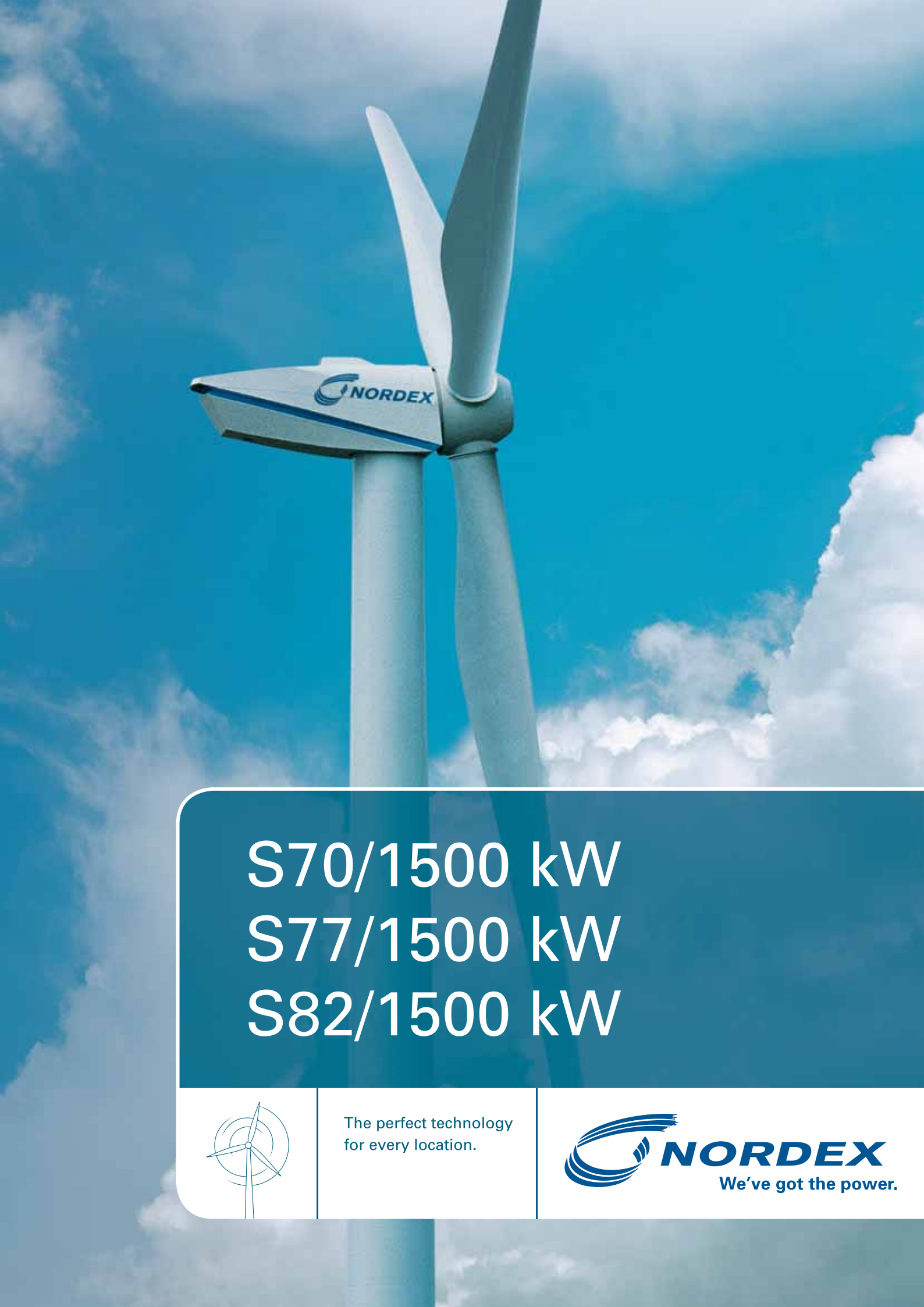
