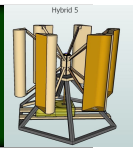


Greenenergy

Hybrid



The **HYBRID** VAWTS are the most powerful Windmills ever made (56 % Betz rentability !!!!)

All tests are available : effrpm / efftsr / forces / power / smpower / smpowerrpm / smpowertsr / torques / videos (example on page 2)

The **HYBRID** is the first vertical windmill, which has surpassed the HAWT rentability.

The **HYBRID** is the only windmill with such high rentability even at ground level. (cP 0,53 at 3 m/sec and cP 0,56 at 6 m/se

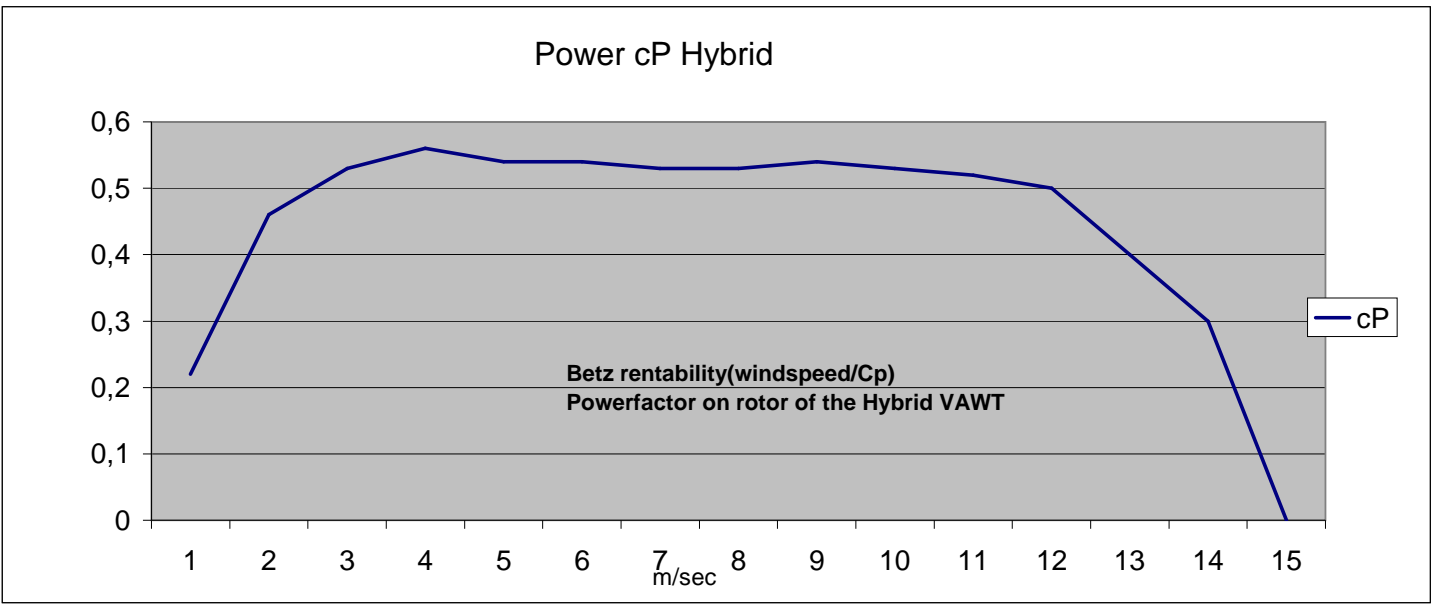
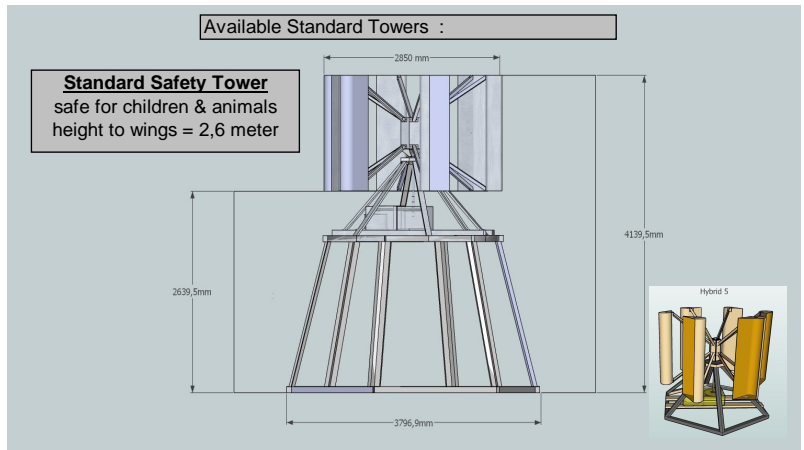
The **HYBRID** uses **MVC Technology®** (Multiple Vortex Compression Technology) invented by the Belgian engineer A. Erauw

