ENGLISH

PRODUCT PORTFOLIO

Leitwind

A RANGE OF PRODUCTS TO MEET EVERY *need*

We believe in decentralised power generation close to end consumers and accessible to any kind of investor, in order to build a widespread power grid connected with other renewable energy sources.

LEITWIND, **the only Italian manufacturer of megawatt-class wind turbines** specializes in the development of single-turbine projects (feed-in, self-consumption) and small wind parks.

The **LEITWIND** portfolio offers a wide range of **products from 250 kW to 3,000 kW**, designed with the aim of providing an efficient and reliable solution to meet every need.

Alongside the production of wind turbines, **LEITWIND offers full-service O&M contracts** to ensure quality, safety and profitability of each project.

LTW42
250 - 500 kW

The smallest wind turbine in the LEITWIND portfolio, it was developed specifically to safeguard the environment, aiming for decentralised production of low-cost renewable energy and its direct consumption right where it is produced. Its compact size and low visual impact are just some of the many features that make this turbine model a real success.

CHARACTERISTICS

- Ideal for low-wind areas
- Streamlined authorisation procedure
- Short installation times
- Low visual impact
- Suitable for self-consumption
- Up to 97% average technical availability

LTW42 250 kW
Ketzin, Germany

LTW42 500 kW
Marra, Italy

LTW80 1,500 kW
Salzstiegl, Austria

LTW80 1,650 kW
Saint François, Guadeloupe

LTW80
500 - 1,800 kW

The LTW80 model, one of the most reliable wind turbines on the market, was developed to deliver high power production even in very windy areas. In 2020, LEITWIND also built a version of the LTW80 capable of withstanding tropical cyclone conditions and extreme wind speeds, with gusts of up to 250 km/h.

CHARACTERISTICS

- **Ideal for high-wind areas**
- **Excellent performance even in high winds**
- **LEITWIND's most installed turbine in the world**
- ***Typhoon* version available**
- **Suitable for powering Energy Communities**
- **Up to 97% average technical availability**

LTW90
500 - 2,000 kW

The LTW90 wind turbine was specially designed for low-wind sites. Thanks to the large rotor surface area, it ensures significant power generation and is perfectly suitable for a wind class of up to IIIA+.

CHARACTERISTICS

- Ideal for low-wind areas
- Excellent performance thanks to large rotor diameter
- Ideal for single-turbine projects
- Suitable for powering Energy Communities
- Up to 97% average technical availability

LTW90 900 kW
Vallata, Italy

LTW90 1,000 kW
Avigliano Santa Tecla, Italy

LTW101 3,000 kW
Lelystad, Netherlands

LTW101 3,000 kW
Alexandroupolis, Greece

LTW101
2,000 - 3,000 kW

The LTW101 wind turbine is the largest wind turbine model in the LEITWIND portfolio, it was developed to meet the needs of customers who require a turbine that can deliver high power outputs, while ensuring high efficiency and reliability.

CHARACTERISTICS

- **Ideal for moderate wind areas**
- **Excellent performance thanks to large rotor diameter**
- **Ideal for single-turbine projects**
- **The largest turbine in the LEITWIND portfolio**
- **Up to 97% average technical availability**

MODEL

LTW42

250 | 500 kW

LTW42 250 | 500 kW

DESIGN DATA	
Rated power	250	500 kW
Hub height	28 / 39 m
Tip height max (upper end)	49 / 60 m
Wind class	IIIA+
Cut-in wind speed	2.5 m/s
Cut-out wind speed	20 m/s
Concept	Direct Drive 3-bladed upwind turbine with horizontal axis, variable speed and automatic pitch and yaw regulation

TOWER	
	Segmented tubular steel tower
	Transformer and converter station in tower bottom

ROTOR	
Rotor diameter	42 m
Swept area	1,416 m^2
Rotational speed	29.7 rpm
Tip speed	66 m/s
Blade material	GFRP-EP
Power and rotor speed control	Active pitch control

GENERATOR Direct Drive	
Type	Permanent Magnet Direct Drive Synchronous Machine
Stator Winding	Modular coils with tooth concentrated winding, exchangeable
Rotor Topology	Modular Permanent Magnets with flux concentration, exchangeable
Cooling	Air cooled rotor, air cooled stator
Speed Range	Variable Low Speed Machine

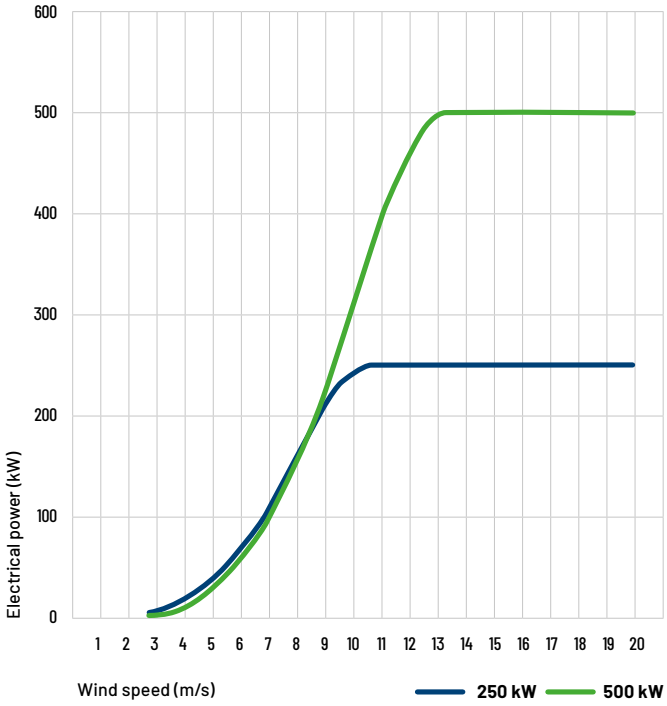
CONTROL & SAFETY SYSTEM	
Pitch and yaw control	Active electrical LeitPitch system and active electrical yaw system
Remote control	Leitwind integrated SCADA
Safety system	Hardwired safety loop
Main brake	Aerodynamic, indipendent pitch control
Service brake	Hydraulic
Rotor lock	Hydraulic

