

ENEL-FIAT 50 KW WIND TURBINE GENERATOR

Generator features

The wind machine has been designed in order to cope with the light-to-moderate wind conditions, with due allowance for the continuous and safe operation of the plant even in extreme meteorological conditions often to be expected during winters.

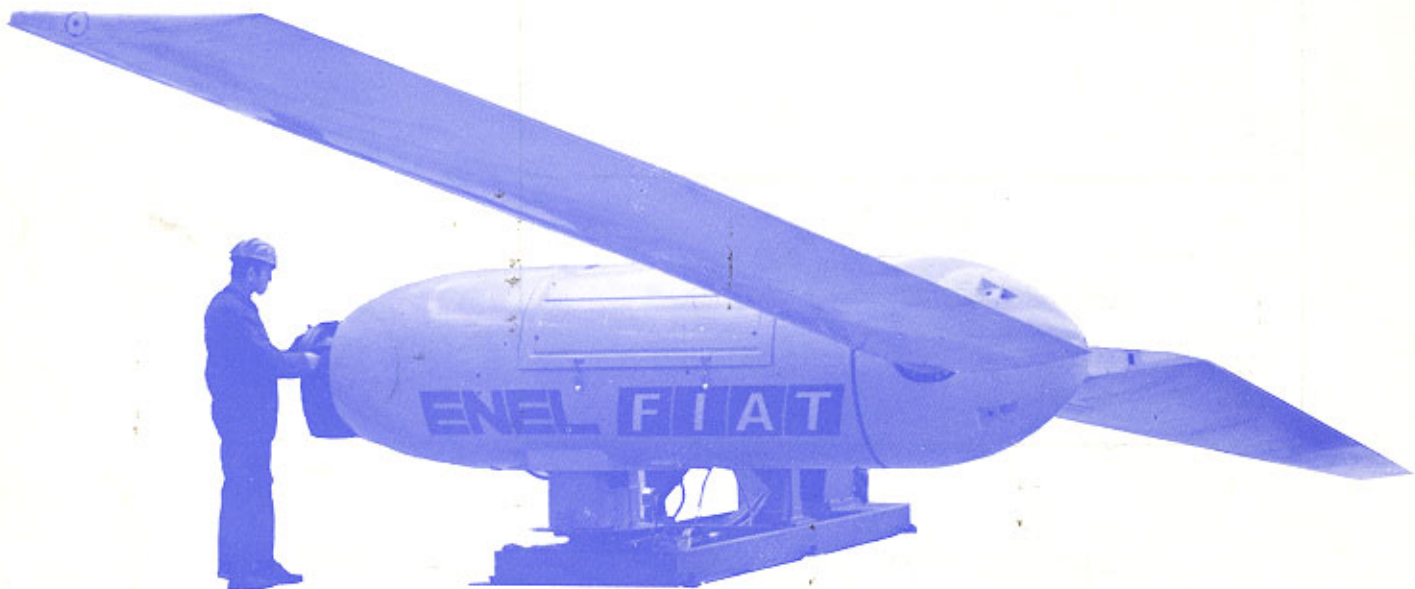
The rotor runs at nearly constant r.p.m. for wind speeds above rated speed (11.3 m/s), the blade pitch being controlled by means of a hydro-mechanical irreversible system incorporating a centrifugal governor. A remotely-activated by-pass electro-valve allows for the immediate shut-down of the unit, at the maximum wind speed, by means of the full feathering of the rotor blades.

Between 5 and 11.3 m/s wind speeds the rotor operates at fixed pitch and slightly increasing r.p.m., in accordance with the mechanical characteristics of the induction generator, which is driven through a speed increasing gear-box. Once stationary, the rotor is locked by means of a parking brake.

The unit has been designed to yaw freely into the wind.