Advantages:

- Short term ROI (return on investment)
- Suitable for open area & industry
- Incredible Life Expectancy .> 40 years !!
- 100 % Stainless Steel construction (INOX)
- Usable at ground level & industrial building
- Ultra Low Wind speed usage
- Works in ALL winds from any direction (even turbulent)
- Very wide wind speed range (2 to 13,5 m/sec)
- NO NOISE
- NO light reflection
- SAFE : no danger of "stampede"
- Favorable Ecological Footprint (raw materials)

Disadvantages:

- Less suitable for urban area (optical pollution)



The PERFECT windmill (in Betz theory) should be able to produce Betz 58/59%. But this has never been achieved and probably never will.

The **HYBRID** is the only wind generator with performances(56%) so near the **utopian maximum Betz** rentability

Our turbines have the advantages, producing no sound and no resonance vibrations (on buildings and houses).

They avoid optical pollution (reflections).

They are SAFE (no risk of degrading and fly-away wing blades etc)

and..most important.. they are MAINTENANCE FREE!

The **HYBRID** does not kill birds.

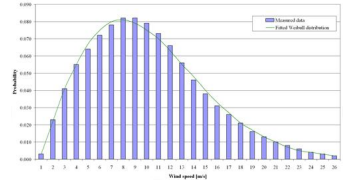
The life expectancy is estimated 3 x longer than HAWTs.(+40 years) due to the Stainless steel construction,

Our Technology (**MVC Technology®**) is based on "turbulence impact", "mass compression",

"vacuum suction", "vortex attack", "dragacceleration" & "lift overtake momentum"

The exact synchronization and combination of these 5 above kinetic phenomena makes our turbine so unique performing. (kinetic synchronization)

performances (Weibull) explanation



As **nobody** in the world can tell exactly how much year power can be expected from a wind generator

We made a Weibull Wind Distribution for the **HYBRID**.

