

# EUNICE

## products

## EW16 Thetis

The **FIRST** and **ONLY**  
wind turbine  
**MADE IN GREECE**

[www.eunice-group.com](http://www.eunice-group.com)

### Private manufacturing facility in Madra, Attica

- Sophisticated design systems
- Fully equipped vertical production line
- Processes certified according to ISO 9001:2015
- Absolute quality control



## With the expert's accuracy!

Eunice Energy Group is the manufacturer of the first and only Greek wind turbine, the EW16 Thetis, with a nominal power of 50kW. The EW16 Thetis is designed and certified according to the international standard IEC 61400-2 for Class II winds.

The smart and reliable design of the EW16 Thetis results in the creation of a simple, silent, and robust wind turbine. The minimization of moving parts in the design of the turbine means lower construction and maintenance costs, optimal economic performance, and maximization of its lifespan, making it a very attractive and profitable investment.

## EW16 Thetis by Eunice

- ✓ High reliability - tested in the most adverse weather conditions
- ✓ Compliance with EU grid code requirements (with optional further adaptations)
- ✓ AC-DC-AC Converter technology for full control of the grid's powering mode
- ✓ Customized SCADA
- ✓ Can be directly connected to low voltage or any other grid, in terms of requirements and power
- ✓ Low maintenance & extremely low noise levels
- ✓ Ideal for micro grids & smart grids



EW16 THETIS

**High Yields**

**Ultimate safety**

**50kW**

Rated  
Power

**22m**

Tower hub  
height

**16m**

Rotor  
diameter

**200m<sup>2</sup>**

Swept  
area

### Technical Advantages

The technical benefits of this wind turbine start with its physical dimensions. Thanks to the tower hub height of 22m and a swept area of 200m<sup>2</sup>, the EW16 Thetis achieves a high output and production. The gearless direct drive system and the aerodynamic design of the blades result in practically zero noise emission levels.

This allows installation as near as 250 meters from settlements and facilities. Moreover, the blades have a fixed angle of incidence, are made of glass fiber-reinforced composite, and are equipped with enhanced lightning protection.

### Permanent Magnet Synchronous Generator (PMSG)

The state-of-the-art variable-speed permanent magnet synchronous generator (PMSG) and the inclusion of a full power converter allow production at peak level and control of active and reactive power, while thanks to its filters, no harmonics are injected into the grid. The electrical power conversion system delivers 3-phase 400~1000V/50~60Hz AC power directly to a low voltage grid or battery. Operation control and communication with the wind turbine are achieved with PLC systems, special SCADA systems, and state-of-the-art protocols.

### Control and Safety System

The control system monitors in real time all the operating parameters of the wind turbine, ensuring safe and uninterrupted operation.

The entire control system (PLC control system and IGBT based PWM converter) is located inside the main cabin. A number of sensors alert the central PLC control system in real time, with very short response.

The wind turbine is controlled by both electrical and mechanical brakes.

The EW16 Thetis has 4 brakes, including one fail-safe class brake for the most adverse weather conditions. Even in the case of grid loss, the wind turbine remains safe.

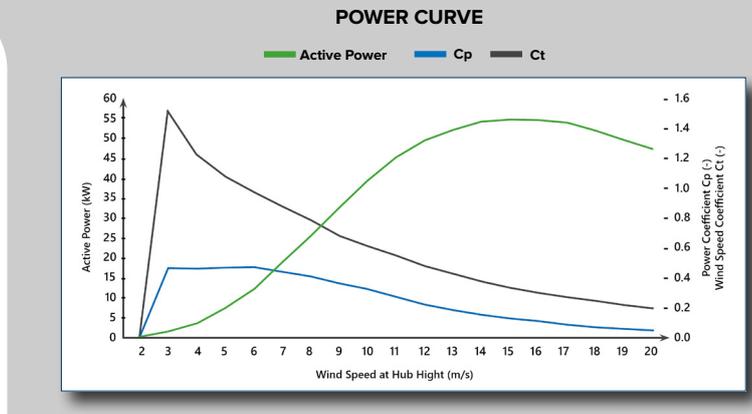
### Certifications



EW16 Thetis

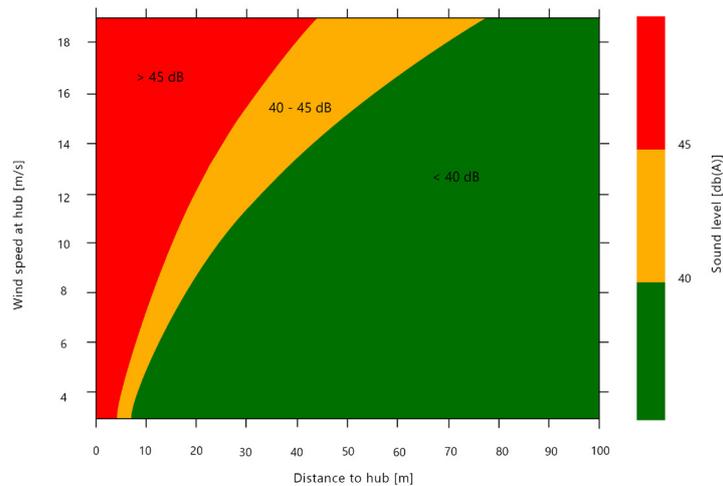
## Top Level Design

### Reduced noise levels



### Noise Levels.

The following graph shows the gradation for LpA noise levels emissions from the EW16 Thetis small wind turbine towards the surrounding area, as a function of the wind speed and the distance from the axis (hub).



LpA noise levels around the EW16 Thetis.

Wind speed at axis height (m/s)	18	58	51	48	45	44	42	41	39	38	38
	15	54	48	45	42	40	39	38	36	35	34
	12	51	45	42	39	37	36	34	33	32	31
	9	47	41	38	35	33	32	30	29	28	27
	6	43	37	33	31	29	27	26	25	24	23
	3	38	32	28	26	24	22	21	20	19	18
LpA	10	20	30	40	50	60	70	80	90	100	
		Distance (m)									



#### — MODERN TECHNOLOGY IN WIND ENERGY

# Investing in clean energy production

#### — FINANCIAL VIABILITY

## Secure Investments.

The installation of small wind turbines for the injection of generated electrical power into the grid is an extremely lucrative investment.

According to the regulatory framework, the investor obtains a twenty-year contract for the sale of electricity at a price of 157 euros per MWh, without the imposition of the municipal tax of 6.5 euros/MWh that applies to other forms of renewables.

Provided that the wind speeds at the installation site are satisfactory, the expected project IRR exceeds 8.5% with an average net annual cash flow of over 21,000 euros, achieving very satisfactory recovery times of the invested capital.

Even with financing according to the usual banking criteria, the return on equity is excellent, exceeding 18%, achieving average net cash flows of over 11,000 euros per year.

## EUNICE

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#### — EW16 Thetis

## Product Features

Manufacturer: Eunice Wind  
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Design standard	IEC 61400-2
Rated power	50kW
Hub height	22,03m
Number of blades	3
Rotor diameter	15,96m
IEC Wind class	II
Extreme wind speed at hub height (10-minute mean)	42,5m/s
50 – year gust	59,5m/s
Annual average wind speed at hub height	8,5m/s
Rated wind speed	12m/s
Cut-in wind speed	3m/s
Cut-out wind speed	20m/s
Power density	250W/m <sup>2</sup>
Ambient temperature range (IEC 61400-2)	-10°C to +40°C
Rated voltage	400 V/3-phase
Power factor	0.9 – 1.0 capacitive and inductive, remotely adjustable
Rated frequency	50Hz