POWER ELECTRONIC LeitDrive	
Converter type	4Q full power - 3 phase IGBT
Arrangement	Single LeitDrive converter
Converter rated voltage and frequency (grid-side)	690 V ±10% (MV grid connection on demand), 50-60 Hz ±5%
Converter power factor (grid-side)	0.95 ind - 1 - 0.95 cap for reactive power compensation control, grid voltage control capability
Power quality and Grid codes	High quality output power in accordance with major grid code requirements. Integration into various grid systems worldwide. - Grid code compliance e.g. CEI 0-16, TERNA (incl. LVRT) and many other countries - Power quality according to IEC 61400-21 - Emission limits according to IEC 61800-3

AEP - ESTIMATED ANNUAL ELECTRICAL PRODUCTION

	LTW42 250 kW	LTW42 500 kW
m/s	MWh/y	MWh/y
4.5	492	495
5.0	622	676
5.5	750	872
6.0	872	1,075
6.5	985	1,278
7.0	1,088	1,472
7.5	1,181	1,653

POWER CURVE



	LTW42 250 kW	LTW42 500 kW
Wind speed (m/s)	Electrical power (kW)	Electrical power (kW)
2.5	3	0
3.0	7	0
4.0	22	14
5.0	47	40
6.0	81	74
7.0	128	124
8.0	190	188
9.0	234	270
10.0	249	360
11.0	250	439
12.0	250	483
13.0	250	496
14.0	250	500
15.0 - 20.0	250	500

MODEL

LTW80

500 | 800 | 1,000 kW

LTW80 500 | 800 | 1,000 kW

DESIGN DATA

Rated power	500	800	1,000 kW
Hub height	60 / 65 / 80 m
Tip height max (upper end)	100 / 105 / 120 m
Wind class	IIA / IIIA+
Cut-in wind speed	3 m/s
Cut-out wind speed	25 m/s
Concept	Direct Drive 3-bladed upwind turbine with horizontal axis

TOWER

	Segmented tubular steel tower
	Transformer and converter station in tower bottom

ROTOR

Rotor diameter	80 m
Swept area	5,064 m²
Rotational speed	17.5 rpm
Tip speed	74 m/s
Blade material	GFRP-EP
Power and rotor speed control	Active pitch control

GENERATOR Direct Drive

Type	Permanent Magnet Direct Drive Synchronous Machine
Stator Winding	Modular coils with tooth concentrated winding, exchangeable
Rotor Topology	Modular Permanent Magnets with flux concentration, exchangeable
Cooling	Air cooled rotor, air cooled stator
Speed Range	Variable Low Speed Machine

CONTROL & SAFETY SYSTEM

Pitch and yaw control	Active electrical LeitPitch system and active electrical yaw system
Remote control	Leitwind integrated SCADA
Safety system	Hardwired safety loop
Main brake	Aerodynamic, indipendent pitch control
Service brake	Electrical
Rotor lock	Hydraulic

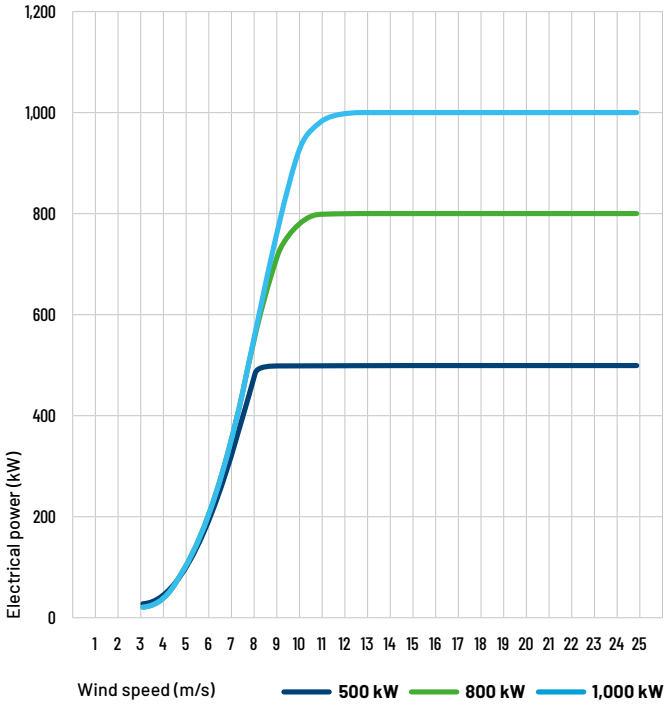
POWER ELECTRONIC LeitDrive

Converter type	4Q full power - 3 phase IGBT
Arrangement	Multiple modular LeitDrive converter - increase of technical availability - partial load operation
Converter rated voltage and frequency (grid-side)	690 V ±10%, 50-60 Hz ±5%
Converter power factor (grid-side)	0.95 ind - 1 - 0.95 cap for reactive power compensation control, grid voltage control capability
Power quality and Grid codes	High quality output power in accordance with major grid code requirements. Integration into various grid systems worldwide. - Grid code compliance e.g. CEI 0-16, TERNA (incl. LVRT) and many other countries - Power quality according to IEC 61400-21 - Emission limits according to IEC 61800-3