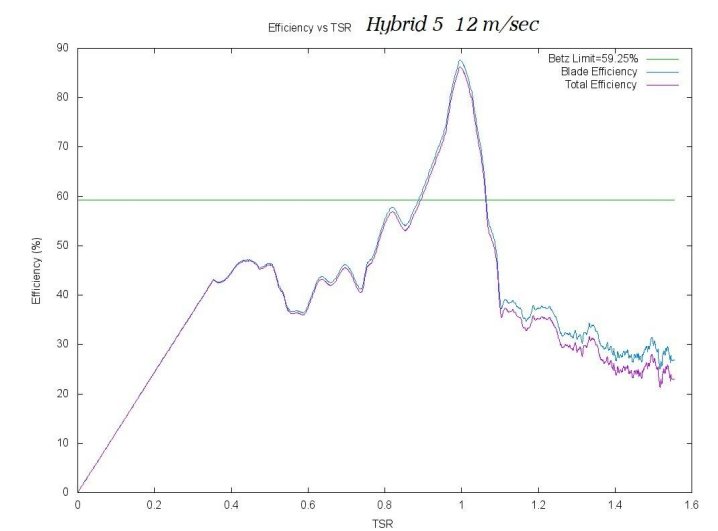
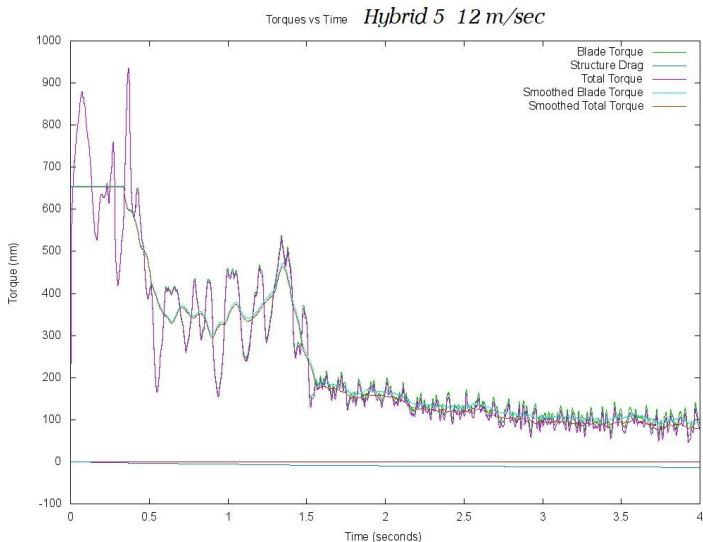
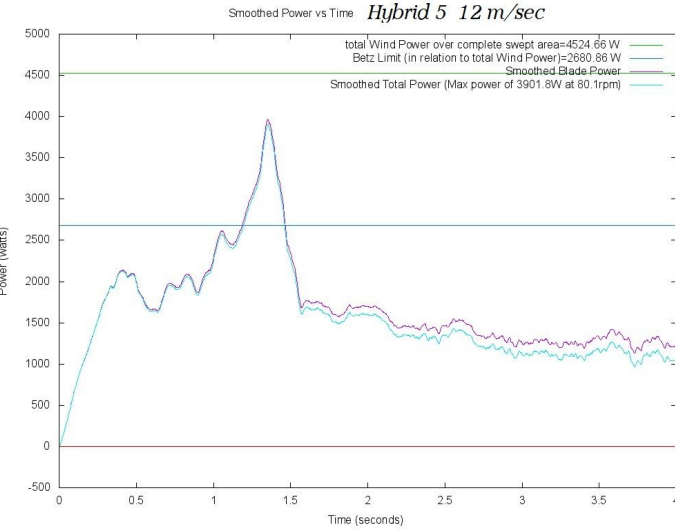
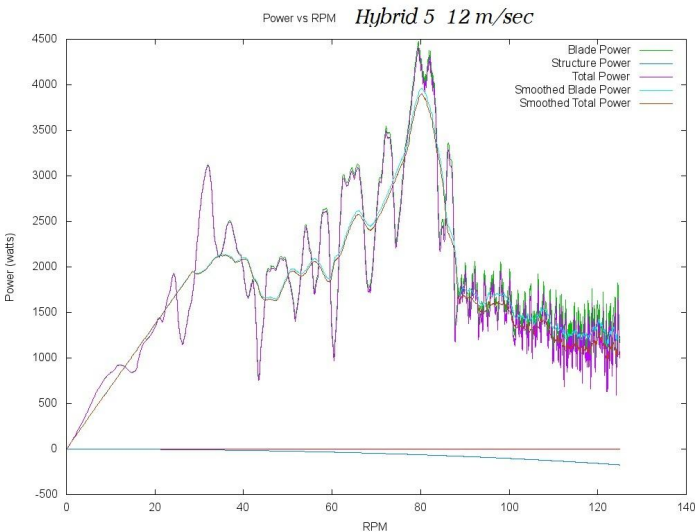
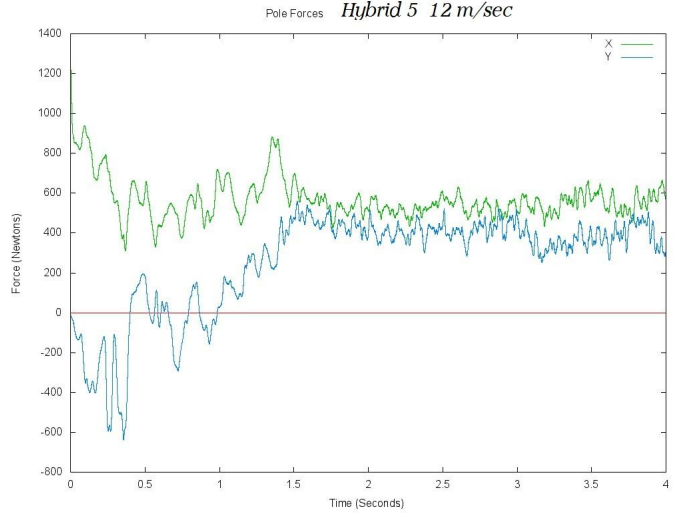
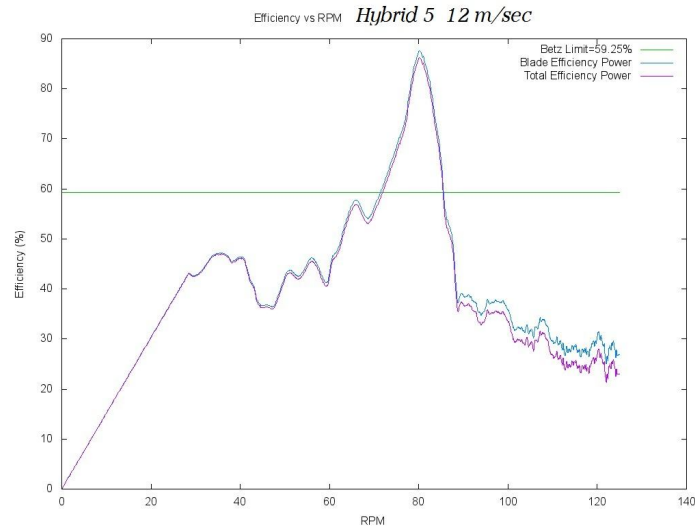
Weibull Wind Distribution - in most of the world - can be modeled using the Weibull Distribution.

