



Best Wind Technology
For
Highest Performances



Optimized 5 m rotor diameter
**Aerodynamic winglet design(High efficiency /
low noise)**
6.0 KW direct drive PM generator
Overspeed attitude control actuator
Fully sealed design
DC standalone, AC grid application

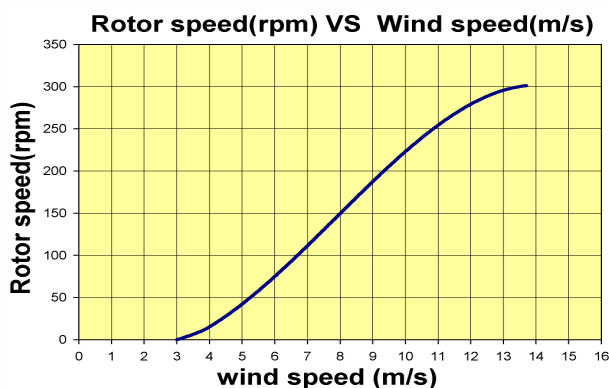


ITRI's technology integrates all necessary features to achieve the best possible energy yield out of wind, this especially in the prevalent low and medium wind speed conditions.

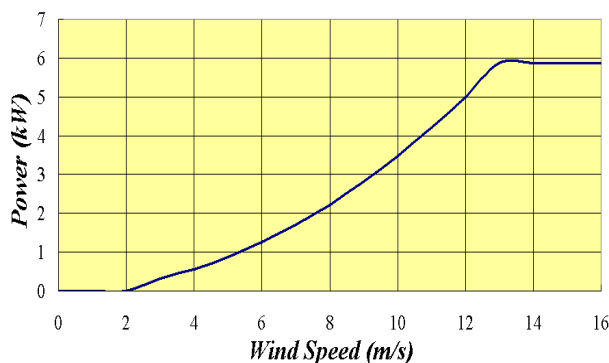
While operating above up limit speed, our wind turbine has overspeed attitude control actuator to control the rotational speed of the wind turbine within the safety range. Overspeed attitude control actuator reduce the possibility that the blade of the wind turbine and generator are damaged.

The permanent magnetism type three-phase generator is connected to our wind turbine and transport electric power to a specific AC/DC/AC inverter delivering best quality power in case of grid connection, which is 110v to 240v of family specification. Better than other competitors, our inverter, through the special design, can accept wide input voltage range from 60 volts to 380 volts, operating from the low wind speed to high wind speed.

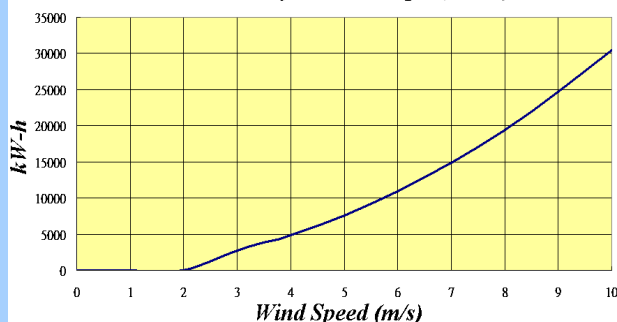
Last but not least, Intro's WT is designed and realized without compromise, using state of the art components and according to IEC 61400-2 design rules (IEC 61400-1 for class II maximum wind speed).



Flowtech 6 kW Wind Turbine



Estimated Yearly Power Output(kW-h)



ITRI's wind turbine is characterized by a very high efficiency in the lower to medium wind speed range which is prevailing most of the time (>80%). This is achieved by the conjunction of an optimized 3 blades rotor, efficient gear speeding PM generator combined with overspeed attitude control actuator to extend operating range for high speed wind.

At high wind speeds, the WT continue to operate at its nominal output, the overspeed being controlled by the overspeed attitude control actuator.

These unique features make the ITRI unit the most powerful WT of its class.

The high availability of ITRI's WT power production makes it a reliable source of cost effective renewable energy throughout the years and weather condition.

Its superior low/medium wind performances opens new possibilities for the application of medium size wind power in distributed power production with minimal environmental impact.