AEP - ESTIMATED ANNUAL ELECTRICAL PRODUCTION

	LTW80 500 kW	LTW80 800 kW	LTW80 1,000 kW
m/s	MWh/y	MWh/y	MWh/y
5.5	1,937	2,946	2,733
6.0	2,192	2,892	3,215
6.5	2,414	3,255	3,666
7.0	2,609	3,581	4,078
7.5	2,777	3,867	4,446
8.0	2,917	4,111	4,765
8.5	3,030	4,313	5,034

POWER CURVE



	LTW80 500 kW	LTW80 800 kW	LTW80 1.000 kW
Wind speed (m/s)	Electrical power (kW)	Electrical power (kW)	Electrical power (kW)
3.0	26	19	19
4.0	66	70	70
5.0	141	157	157
6.0	263	286	286
7.0	424	459	462
8.0	500	650	681
9.0	500	764	876
10.0	500	796	972
11.0	500	800	996
12.0	500	800	1,000
13.0	500	800	1,000
14.0	500	800	1,000
15.0	500	800	1,000
16.0 - 25.0	500	800	1,000

MODEL

LTW80

1,500 | 1,650 | 1,800 kW

LTW80 1,500 | 1,650 | 1,800 kW

DESIGN DATA

Rated power	1,500	1,650*	1,800 kW
Hub height	48 / 50 / 60 / 65 / 80 m
Tip height max (upper end)	88 / 90 / 100 / 105 / 120 m
Wind class	IIA / IIIA+ / WTC S (IIIA + Tropical Cyclone Class 1)
Cut-in wind speed	3 m/s
Cut-out wind speed	25 m/s
Concept	Direct Drive 3-bladed upwind turbine with horizontal axis, variable speed and automatic pitch and yaw regulation

TOWER

	Segmented tubular steel tower
	Transformer and converter station in tower bottom

ROTOR

Rotor diameter	80 m
Swept area	5,064 m²
Rotational speed	17.8 rpm
Tip speed	75 m/s
Blade material	GFRP-EP
Power and rotor speed control	Active pitch control

GENERATOR Direct Drive

Type	Permanent Magnet Direct Drive Synchronous Machine
Stator Winding	Modular coils with tooth concentrated winding, exchangeable
Rotor Topology	Modular Permanent Magnets with flux concentration, exchangeable
Cooling	Air cooled rotor and water cooled stator
Speed Range	Variable Low Speed Machine

CONTROL & SAFETY SYSTEM

Pitch and yaw control	Active electrical LeitPitch system and active electrical yaw system
Remote control	Leitwind integrated SCADA
Safety system	Hardwired safety loop
Main brake	Aerodynamic, indipendent pitch control
Service brake	Electrical
Rotor lock	Hydraulic

POWER ELECTRONIC LeitDrive

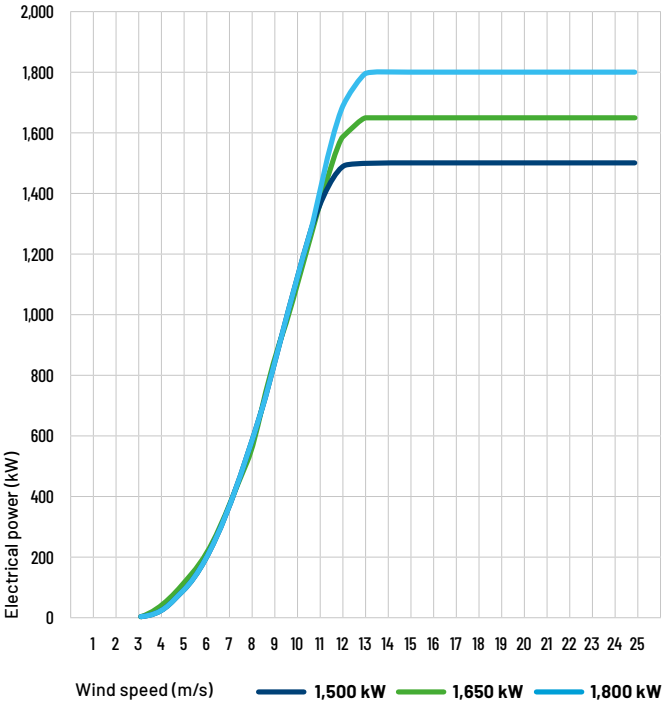
Converter type	4Q full power - 3 phase IGBT
Arrangement	Multiple modular LeitDrive converter - increase of technical availability - partial load operation
Converter rated voltage and frequency (grid-side)	690 V ±10%, 50-60 Hz ±5%
Converter power factor (grid-side)	0.95 ind - 1 - 0.95 cap for reactive power compensation control, grid voltage control capability
Power quality and Grid codes	High quality output power in accordance with major grid code requirements. Integration into various grid systems worldwide. - Grid code compliance e.g. CEI 0-16, TERNA (incl. LVRT) and many other countries - Power quality according to IEC 61400-21 - Emission limits according to IEC 61800-3