This statistical tool tells us how often winds of different speeds will be seen at a location with a certain average (mean) wind speed.

Knowing this, it helps us to choose a wind turbine with the optimal cut-in speed (the wind speed at which the turbine starts to generate power) cP powercoeff and the cut-out speed.(the speed at which the turbine hits the limit of the windgenerator and can no longer put out increased power)

Based on hundreds of "live" tests on the **HYBRID**, we made the most common Weibull Distributions for you (it will fit for any global position:min-max)

Don't be surprised if you will see very high performances on the test graphics of **Hybrid 5** (breaking Betz law !! at 80 RPM and a performance of 3.901,8 Watt !!) But don't dream...this only a **MOMENTUM** !!! (we "**smoothed**" the power to 2261,4 Watt, to avoid any disillusionment)



HYBRID 3

HYBRID 3 Technical specifications	
Sweptarea	1,5 m ²
wings	6 pcs
Rotor diameter	988 mm
Blade height	1500 mm
Total height	2000 mm
Material	100 % stainless steel (INOX)
Weight	95 kg
Permanent Magnet Generator	1 kW (max 1,5 kW)
Output Voltage	0-500 AC 3 phase
Output Voltage rectified	0-500 DC 2 phase
Cut-in speed	2 m/sec
Cut-out speed	18 m/sec
Survival speed	50 m/sec
Certification	IEC 55022 – IEC 61000
Export Price 1 pc	
Export Price Dealer	on demand