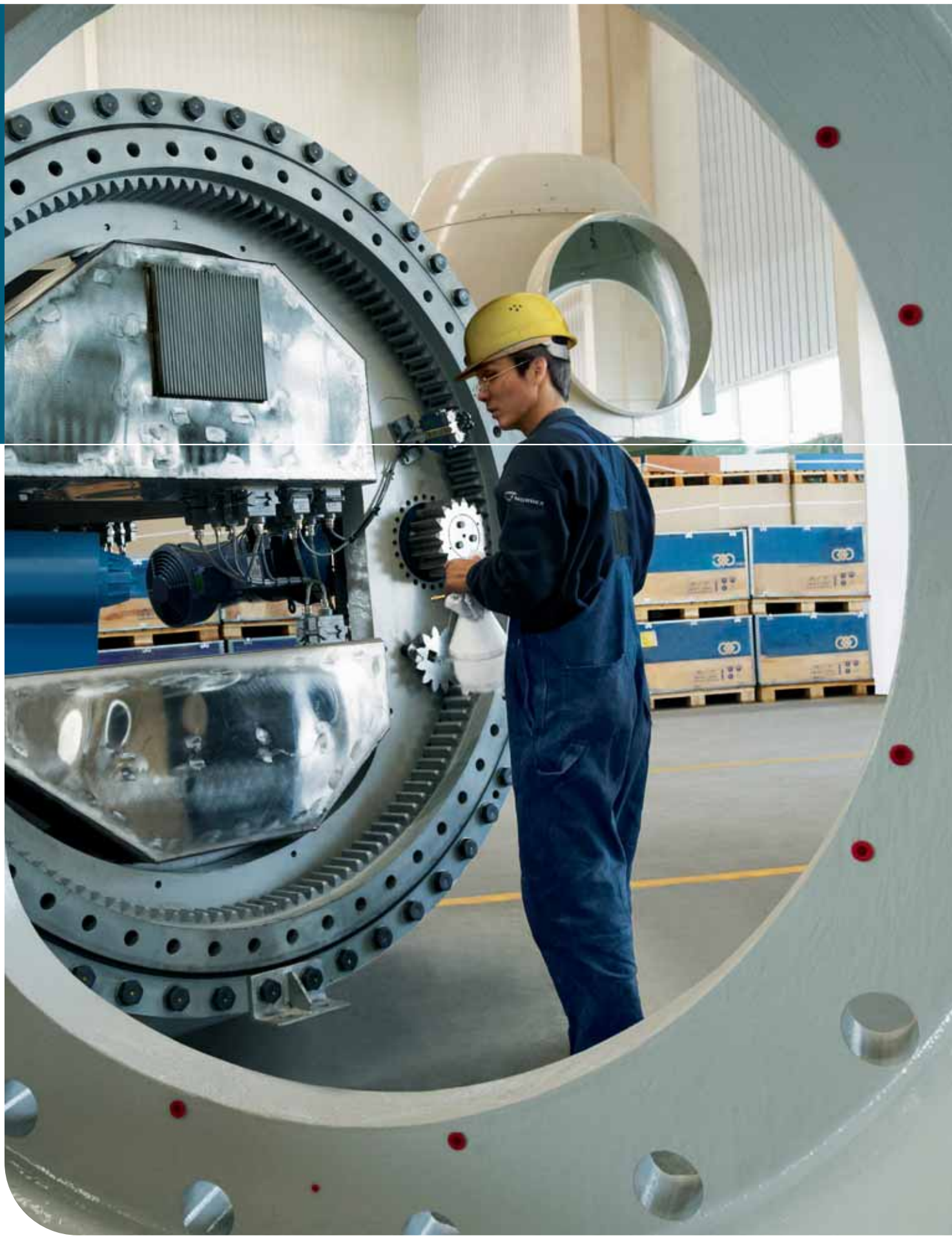