** LTW80 1,650 kW is also available in the Typhoon version*

AEP - ESTIMATED ANNUAL ELECTRICAL PRODUCTION

	LTW80 1,500 kW	LTW80 1,650 kW	LTW80 1,800 kW
m/s	MWh/y	MWh/y	MWh/y
5.5	3,094	3,147	3,119
6.0	3,752	3,839	3,847
6.5	4,400	4,529	4,581
7.0	5,023	5,199	5,303
7.5	5,611	5,838	5,997
8.0	6,157	6,438	6,653
8.5	6,658	6,991	7,264

POWER CURVE

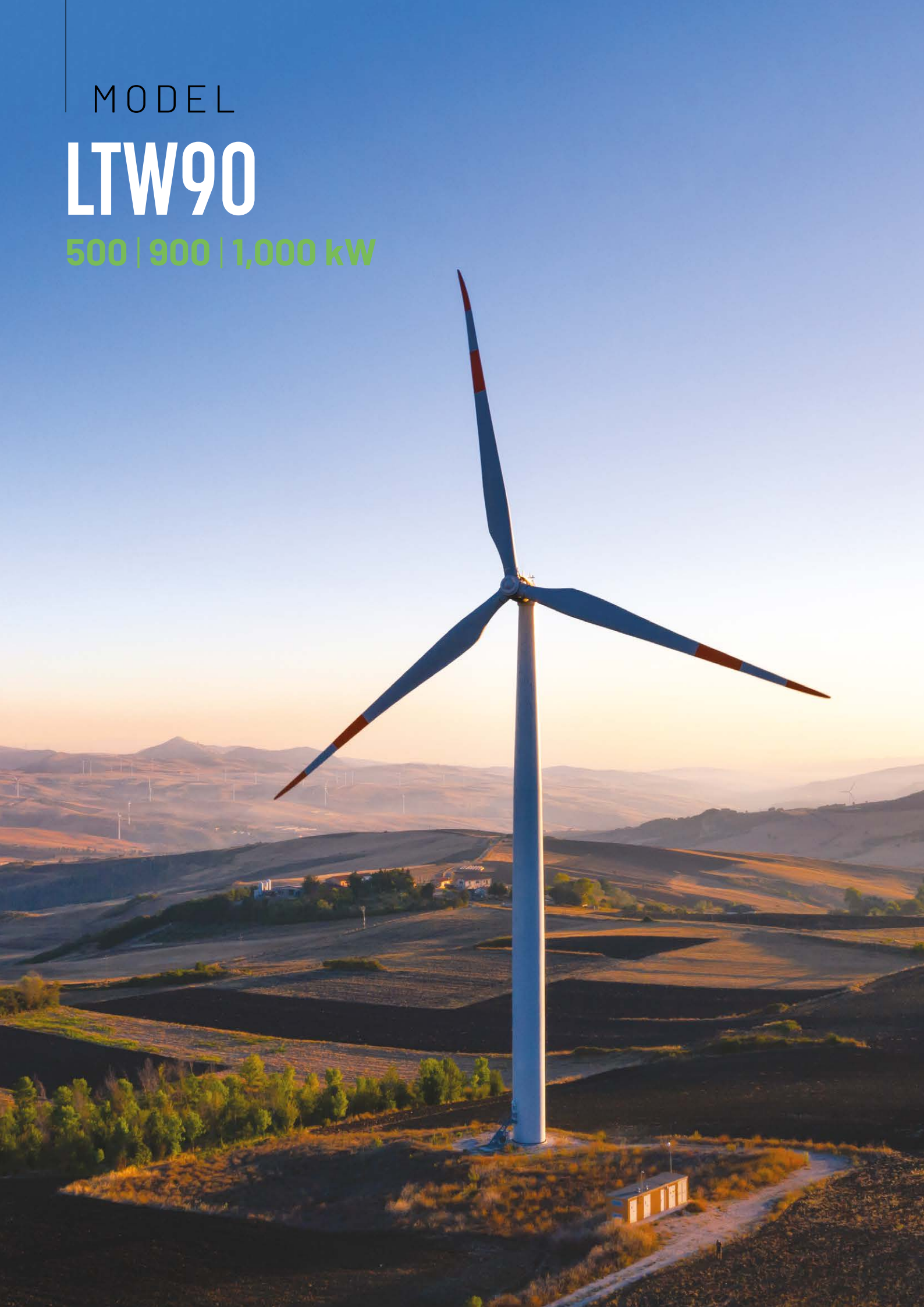


	LTW80 1.,500 kW	LTW80 1,650 kW	LTW80 1,800 kW
Wind speed (m/s)	Electrical power (kW)	Electrical power (kW)	Electrical power (kW)
3.5	33	33	23
4.0	73	73	59
5.0	151	151	145
6.0	278	278	263
7.0	455	455	440
8.0	694	694	677
9.0	954	954	946
10.0	1,222	1,239	1,256
11.0	1,478	1,516	1,555
12.0	1,500	1,638	1,775
13.0	1,500	1,650	1,800
14.0	1,500	1,650	1,800
15.0	1,500	1,650	1,800
16.0 - 25.0	1,500	1,650	1,800

