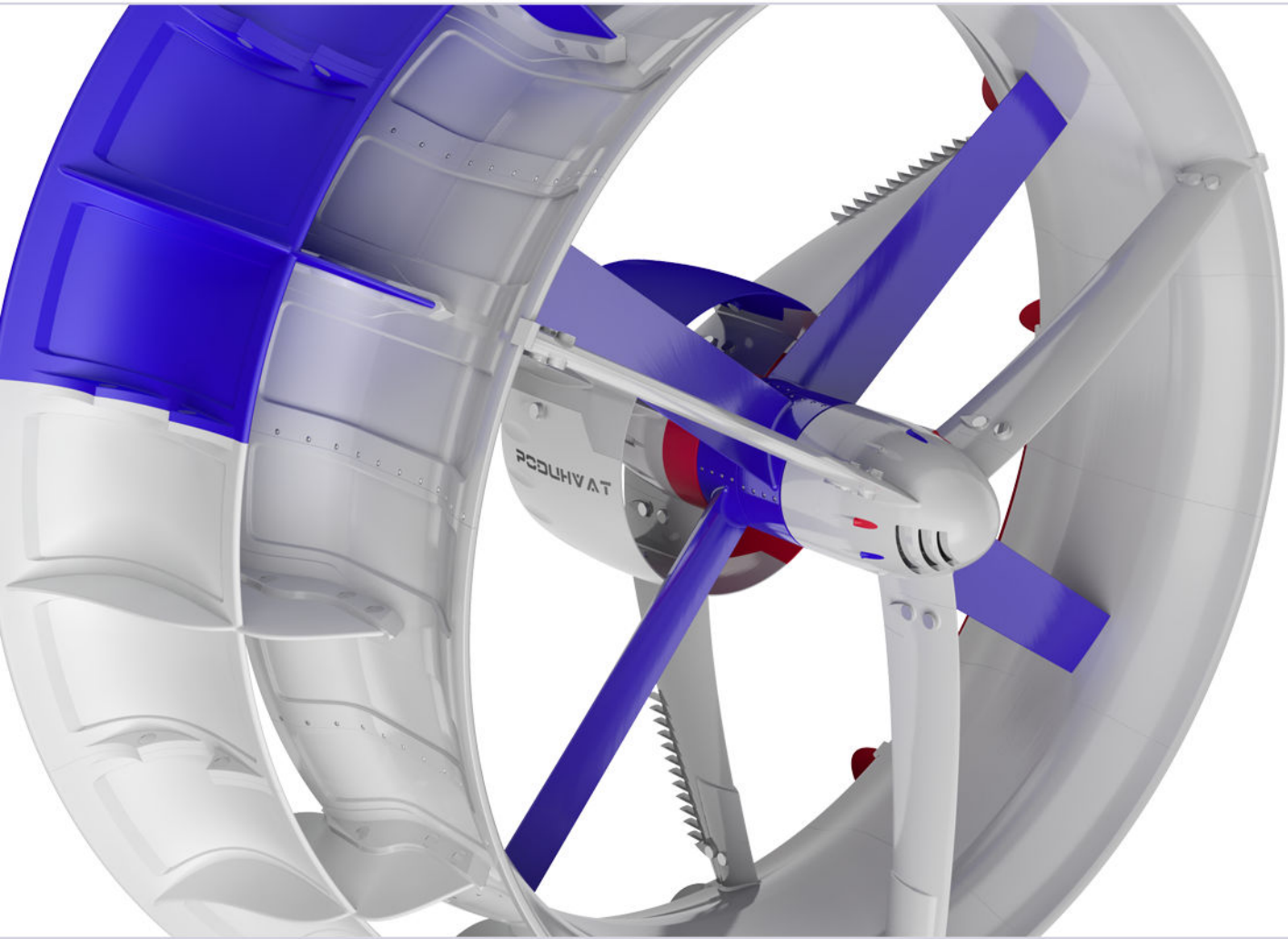


VETAR 15

ADVANCED HIGH ENERGY YIELD WIND TURBINE



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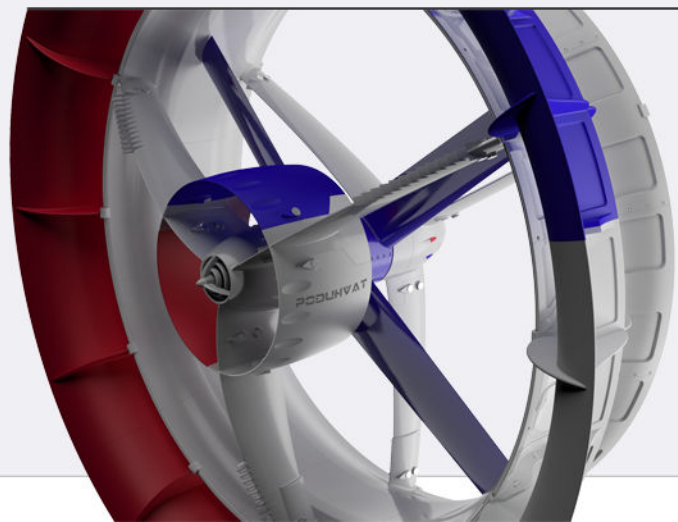
Vetar 15 is a larger than Vetar 10 wind turbine which makes it more suitable for areas with lower wind velocities. Vetar 15 is a new, highly advanced, high energy yield, birds friendly, low noise and low vibration concept of HAWT.

New features which make Vetar 15 couple of times more productive than conventional HAWTs are:

1. Advanced aerodynamics with 1.5 times air acceleration capability.
2. Two highly efficient contra rotating rotors with efficiency up to 55.5% connected with two independent PM electro-generators.
3. Turbulence and thermal control system (TTCS) which can reduce turbulent losses up to 10%.

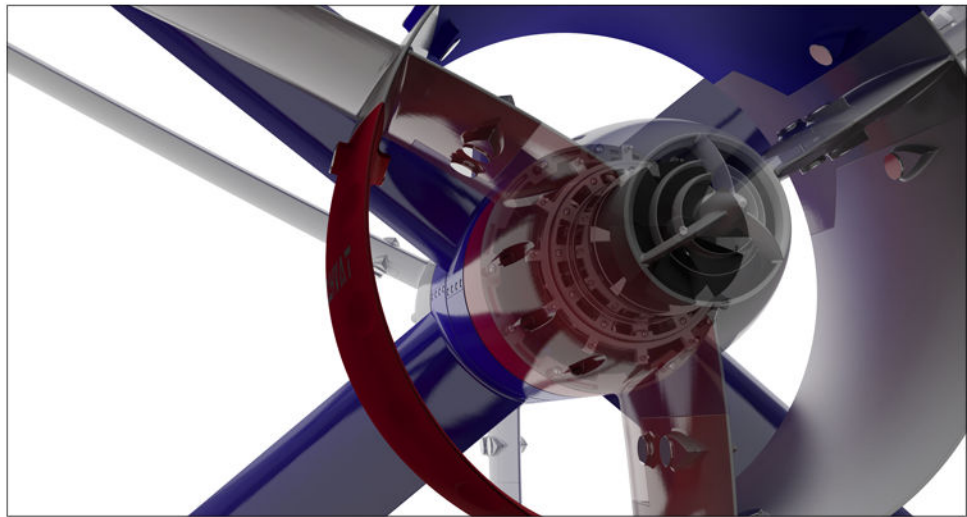
TTCS is consisted of specially designed turbulence control ring, specially shaped and distributed electro-generator housing supporters and turbulent separation control canards.

Thermal control segment is highly effective cooling system which include additional inner blades inside main rotors, as well as additional rotors inside electro-generators housings for air circulation, pressurization and ejection of heated air at the back of second electro-generator housing for additional turbulence control.