The various available configurations of the ITRI's WT respond to a very wide range of applications as battery charging, stand-alone AC distribution, island AC grid, public grid intertie, water pumping. It figures as a real alternative or complement to photovoltaic or diesel generation.

Unlike most of its competitors, ITRI's WT rotation speed is always under control of both electronics and overspeed attitude control actuator.

Due to that uncompromising design, maximum rotation speed is limited to 300rpm, involving a maximum tip speed of 79m/s. That's one of the key to get a quiet running in the entire wind range, low noise, low blade wearing, low mechanical stress.

ITRI 5_5 performances and specifications

Performances

Rated output power :5.0 kW @ 12m/s ; 6.0kW @ above 13m/s

Cut in wind speed :3.0 m/s

Cut out wind speed :None

Survival wind speed : 60 m/s (design according to IEC61400-1, class II wind site)

Rotor

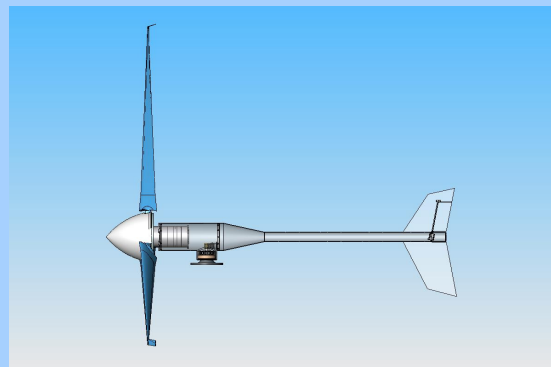
Diameter/swept area : 5 m /19.6 m²

Blades : 3 fiberglass blades, aluminum root insert

Rotational speed :50 to 300 rpm, variable speed

Power regulation : overspeed attitude control
actuator

Overspeed control: overspeed attitude control
actuator



Generator

Type : synchronous multiple poles
Permanent magnets

Rated output power : 5 KW at 275 rpm

Protection :Totally enclosed, fully sealed

Cooling : Passive air flow

Miscellaneous

Yawing system : Passive, upwind tail(sealed slewing ring),electric rotating collector

Power regulation : overspeed attitude control actuator, electronic optimal power point tracking

Overspeed control : overspeed attitude control actuator

Brake: overspeed attitude control actuator in the tail fin(lower blade rotation speed), operational on full wind speed range(0 to 60 m/s)

Weight : 200 kg(complete nacelle with rotor and generator)

Towers :16 –20 m standard guyed tilt-up or stand alone towers(steel tube, and paint)

Battery charger : 16 battery bank, 5KW nominal output, Supply the electricity for 3 hours, low voltage and over voltage protection for optimal battery charging and lifetime.

Grid inverter : 5 KW nominal output grid inverter with optimal power point tracking.
(110~240V / 50 or 60 Hz , Accord with various kinds of power consuming specification demands)

Maintenance : Annual inspection



5kW Hybrid Grid Inverter

ITRI's 5KW Wind Turbin Grid Inverter	SPEC
Connection 1 – WT Generator input	
Input voltage range (3phases input)	70V to 280V
Input voltage frequency	10 to 90 Hz
Maximum input current (continuous)	12.5A/280Vdc
Maximum input power (continuous)	6000W
Optional Power	
DC Input (Solar pannel)	160Vdc ~ 400Vdc
AC Input (Desel engine / CPC Solar)	120 ~ 244V/48~62Hz
Measurements and display	Generator voltage/Current/Power/Frequency/PF
GRID Source	By pass, AC Source
Connection 2 - 192 V Battery bank	
Nominal battery voltage	192Vdc
Battery voltage range	160Vdc~256Vdc
Maximum charging power (continuous)	215Vdc*5=1075
Maximum charging current (continuous)	5A@192Vdc
Connection 3 – Grid connect	
Output type	AC Single phase
Output Voltage (master mode)	100/110/120/220/230/240 $\pm 1\%$
Output Frequency (master mode)	50 or 60Hz $\pm 0.10\%$
Output Voltage (slave mode)	220Vac
Output Frequency (slave mode)	48 to 62Hz
Total harmonic distortion	<3%
Maximum output power (continuous)	6.25 KVA
Maximum output power 20s	7.2 KVA
Maximum output current (continuous)230V	22A