MODEL

LTW90

500 | 900 | 1,000 kW



LTW90 500 | 900 | 1,000 kW

DESIGN DATA	
Rated power	500 | 900 | 1,000 kW
Hub height	60 / 65 / 80 / 97.5* m
Tip height max (upper end)	105 / 110 / 125 / 142 m
Wind class	IIIA / IIIA+ / S
Cut-in wind speed	3 m/s
Cut-out wind speed	25 m/s
Concept	Direct Drive 3-bladed upwind turbine with horizontal axis, variable speed and automatic pitch and yaw regulation

TOWER	
	Segmented tubular steel tower
	Transformer and converter station in tower bottom

ROTOR	
Rotor diameter	90 m
Swept area	6,404 m^2
Rotational speed	15 rpm
Tip speed	71 m/s
Blade material	GFRP-EP
Power and rotor speed control	Active pitch control

GENERATOR Direct Drive	
Type	Permanent Magnet Direct Drive Synchronous Machine
Stator Winding	Modular coils with tooth concentrated winding, exchangeable
Rotor Topology	Modular Permanent Magnets with flux concentration, exchangeable
Cooling	Air cooled rotor and water cooled stator
Speed Range	Variable Low Speed Machine

CONTROL & SAFETY SYSTEM	
Pitch and yaw control	Active electrical LeitPitch system and active electrical yaw system
Remote control	Leitwind integrated SCADA
Safety system	Hardwired safety loop
Main brake	Aerodynamic, indipendent pitch control
Service brake	Electrical
Rotor lock	Hydraulic

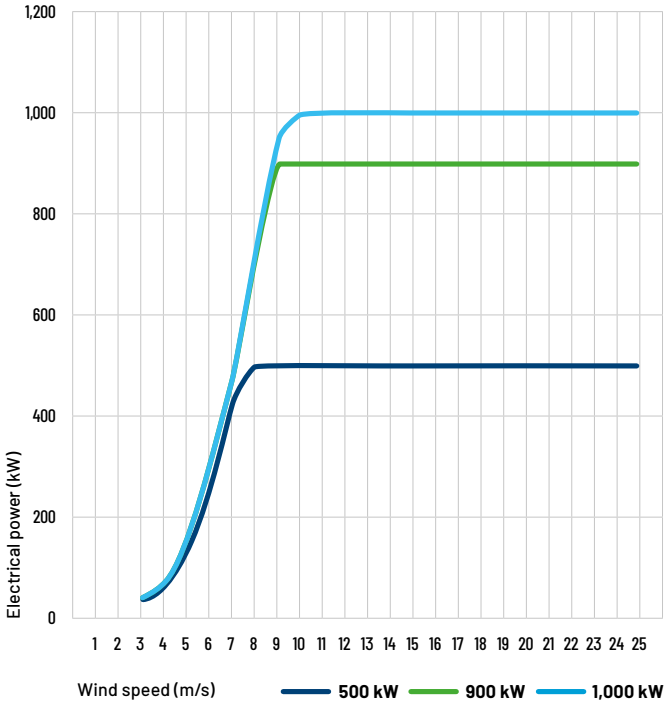
POWER ELECTRONIC LeitDrive	
Converter type	4Q full power - 3 phase IGBT
Arrangement	Multiple modular LeitDrive converter - increase of technical availability - partial load operation
Converter rated voltage and frequency (grid-side)	690 V ±10%, 50-60 Hz ±5%
Converter power factor (grid-side)	0.95 ind - 1 - 0.95 cap for reactive power compensation control, grid voltage control capability
Power quality and Grid codes	High quality output power in accordance with major grid code requirements. Integration into various grid systems worldwide - Grid code compliance e.g. CEI 0-16, TERNA (incl. LVRT) and many other countries - Power quality according to IEC 61400-21 - Emission limits according to IEC 61800-3

** LTW90 500 kW is not available with this hub height*

AEP - ESTIMATED ANNUAL ELECTRICAL PRODUCTION

	LTW90 500 kW	LTW90 900 kW	LTW90 1.000 kW
m/s	MWh/y	MWh/y	MWh/y
4.5	1,608	2,141	2,194
5.0	1,920	2,660	2,749
5.5	2,195	3,150	3,283
6.0	2,437	3,601	3,781
6.5	2,646	4,007	4,238
7.0	2,827	4,365	4,650
7.5	2,980	4,670	5,020