S70/1500 kW
S77/1500 kW
S82/1500 kW

The perfect technology
for every location.

NORDEX
We've got the power.



We have an eye for technical details.

Your aim is our aim: optimal yields. This is why we produce core components like the rotor blades ourselves.

NORDEX S70, S77, S82
HIGH-TECH FOR MAXIMUM WIND YIELDS.

People who invest in wind farms expect a dependable energy yield. With our high-power turbines, there is no problem: we guarantee a high level of availability-more than 95 percent. We are able to do this because our technology is tailor-made. We manufacture wind power systems for energy suppliers across the globe fully in line with the individual requirements of their markets.

The ideal turbines for Asia are the Nordex S70, Nordex S77 and Nordex S82. The concept behind the Nordex S70 on the basis of pitch technology follows upon the successful solutions incorporated in smaller turbines and transfers these to the requirements of the megawatt class. In this way, a tried and tested technology has been consistently implemented and the details optimized. The strategically planned long development and prototype phase ensures maximum reliability in series production. The Nordex S70 is the best choice for locations with high wind speeds.

The Nordex S77 is the logical consequence of our platform strategy and picks up on the experience gained with the S70. As a result of the enlarged rotor diameter (77 metres) and the pitch technology used, the machine is optimally designed for use in areas with moderate wind speeds, it's an IEC 2a wind turbine. Of course, Nordex is steadily about to optimize the turbine family for Asia. This is why we launched a further high-tech, low-wind turbine with an IEC 3a certificate. The S82 is based on the same platform as the Nordex S70 and S77 and is characterized by a still larger rotor diameter and is even more efficient at lower wind speeds.

Modern turbines for all climatic regions

The Nordex S70, Nordex S77 and Nordex S82 are available in a standard version, in a cold-climate version (CCV) and in a hot-climate version (HCV). All versions are designed for wind speeds up to 25 m/s.

With the Nordex S70, S77 and S82 you acquire a modern and reliable system. It combines consistent engineering with technologically high-quality components in an efficient concept. All three wind turbines are designed for a service life of at least 20 years. To date, turbines from the 1.5 MW product family are already in operation at more than several hundred locations around the world.

Type	Wind Class
S70	IEC 1a (tbc)
S77	IEC 2a
S82	IEC 3a

RELIABILITY, SERVICE, ENVIRONMENTAL SUSTAINABILITY

NORDEX ALWAYS OFFERS THAT BIT MORE.

Our machines offer low maintenance due to

- access to the blade-adjustment system in the spinner
- having no rotating hydraulics in the hub
- maintenance-free blade-adjustment drives
- easily accessible control cabinets
- user-friendly rotor lock and easy checking and monitoring of the elastomer bearings in the drive train
- upper platform, which can be used as an uninterrupted working area
- easy entrance to the system
- control from the foot of the tower and from the nacelle, and the wide range of remote query possibilities for the control system and inverter

They are reliable

- as they have a long product cycle time and are a mature series product since 1998
- as all components are of guaranteed high quality due to our choice of certified and reputable manufacturers
- as the modified gearbox offers additional dependability
- as the tubular steel tower is a rigid structure

  The tower's resonant frequency is not transported by the turbine. It is not possible for any resonance to occur between the tower's resonant frequency and the exciter frequency of the system

They are environment friendly due to

- absence of a rotating hydraulic system
- sealing of the spinner to prevent bearing grease from escaping
- generous coaming plates in the rotor bearing casing
- enclosed grease pan below the rotor bearing
- enclosed oil pan below the gearbox
- additional oil pan in the tower head
- hydraulics in the tower head with all lines in the area of the oil pan-meaning that no oil can escape into the environment
- monitoring via the control system

They are noise friendly due to

- the generator, gearing and many other components are attached in such a way that vibrations are either not transmitted or are muffled. In this way noises are immediately reduced at source
- the helical gearing of all gearwheels reduces the noise level of the gearbox

High-tech for high demands:
Our megawatt turbines for Asia provide reliable energy.