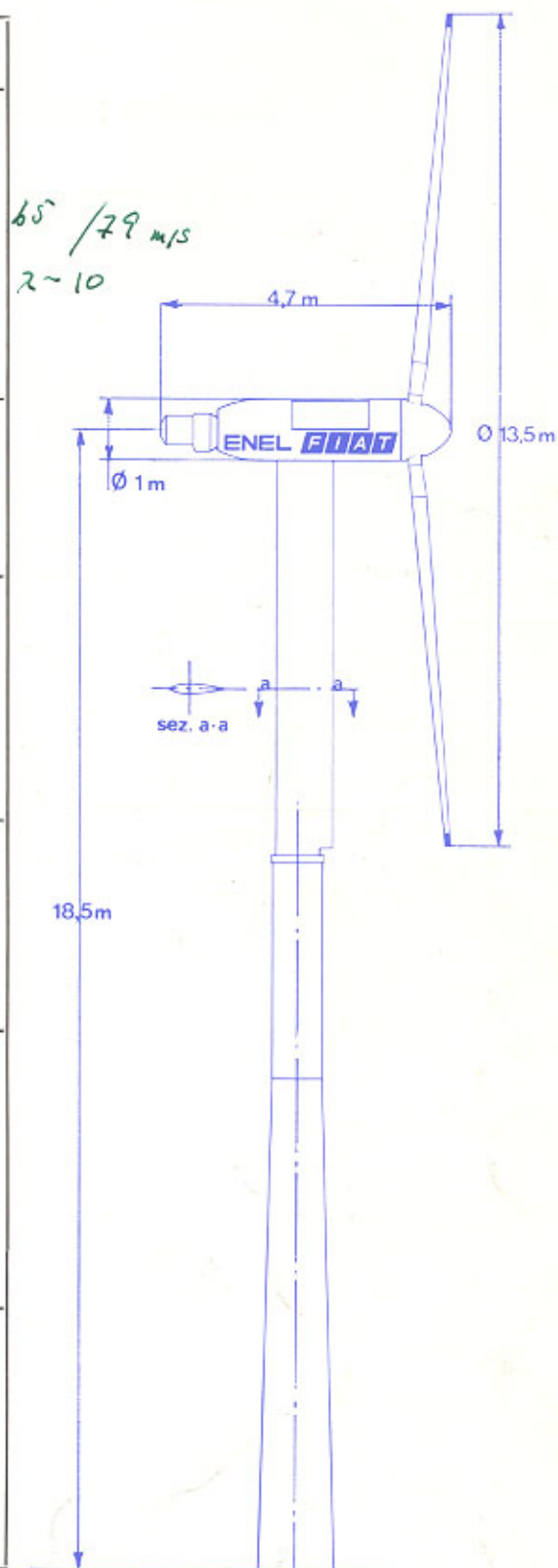
The ENEL-FIAT 50 kW wind turbine generator is the result of the cooperation between three firms of FIAT Group (S.E.S., FIAT Aviazione and FIAT TTG) and ENEL (the Italian National Electricity Board).

A group of 10 wind generators for a total installed power of 500 kW is being set up in the north of the island of Sardinia within 1982. Besides, a prototype generator with three blades is already operating in the South of the same island.



Enel-Fiat 50 Kw wind turbine generator

SPECIFICATIONS	
Rotor	
Number of blades	2
Diameter	13.5 m
Speed	92 or 112 r.p.m.
Location, relative to tower	downwind
* Type of hub	teetering ($\pm 4^\circ$), with elastic restraint
* Method of power regulation	variable pitch
Blade	
Material	fiberglass/steel
Weight/total (1 blade)	200 kg
Airfoil	NACA 44 XX
Tower	
Type	cantilever cylindrical shell, flared root
Height	17.5 m
Material	steel
Foundation	reinforced concrete
Generator	
Type	induction
Rating	55 kW
Voltage	380 V $\pm 10\%$
Frequency	50 Hz ± 1.5
Performance	
Rated Power	50 kW
Wind speed at hub height (18.5 m)	
- Cut-in	5 m/s
- Rated	11.7 m/s
- Cut out	35 m/s max
- Maximum design (survival)	70 m/s
Weight	
Rotor complete	700 kg
Nacelle (incl generator, gearbox and shafts)	1,300 kg
Tower	2,000 kg
Total (on foundation)	4,000 kg



For information apply to :

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