POWER CURVE

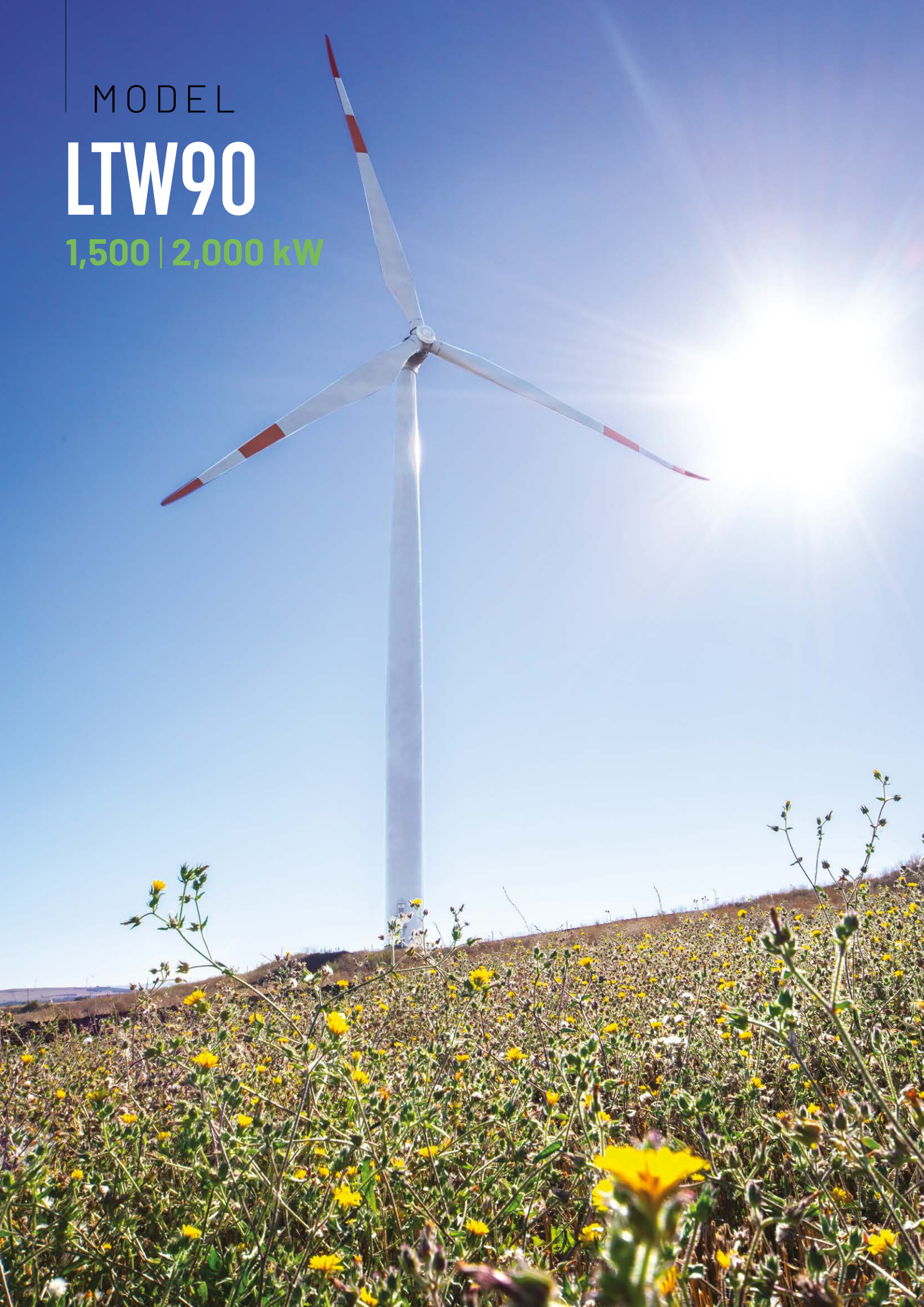


	LTW90 500 kW	LTW90 900 kW	LTW90 1,000 kW
Wind speed (m/s)	Electrical power (kW)	Electrical power (kW)	Electrical power (kW)
3.0	35	39	39
4.0	93	107	107
5.0	203	216	216
6.0	350	379	379
7.0	485	602	602
8.0	500	869	869
9.0	500	900	994
10.0	500	900	1,000
11.0	500	900	1,000
12.0	500	900	1,000
13.0	500	900	1,000
14.0	500	900	1,000
15.0	500	900	1,000
16.0 - 25.0	500	900	1,000

MODEL

LTW90

1,500 | 2,000 kW



LTW90 1,500 | 2,000 kW

DESIGN DATA	
Rated power	1,500	2,000 kW
Hub height	80 / 97.5 / 100 m
Tip height max (upper end)	125 / 142 / 145 m
Wind class	IIIA / IIIA+
Cut-in wind speed	3 m/s
Cut-out wind speed	25 m/s
Concept	Direct Drive 3-bladed upwind turbine with horizontal axis, variable speed and automatic pitch and yaw regulation

TOWER	
	Segmented tubular steel tower
	Transformer and converter station in tower bottom

ROTOR	
Rotor diameter	90 m
Swept area	6,404 m²
Rotational speed	15 rpm
Tip speed	71 m/s
Blade material	GFRP-EP
Power and rotor speed control	Active pitch control

GENERATOR Direct Drive	
Type	Permanent Magnet Direct Drive Synchronous Machine
Stator Winding	Modular coils with tooth concentrated winding, exchangeable
Rotor Topology	Modular Permanent Magnets with flux concentration, exchangeable
Cooling	Air cooled rotor and water cooled stator
Speed Range	Variable Low Speed Machine