NORDEX S70, NORDEX S77 AND NORDEX S82: OPTIMISED DETAILS FOR MAXIMISED RELIABILITY.

Rotor

The rotor is operated at variable speed. The blades are optimized for speed-variable operation and protected by an integrated lightning protection system.

Control and safety concept

In order to balance the wind turbine ideally between maximum yield and minimum load, the pitch and rotor speed controls work together. At low wind speeds the turbine operates with a constant blade pitch and variable rotor speed. At high wind speeds the pitch and rotor speed controls work together to maintain a constant power output from the rotor. A safety system with triple redundancy protects in case of stormy conditions.

Drive train

The drive train is supported at three points immediately above the top flange of the tower. The inclination of the rotor axis, together with the rotor cone, allows for an extremely short distance between the rotor plane and the tower axis and thus reduces the wind turbine's 'nose-heaviness' with its high material requirements.

Gearbox

The gearbox is a three-stage design with one planetary and two spur gear stages. The toothing of the gears is optimised for efficiency and noise emission. Elastic bushings are integrated into the torque-bearing elements suspended on the main frame.

Generator

The double-fed asynchronous generator enables variable speed operation of the wind turbine without passing the total power through the power electronics of the converter, thus providing the most efficient conditions for this advantageous mode of operation.

Converter

The converter is fit with the latest IGBT technology and is controlled via microprocessor-controlled power electronics using pulse width modulation.

Brake system

The aerodynamic braking is achieved by the rotor blades which are controlled independently and redundantly. The mechanical disc brake serves as the final braking element to the safety system.

Hydraulic system

The hydraulic system provides the oil pressure for the operation of different main components: yaw brakes, rotor brake, rotor lock and hood.

Nacelle

The nacelle cover combines compact external dimensions with elegant, attractive design.

Tower

The Nordex S70, Nordex S77 and Nordex S82 are erected on a tubular steel tower. The modular tubular tower is cylindrical, the upper segment is conical.

Control system

All functions of the wind turbine are monitored and controlled by a microprocessor-based control system. Grid voltage, frequency and phase, rotor and generator speed, diverse temperatures, vibration levels, oil pressure, brake pad wear, cable twist as well as the meteorological conditions are all continuously monitored. In addition, the wind turbines are equipped with a remote monitoring system. The data and signal transfer only requires an ISDN-connection. Different versions of appropriate communication software and hardware can be installed on any PC on Windows and is provided by Nordex.

In our assembly plant in Yinchuan we mass-produce large turbines.

FACTS AND FIGURES.