VETAR 15

ADVANCED HIGH ENERGY YIELD WIND TURBINE - Technical



2 x V-GEN 7.5 (7.5 kW) electro generator

Technical data	
Rated power wind	10 kW @ 12.5 m/s
Max power wind	15 kW @ 14.5 m/s
Turbine design standard	AWEA, MCS, IEC - 61400-2, Wind class 1
Start-up wind velocity	1.5 m/s
Cut-in wind velocity	3 m/s
Cut-out wind velocity	50 m/s
Survival wind velocity	75 m/s
Rotor diameter	2.5 m
Highest diameter	3.62 m
Rated power rotation frequency per rotor	2 x 9 Hz (540 RPM)
Max power rotation frequency per rotor	2 x 9.6 Hz (576 RPM)
Each generator voltage	550 V AC @ 576 RPM
Each generator type	V-GEN 7.5, PM, out-runner
Grid feeding	400 V, 50 Hz, 3 phase 3W or 4W + PE
Turbine controller	Aurora Wind Interface 15 kW
Inverter	Aurora Trio 20 kW
Yaw Controller	Active
Rotor rotation controller	Active yaw
Breaking system	Resistors braking, Electromagnetic brakes
Remote monitoring	Aurora Interface monitoring system, LAN, wireless/GPRS/3G
Interface	Graphic - Display
Designed life span	> 20 Years
Tower	Free standing
Turbine mass	760 kg
Acoustic emission	< 35 dB
Warranty	5 years