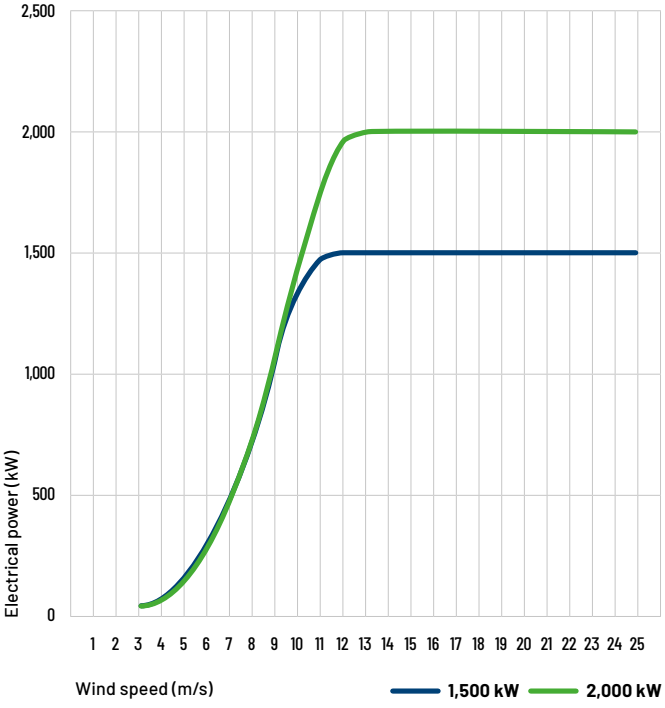
CONTROL & SAFETY SYSTEM	
Pitch and yaw control	Active electrical LeitPitch system and active electrical yaw system
Remote control	Leitwind integrated SCADA
Safety system	Hardwired safety loop
Main brake	Aerodynamic, indipendent pitch control
Service brake	Electrical
Rotor lock	Hydraulic

POWER ELECTRONIC LeitDrive	
Converter type	4Q full power - 3 phase IGBT
Arrangement	Multiple modular LeitDrive converter - increase of technical availability - partial load operation
Converter rated voltage and frequency (grid-side)	690 V ±10%, 50-60 Hz ±5%
Converter power factor (grid-side)	0.95 ind - 1 - 0.95 cap for reactive power compensation control, grid voltage control capability
Power quality and Grid codes	High quality output power in accordance with major grid code requirements. Integration into various grid systems worldwide - Grid code compliance e.g. CEI 0-16, TERNA (incl. LVRT) and many other countries - Power quality according to IEC 61400-21 - Emission limits according to IEC 61800-3

AEP - ESTIMATED ANNUAL ELECTRICAL PRODUCTION

	LTW90 1.500 kW	LTW90 2.000 kW
m/s	MWh/y	MWh/y
4.5	2,383	2,383
5.0	3,087	3,171
5.5	3,804	4,011
6.0	4,507	4,870
6.5	5,175	5,721
7.0	5,792	6,542
7.5	6,348	7,321