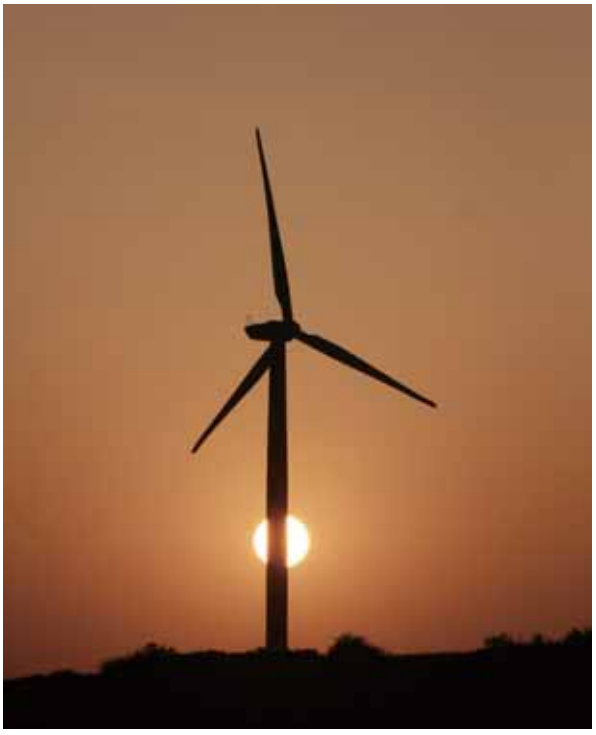
	S70/1500 kW	S77/1500 kW	S82/1500 kW
Key Technical Parameter			
Number of blades	3	3	3
Rotor diameter	70 m	77 m	82 m
Swept area	3848 m^2	4657 m^2	5281 m^2
Power	1500 kW	1500 kW	1500 kW
Voltage	690 V	690 V	690 V
Type	Double fed asynchronous generator	Double fed asynchronous generator	Double fed asynchronous generator
Regulation	Pitch	Pitch	Pitch
Cut-in wind speed	3.5 m/s	3.5 m/s	3.5 m/s
Cut-out wind speed	25 m/s	25 m/s	25 m/s
Rated wind speed from	13 m/s	13 m/s	12.5 m/s
Max. speed in 10 min.	50 m/s	42.5 m/s	37.5 m/s
Gustwind in 3 sec.	70 m/s	59.5 m/s	52.5 m/s
Wind class	IEC 1a (tbc)	IEC 2a	IEC 3a
Tower			
Type	Modular steel tower, cylindrical,upper segment conical	Modular steel tower, cylindrical,upper segment conical	Modular steel tower, cylindrical,upper segment conical
Hub height	70 m	70 m, 80 m	80 m
Total weight tower	100 t	100 t, 151 t	151 t
Weight			
Nacelle	56 t	56 t	56 t
Rotor	33 t	35 t	33 t
Blade	6 t	6.5 t	6 t

POWER CURVES.

S70/1500 kW	
Wind Speed (m/s)	Power (kW)
4	24
5	87
6	190
7	329
8	531
9	736
10	1016
11	1284
12	1426
13	1500
14	1500
15	1500
16	1500
17	1500
18	1500
19	1500
20	1500
21	1500
22	1500
23	1500
24	1500
25	1500

S82/1500 kW	
Wind Speed (m/s)	Power (kW)
4	51
5	148
6	289
7	483
8	729
9	1018
10	1263
11	1414
12	1489
13	1500
14	1500
15	1500
16	1500
17	1500
18	1500
19	1500
20	1500
21	1500
22	1500
23	1500
24	1500
25	1500

S77/1500 kW	
Wind Speed (m/s)	Power (kW)
4	46
5	130
6	247
7	408
8	619
9	876
10	1159
11	1365
12	1473
13	1500
14	1500
15	1500
16	1500
17	1500
18	1500
19	1500
20	1500
21	1500
22	1500
23	1500
24	1500
25	1500



CONTACT US.

Nordex China
Room 808, First Shanghai Center, No. 39, Liangmaqiao Road,
Chaoyang District, Beijing 100125, P. R. China
Phone: +86 10 84 53 51 88
Fax: +86 10 84 53 51 58
E-mail: china@nordex-online.com

Nordex Yinchuan
11 West Kaiyuan Road, Economic and Technological
Development Zone, Yinchuan, Ningxia, 750021, P.R. China
Phone: +86 951 204 5008
Fax: +86 951 204 5145

Nordex Dongying
East Of Dong Si Road And North Of Huaihe Road, Dongying,
Shandong, 257091, P.R.China
Phone: +86 546 776 3330
Fax: +86 546 776 3331

As of: 10/2009

Nordex AG
Bornbarch 2
22848 Norderstedt, Germany
Phone: +49 40 30030 1000
Fax: +49 40 30030 1101
E-mail: info@nordex-online.com

Nordex Europe
Erich-Schlesinger-Straße 50
18059 Rostock, Germany
Phone: +49 381 6663 3300
Fax: +49 381 6663 3339
E-mail: info@nordex-online.com

Nordex USA
300 South Wacker Drive, Suite 1500
Chicago, Illinois 60606, USA
Phone: +1 312 386 4100
Fax: +1 312 386 4101
E-mail: nordexUSA@nordex-online.com

NORDEX
We've got the power.