Power: 1.5 MW
Rotor: Ø 70 m
Tower heights: 65/ 80*/ 85*/ 114,5**m*
Rotor: Ø 77 m
Tower heights: 61,5/ 85*/ 100*/ 111,5** m*

**tubular tower* ***lattice tower*

FL MD 70/77

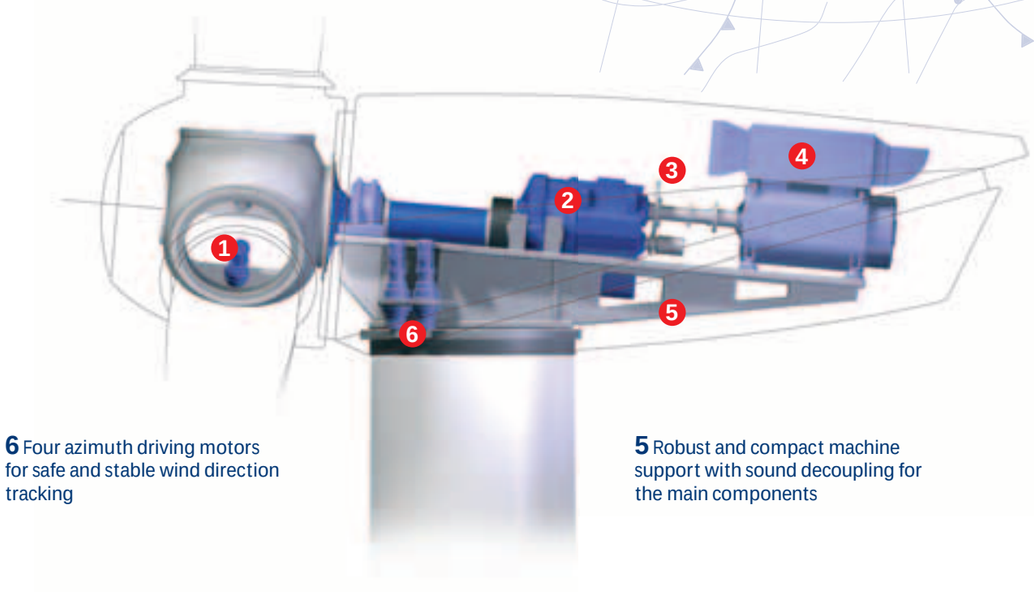
Fuhrländer
AKTIENGESELLSCHAFT

1 High security due to individual blade adjustment

2 Combined planet spur wheel gear for high effectiveness

3 Large disk brake as 2nd safety system

4 Variable speed, double-fed asynchronous generator for high profitability

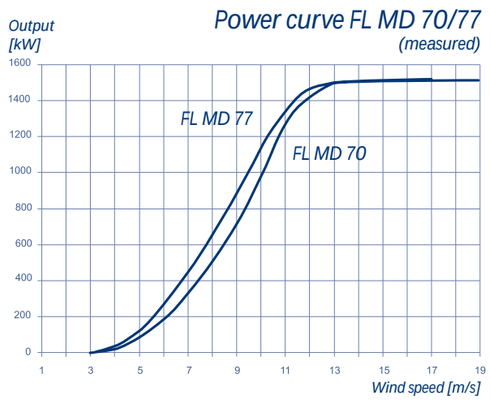


6 Four azimuth driving motors for safe and stable wind direction tracking

5 Robust and compact machine support with sound decoupling for the main components

Medium wind speed at hub height [m/s]	FL MD 70 Annual yield [kWh]	FL MD 77 Annual yield [kWh]
8.5	5'727'000	
8.0	5'232'000	
7.5	4'669'000	5'351'000
7.0	4'105'000	4'820'000
6.5	3'508'000	4'205'000
6.0	2'910'000	3'589'000
5.5	2'341'000	2'956'000
5.0	1'771'000	2'324'000

Power curve FL MD 70/77
(measured)



Subject to technical alterations. Data can vary depending on components.

FL MD 70/77: A concept sets standards

The field-proven concept of the FL MD 70/77 with individual blade adjustment and double-fed asynchronous generator as well as its large rotor stands side by side with the 2 MW-class. Rotors with 70 and 77 m diameters and different tower heights up to more than 100 m allow the optimum adaptation to each location. Robust machine construction in combination with the latest control technology and experienced engineering set standards in this class in terms of profitability and reliability.

Therefore, more and more investors are enthusiastic about the FL MD 70/77, which Fuhrländer already exported to countries such as Portugal, Hungary and Japan, also in a 60-Hz version.

Rotor

Diameter	70 m / 77 m
Surface area	3'848 m² / 4'657 m²
No. of blades	3
Speed	10-21 / 10-19 min⁻¹
Power control	pitch

Gear

Design	Combined spur wheel/planet
Stages	3
Multiplication	1:94.7 / 1:104

Generator

Design	Double-fed three-phase asynchronous machine
Speed	1000...1800 min⁻¹
Voltage (frequency) Converter system	690 V (50/60 Hz) Puls-width modulated IGBT

Power

Rated output at	1,500 kW 11.6 / 13 m/s
Start wind	3.0 m/s
Stop wind	25 / 20 m/s
Survival speed	56 / 50.1 m/s

Tower

Hub height	MD 70 65*/80*/85*/114,5**m MD 77 61,5*/85*/100*/111,5**m
Design	*tubular tower **lattice tower

Weights

Rotor	31'000 / 33'400 kg
Nacelle	56'000 kg
Tower	93'000...260'000 kg

Control

Speed control	Microprocessors
Yawing control	4 gear motors
Main brake	Blade angle adjustment
2nd brake system	Disk brake
Monitoring	Fixed network/radio/Vabera

Sound

Sound output level	103.3 / 104 dB (A) Measurement of 25.08.98 / 13.08.02

Subject to technical alterations. Data can vary depending on components.