Hybrid 3 Performances					Weibull distribution	
					performances	
m/sec	miles/h	km/hour	Cp	Instant Wh	kWh /year	
1	2,3	3,6	0,22	0		NO ROI (return on investment)
2	4,5	7,2	0,46	4	107-688	NO ROI (return on investment)
3	6,7	10,7	0,53	15	187-980	NO ROI (return on investment)
4	9,0	14,3	0,56	38	470-1992	Most common global wind speeds
5	11,2	17,9	0,54	71	915-2993	Most common global wind speeds
6	13,5	21,5	0,54	123	1576-3901	Most common global wind speeds
7	15,7	25,0	0,53	190	2496-4662	Most common global wind speeds
8	17,9	28,6	0,53	284	3717-4983	Most common global wind speeds
9	20,2	32,2	0,54	413	4983-5434	Exeptional windspeeds
10	22,4	35,8	0,53	555	5769-6732	Exeptional windspeeds
11	24,6	39,4	0,52	724	6012-8665	Exeptional windspeeds
12	26,9	43,0	0,5	904	6183-10623	Exeptional windspeeds

HYBRID 5

HYBRID 5 Technical specifications	
Sweptarea	4.22m ²
wings	6 pcs
Rotor diameter	2850 mm
Blade height	1500 mm
Total height	2600 mm
Material	100 % stainless steel (INOX)
Weight	214 kg
Permanent Magnet Generator	3,5 kW (max 5 kW)
Output Voltage	0-500 AC 3 phase
Output Voltage rectified	0-500 DC 2 phase
Cut-in speed	1 m/sec
Cut-out speed	14 m/sec
Survival speed	50 m/sec
Certification	IEC 55022 – IEC 61000
Export Price 1 pc	
Export Price Dealer	on demand

Hybrid 5 Performances

					performances	
m/sec	miles/h	km/hour	Cp	Instant Wh	kWh /year	
1	2,3	3,6	0,22	1		NO ROI (return on investment)
2	4,5	7,2	0,46	10	107-688	NO ROI (return on investment)
3	6,7	10,7	0,53	37	478-2196	Most common global wind speeds
4	9,0	14,3	0,56	94	1203-4114	Most common global wind speeds
5	11,2	17,9	0,54	177	2259-5621	Most common global wind speeds
6	13,5	21,5	0,54	307	3890-7025	Most common global wind speeds
7	15,7	25,0	0,53	475	6024-7992	Most common global wind speeds
8	17,9	28,6	0,53	710	8787-8830	Most common global wind speeds
9	20,2	32,2	0,54	1.032	9625-12081	Exeptional windspeeds
10	22,4	35,8	0,53	1.388	9886-14912	Exeptional windspeeds
11	24,6	39,4	0,52	1.809	9993-17377	Exeptional windspeeds
12	26,9	43,0	0,5	2.261	9787-18968	Exeptional windspeeds

HYBRID 15**HYBRID 15 Technical specifications**

Sweptarea	12 m ²
wings	6 pcs
Rotor diameter	4100 mm
Blade height	3000 mm
Total height	4400 mm
Material	100 % stainless steel (INOX)
Weight	460 kg
Permanent Magnet Generator	2x 3,5 kW (max 10 kW)
Output Voltage	0-600 AC 3 phase
Output Voltage rectified	0-600 DC 2 phase
Cut-in speed	1 m/sec
Cut-out speed	14 m/sec
Survival speed	50 m/sec
Certification	IEC 55022 – IEC 61000
Export Price 1 pc	
Export Price Dealer	on demand

Hybrid 15 performances

					performances	
m/sec	miles/h	km/hour	Cp	Instant Wh	kWh /year	
1	2,3	3,6	0,22	2	-	NO ROI (return on investment)
2	4,5	7,2	0,46	28	304 – 429	NO ROI (return on investment)
3	6,7	10,7	0,53	105	1359 – 1797	Most common global wind speeds
4	9,0	14,3	0,56	267	3420 – 11696	Most common global wind speeds
5	11,2	17,9	0,54	503	6422 – 15981	Most common global wind speeds
6	13,5	21,5	0,54	873	11059 – 19972	Most common global wind speeds
7	15,7	25,0	0,53	1.350	17126 – 22721	Most common global wind speeds
8	17,9	28,6	0,53	2.019	24981 – 25104	Most common global wind speeds
9	20,2	32,2	0,54	2.934	27364 – 34346	Exeptional windspeeds
10	22,4	35,8	0,53	3.946	28106 – 42395	Exeptional windspeeds
11	24,6	39,4	0,52	5.143	28410 – 49403	Exeptional windspeeds
12	26,9	43,0	0,5	6.428	27824 - 53926	Exeptional windspeeds

