

## First in production, first in profitability

**24 meters**, rotor diameter;  
**452.5 m<sup>2</sup>**, swept area;  
**60 kW**, power generated;  
**240,000 kWh**, energy produced at 6 m/s:  
the best performance in its category  
**365 days a year**.

A small wind turbine with all the characteristics  
of a maxi unit, *Victory 24-60* ensures high  
producibility, even when the wind  
is low, thus **guaranteeing**  
**a safe, durable investment.**

24 m  
60 kW  
240.000 kWh a 6 m/s  
365 gg/anno

**tozzi nord** S.r.l.  
wind turbines

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The company is managed and coordinated  
by TRE S.p.a. Tozzi Renewable Energy

# long live the wind

gruppo tozzi

## tozzi nord

everyone wins

[www.tozzinord.com](http://www.tozzinord.com)

# Victory 24-60

## The supremacy of 100% Italian technology

In the wake of the success of the 10 kW model TN535 (more than 90 installations in Italy and abroad), **with the European launch of the Victory 24-60 - a new 60 kW wind turbine with unique performance - Tozzi Nord has augmented its commitment to small wind.**

Thanks to its aerodynamic properties and a **24 m diameter rotor** that maximizes swept area, the *Victory 24-60* ensures the highest energy production, even when the wind is low; these results are unequaled by any other turbine in its category.

This record - **240,000 kWh at 6 m/s** - is the utmost expression of Italian technology. With winning numbers and truly reliable credentials, *Victory 24-60* ensures superb energy production and thus rapid return on investment.



## Experience and excellence

**Tozzi Nord** is a company within the **Gruppo Tozzi**, one of the first Italian operators to invest in renewable energy and to have produced large-scale wind turbines; today the company can boast installations for more than **387 MW**.

With this solid background and more than 150 met masts in Italy and abroad,

**Tozzi Nord is at the cutting edge of the market for small wind turbines.**

Backed by its strong, integrated production management, with *Victory 24-60* Tozzi Nord has set new benchmarks for 'Made in Italy' excellence.

## An advantageous investment

Shopping and business centers, agritourism sites, farms, industry, small and mid-sized companies, campgrounds, public administrations, rural manufacturing sites: these are the ideal users for *Victory 24-60*. The incomparable performance of *Victory 24-60* guarantees high return on investment for investors and entrepreneurs seeking to upgrade their property.

## High added value service

With *Victory 24-60*, **Tozzi Nord** offers a high quality service package. Our clients are supported by a team of experts who can provide assistance both in financing and in choosing the best turbine installation site. Five years warranty.

## Quality above and beyond the product

**Tozzi Nord** is the first Italian manufacturer of small wind turbines to have its TN535 turbine (10 kW) certified by an accredited body and to install its product even in the UK.

The same path is now being followed for the *Victory 24-60* (60 kW). Designed to meet the IEC61400-1 standard, the certification process for this turbine is currently underway. This process also includes certification of the power curve and noise emissions, thus confirming the turbine's qualitative excellence and guaranteeing the customer a secure investment.

Estimated AEP					
Annual average wind speed (m/s)	4	5	6	7	8
Annual average wind speed (mph)	8.96	11.20	13.44	15.68	17.92
Turbulence index (%)	18.00	18.00	18.00	18.00	18.00
Rated annual energy output (MWh/a)	116,7	181,9	240,6	288,8	325,6

Upwind Victory 24-60 Wind turbine	
Rated power	60 kW
Rotor diameter	24 m - 78.74 ft
Hub height	30 m - 98.72 ft / 22 m - 72.17 ft
IEC Wind class	III A
Rated wind speed	8 m/s - 17.89 mph
Cut-in wind speed	2.5 m/s - 5.59 mph
Cut-out wind speed	20 m/s - 44.73 mph

Rotor	
Type	Upwind
Rotational direction	Clockwise
No. of blades	3
Swept area	452.5 m <sup>2</sup> - 4870.66 ft <sup>2</sup>
Blade material	GRP (epoxy resin)
Rotational speed	Variable: 10-43 rpm
Pitch Control	Tozzi Nord pitch control: hydraulically activated

Drive Train with generator	
Hub	Rigid
Main bearings	Spherical roller bearing
Gearbox	Parallel axis, two stages - ratio 1:20.6
Generator	PMS (Permanent Magnet Synchronous)
Grid feed	AC-DC-AC located at tower base
Grid code	Italy, CEI 0-21; UK, G59/2

Brake System	
Primary brake system	Aerodynamic brake with emergency power supply
Secondary brake system	Slow shaft disc brake with emergency power supply
Yaw	Active via yaw gear

Remote Monitoring Systems	
	Tozzi Nord SCADA System
	Tozzi Nord Real Time Viewer
	Remote Monitoring system for Android (optional)

