is fully enclosed in reinforced fiberglass, providing protection against environmental conditions. Access to the nacelle is provided from the tower through a central opening, and an integrated service crane with a lifting capacity of 250 kg is installed for maintenance and component handling operations.

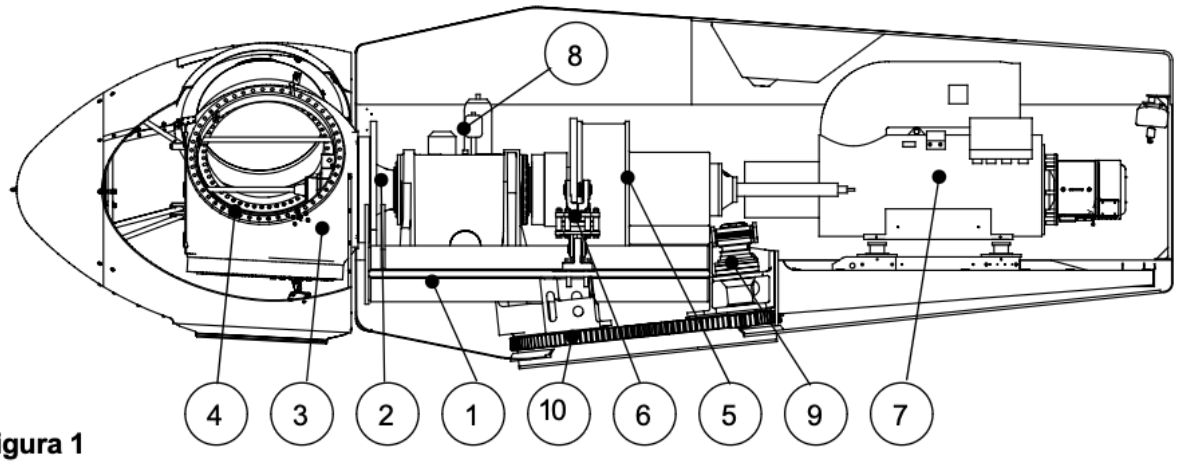

Figura 1

1. Base plate of the nacelle
2. Slow shaft
3. Hub
4. Blade bearing
5. Speed multiplier
6. Gear tie rod
7. Generator
8. Hydraulic power station
9. Shipboard gear motor
10. Shipboard gear wheel

2.2 Technical data

2.2.1 Rotor

Diameter:	52 m
Swept area:	2,124 m²
Rotor speed:	31.4 rpm
Rotation direction:	Clockwise (front view)
Maximum rotor speed:	~31.4 rpm
Tip speed:	~85 m/s
Cut-in wind speed:	4.0 m/s
Rated wind speed:	~14 m/s
Cut-out wind speed:	~25 m/s

2.2.2 Tower

Exact hub height:	50 m
Weight: approx.	77,000 kg
External surface treatment:	
• Sandblasting:	SA 3
• Metallizing:	60 µm Zn
• Primer:	≥ 90 µm
• UV-resistant top coat:	≥ 50 µm
• Corrosion class:	3
Internal surface treatment:	
• Sandblasting:	SA 2.5
• Zinc primer:	≥ 40 µm
• Top coat:	≥ 100 µm
• Corrosion class:	2

2.2.3 Gearbox

Type:	Planetary + helical
Ratio:	1:62

2.2.4 Main Generator (850 kW)

Type:	Asynchronous, variable slip
Rated power:	850 kW
Voltage:	690 VAC
Frequency:	50 Hz
Protection class:	IP54

Number of poles:	4
Speed:	1620 rpm
Rated current:	628 A
Power factor:	0.88 (resultant 0.98)