HYBRID 30**HYBRID 30 Technical specifications**

Sweptarea	24 m ²
wings	6 pcs
Rotor diameter	5980 mm
Blade height	4000 mm
Total height	5600 mm
Material	100 % stainless steel (INOX)
Weight	835 kg
Permanent Magnet Generator	2x 7,5 kW (max 20 kW)
Output Voltage	0-600 AC 3 phase
Output Voltage rectified	0-600 DC 2 phase
Cut-in speed	1 m/sec
Cut-out speed	14 m/sec
Survival speed	50 m/sec
Certification	IEC 55022 – IEC 61000
Export Price 1 pc	
Export Price Dealer	on demand

HYBRID 30 Performances**performances**

m/sec	miles/h	km/hour	Cp	Instant Wh	kWh /year	
1	2,3	3,6	0,22	3	-	NO ROI (return on investment)
2	4,5	7,2	0,46	56	608 – 3912	NO ROI (return on investment)
3	6,7	10,7	0,53	210	2718 – 12486	Most common global wind speeds
4	9,0	14,3	0,56	534	6840 – 23392	Most common global wind speeds
5	11,2	17,9	0,54	1.006	12845 – 31961	Most common global wind speeds
6	13,5	21,5	0,54	1.746	22119 – 39944	Most common global wind speeds
7	15,7	25,0	0,53	2.701	34252 – 45443	Most common global wind speeds
8	17,9	28,6	0,53	4.037	49963 – 50207	Most common global wind speeds
9	20,2	32,2	0,54	5.868	54728 – 68693	Exeptional windspeeds
10	22,4	35,8	0,53	7.892	56212 – 84790	Exeptional windspeeds
11	24,6	39,4	0,52	10.286	56820 – 98806	Exeptional windspeeds
12	26,9	43,0	0,5	12.856	55649 – 107852	Exeptional windspeeds

HYBRID 50**HYBRID 50 Technical specifications**

Sweptarea	36 m ²
wings	6 pcs
Rotor diameter	8977 mm
Blade height	4000 mm
Total height	5600 mm
Material	100 % stainless steel (INOX)
Weight	1480 kg
Permanent Magnet Generator	2x 10 kW (max 30 kW)
Output Voltage	0-600 AC 3 phase
Output Voltage rectified	0-600 DC 2 phase
Cut-in speed	1 m/sec
Cut-out speed	14 m/sec
Survival speed	50 m/sec
Certification	IEC 55022 – IEC 61000
Export Price 1 pc	
Export Price Dealer	on demand

HYBRID 50 performances**performances**

m/sec	miles/h	km/hour	Cp	Instant Wh	kWh /year	
1	2,3	3,6	0,22	5	-	NO ROI (return on investment)
2	4,5	7,2	0,46	84	913 – 5868	NO ROI (return on investment)
3	6,7	10,7	0,53	316	4077 – 18730	Most common global wind speeds
4	9,0	14,3	0,56	802	10260 – 35088	Most common global wind speeds
5	11,2	17,9	0,54	1.510	19267 – 47942	Most common global wind speeds
6	13,5	21,5	0,54	2.618	33178 – 59916	Most common global wind speeds
7	15,7	25,0	0,53	4.051	51379 – 68164	Most common global wind speeds
8	17,9	28,6	0,53	6.056	74944 – 75311	Most common global wind speeds
9	20,2	32,2	0,54	8.802	82092 – 103039	Exeptional windspeeds
10	22,4	35,8	0,53	11.838	84318 – 127184	Exeptional windspeeds
11	24,6	39,4	0,52	15.429	85230 – 148208	Exeptional windspeeds
12	26,9	43,0	0,5	19.284	83473 - 161778	Exeptional windspeeds