POWER CURVE

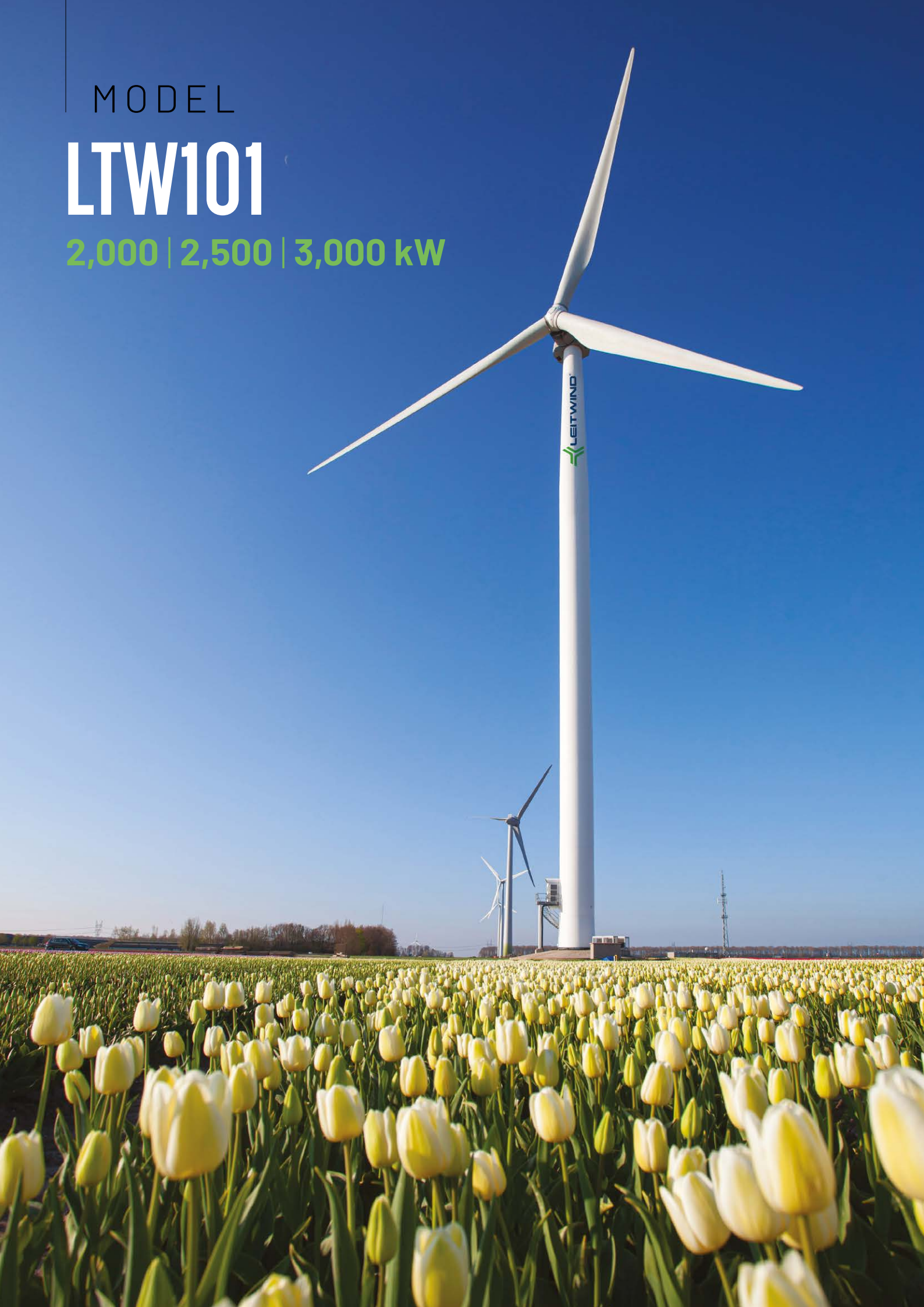


	LTW90 1,500 kW	LTW90 2,000 kW
Wind speed (m/s)	Electrical power (kW)	Electrical power (kW)
3.0	39	39
4.0	107	90
5.0	216	196
6.0	379	356
7.0	602	579
8.0	888	874
9.0	1,221	1,223
10.0	1,431	1,619
11.0	1,499	1,893
12.0	1,500	1,993
13.0	1,500	2,000
14.0	1,500	2,000
16.0 - 25.0	1,500	2,000

MODEL

LTW101

2,000 | 2,500 | 3,000 kW



LTW101 2,000 | 2,500 | 3,000 kW

DESIGN DATA	
Rated power	2,000	2,500	3,000 kW
Hub height	80 / 93.5 m
Tip height max (upper end)	130 / 144 m
Wind class	IIA / IIIA
Cut-in wind speed	3 m/s
Cut-out wind speed	25 m/s
Concept	Direct Drive 3-bladed upwind turbine with horizontal axis, variable speed and automatic pitch and yaw regulation

TOWER	
	Segmented tubular steel tower
	Transformer and converter station in tower bottom

ROTOR	
Rotor diameter	101 m
Swept area	8,012 m^2
Rotational speed	15 rpm
Tip speed	79 m/s
Blade material	GFRP-EP
Power and rotor speed control	Active pitch control

GENERATOR Direct Drive	
Type	Permanent Magnet Direct Drive Synchronous Machine
Stator Winding	Modular coils with tooth concentrated winding, exchangeable
Rotor Topology	Modular Permanent Magnets with flux concentration, exchangeable
Cooling	Air cooled rotor and water cooled stator
Speed Range	Variable Low Speed Machine

CONTROL & SAFETY SYSTEM	
Pitch and yaw control	Active electrical LeitPitch system and active electrical yaw system
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Main brake	Aerodynamic, indipendent pitch control
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POWER ELECTRONIC LeitDrive	
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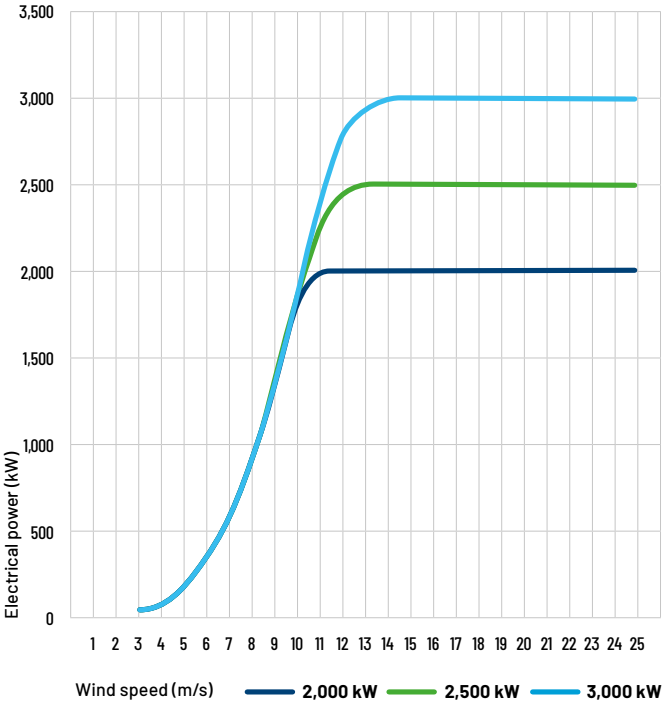
AEP - ESTIMATED ANNUAL ELECTRICAL PRODUCTION

	LTW101 2,000 kW	LTW101 2,500 kW	LTW101 3,000 kW
m/s	MWh/y	MWh/y	MWh/y
4.5	3,067	3,109	3,161
5.0	4,009	4,134	4,249
5.5	4,974	5,217	5,429
6.0	5,921	6,315	6,652
6.5	6,822	7,387	7,872
7.0	7,656	8,403	9,050
7.5	8,406	9,338	10,151

POWER CURVE



	LTW101 2,000 kW	LTW101 2,500 kW	LTW101 3,000 kW
Wind speed (m/s)	Electrical power (kW)	Electrical power (kW)	Electrical power (kW)
3.0	41	41	41
4.0	122	118	118
5.0	268	258	258
6.0	480	470	470
7.0	772	769	769
8.0	1,162	1,154	1,154
9.0	1,634	1,634	1,634
10.0	1,983	2,125	2,205
11.0	2,000	2,402	2,667
12.0	2,000	2,500	2,891
13.0	2,000	2,500	2,993
14.0	2,000	2,500	3,000
15.0	2,000	2,500	3,000
16.0 - 25.0	2,000	2,500	3,000

CONTACTS

LEGAL HEADQUARTERS

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