2.2.5 Weights

Complete nacelle: approx.	22’000 kg
Rotor incl. hub: approx.	10’000 kg

2.3 Power curves – Vestas V52 850kW

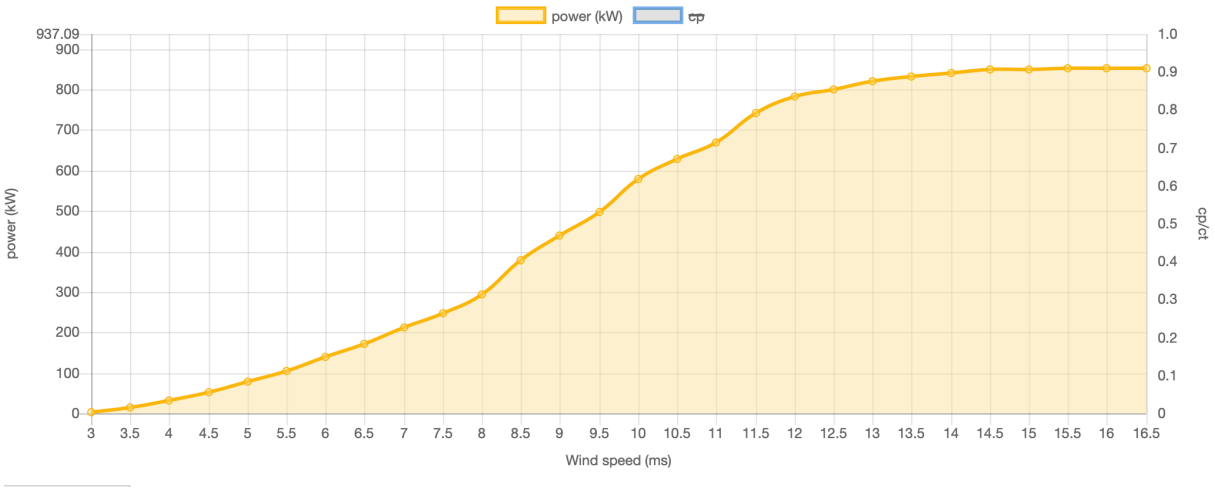

Figure 1: Power curve Vestas V52

3. Storage status

3.1 WTGs

3.1.1 Blades

3.1.2 Drive train

3.1.3 Hub

3.1.4 Nacelle

3.1.5 Towers

4. Scope of Supply

Position	Quantity	Description
1000		**Wind Tubrine**
1001	41	**Wind turbine** • *Manufacturer: Vestas* • *Model: V52 850kW*

Table 1: scope of supply.

4.1 Exclusions

Scope not explicitly listed in the Scope of Supply (Table 1) is excluded.

The following items are explicitly excluded:

Mechanical
Modification of any existing systems not explicitly cited.
Missing parts and components.
Electrical
Modification of existing systems not explicitly cited.
Civil
Land and land preparation and permits
Temporary accesses and final accessing roads
Security plan and hardware
Temporary accommodation
Finishing and fencing
Waste disposal facility

Table 2: exclusions from the Scope of Supply.

Project Management
Attainability of installation, commissioning and operation permits, or any other permit.
Assessment and acceptance of safety relevant issues.

Any study, engineering, documentation, or other service.
Additional works resulting from changes in laws or any other reasons.
Building of Site Facilities of any kind (lights, water supply and treatment, heating, power supply, etc.).
Custom duties and taxes.
Engineering
Feasibility studies, basic, design and detailed engineering of existing equipment.

Table 3: exclusions from scope of Services.

5. Mandatory condition for purchase

The following material may be sold under the following conditions:

The Purchaser declares to accept the Products in the absence of the necessary certifications required by the applicable legislation and technical regulations and declares to be qualified to recondition, recertify and secure the Products for future reuse, or to use qualified parties to recondition, recertify and secure the Products for future reuse if not directly able to carry out the aforementioned activities. Therefore, the Purchaser declares to accept the Products, even if they are working, in conditions of out of service and undertakes to carry out the necessary compliance activities, which are essential for the purposes of any subsequent use. As a result, the Seller is relieved of any type of liability related to the lack of the aforementioned technical certifications.

The Seller also reserves the right to ask the Buyer for evidence of the recertification and compliance of the Products by the Buyer (or by a qualified party used by him, in accordance with the provisions of this clause).

In any case, the Purchaser shall be held liable (i) for the above-mentioned compliance activities, as well as (ii) for any obligation subsequent to this sale, deriving from the autonomous management of the Products in accordance with the regulations applicable to them.