DETAILED INFORMATION WINDMASTER 750-E GREAT EPPLETON

Number of turbines : 4 identical (Price ex. site on request)

Specification WindMaster 750/43	
Rotor diameter	: 43,4 m
Generator capacity	: 750 kW
Shaft level	: 48,2 m
Working range	: 4,5-19 m/s
750 kWe at	: 13 m/s
Yearly production at 6 m/s*	: 1.150.000 kWh/year/turbine**
Yearly production at 7 m/s*	: 1.684.000 kWh/year/turbine**
Yearly production at 8 m/s*	: 2.184.000 kWh/year/turbine**
Year of commissioning	: 1998

*10 min average values, according IEA standards on hub (shaft) height
** Weibull factor k=2; 100% availability

Rotor blades and rotor

Number of blades	: 2
Material	: wood-epoxy-laminate
Present manufacturer	: NGUP Nijverdal; The Netherlands; Moult in possession of TransconAccess
Tip speed	: 73 m/s
Blade length	: 20,268 m
Rotation speed	: 32 rpm
Rotor surface	: 1.480 m²

Generator

Make	: AEG or ABB
Rating	: 110% of 750 kW continuously (1000kW max.)
Type	: Squirrel cage asynchronous generator 4 pole
Compensation	: 125 kVAR fixed.
Rotation speed	: 1.509 rpm
Protection class	: IP55
Safety device	: 3 PTC's
Voltage	: 660 V
Connection to grid	: First connection at speed of 1495 rpm via resistors, next step directly connected, 2 circuit breakers, star connected

Gear box

Make	: Flender AG, Alfred Flenderstr 77 Bocholt or Jahnel Kesterman
System	: parallel, 3- stages
Transmission	: 1: 46,5
Oil contents	: 320L
Lubrication	: electrical pump

Yaw system

Type	: free yaw, active yaw back-up.
Motors	: 2 hydrolic low speed motors each with gear drive,
Nacelle support	: 4-piont ball bearing on toothed wheel
Cable twist control	: sensor + computer
Power supply	: hydrolic unit A, 3 kW
Angle control	: wind vane

Brake system

Type	: hydraulically activated disc brake at low speed shaft
Disc diameter	: 1,6 m
Numbers of callipers	: 8
Normal brake time	: 4 sec
Activation	: overspeed sensors
Power supply	: hydraulic Unit A; 3 kW

Pitch system

Type	: crank mechanism inside hub
	: pitch shaft through hollow mainshaft
	: axial bearing and hydrolic cylinder
Power supply	: Hydraulic Unit B, 5,5 kW
Safety system	: fail-safe emergency valves and accumulator system
Control system	: digital stroke transducer and computer controlled valve

Tower

Construction	:	2 conic round parts lower part with lifting lugs. Parts to be welded together. Top part with noise damper and flange.
Foundation bolds	:	2x30 pieces, M42; 100 cm long, bolded in 40mm steel ring in steel armoured concrete foundation.
Bold circles	:	2,8 m/2,4 m
Platforms	:	4; on 3m, 6m, 23m, 43m
Top platform	:	oil tight
Bottom platforms	:	fire tight
Cables	:	carefully tagged and fixed over cable reel in bottom part of tower
Ladders	:	equipped with safety rail

Noise

Sound level direct at source	:	100 dB(A)
Measured at wind velocity	:	7,5 m/s

Weights

Rotor	:	12.800 kg
Rotor blades	:	2.500 kg
Turbine head excluding rotor	:	35.700 kg
Tower	:	40.500 kg
Total weight installed	:	89.000 kg

Control

Power control	:	active pitch control
Breaking system	:	active pitch control and disk break on main shaft.
Microprocessor	:	Mitsubishi

Transformer station

Integrated in tower : 800 kVA , 20,250/0,66 kV ±2,5 and ± 5% off load tap changer.

HV Bushings : Elastimold type M 400 AR-3/j
LV bushings : DIN 1/1000 A directly connected to cables.
Each windmill connected to central distribution rail.
Tower to be hoisted over transformer.

Documentation

Electrical drawings
Mechanical construction drawings
Certificates “Germanischer Lloyd”
Maintenance manuals
Log books