

## The International Wind Energy Market is Booming

# Reaching for the Sky: Forged Bar Stock from Wetzlar

The German Wind Energy Association reported a world record in December 2005 for the construction of wind farms. Germany's technological lead is bearing fruit. One key element in these power generators that is both old and new is forged bar stock from Buderus Edelstahl.

Despite a slight reduction in the enormous growth trend in Germany last year, the wind energy sector is booming internationally, with around 10,000 megawatts of new wind energy capacity installed in 2005. With a 23 percent growth rate and a market volume of more than € 10 billion, the wind industry can boast some excellent results. German wind generator manufacturers and suppliers such as Buderus Edelstahl are benefiting from their share of over 50 percent of this market. The growth trend in Germany produced eleven percent year-on-year growth, a figure that is calculated to do no harm to the industry, particularly since it has continued to chalk up new technical developments.

### Repowering – More Power, New Plant

Repowering is the term used to describe the replacement of older wind farms by new, more powerful machines. New machines means a higher installed capacity, reducing operating costs and increasing power output.

This idea could bring a lot of benefits,

**Installing the 126 metre  
diameter rotor unit at the  
Brunsbüttel 5M wind farm**





Structural steel is stocked for making gears up to 1,400 mm

especially in Germany where the extent of suitable on-shore sites is limited. Modern machines are much smoother and quieter; they are more compatible with the power grid, and achieve a higher level of utilisation. According to the German Wind Energy Association (Bundesverband WindEnergie e.V.), experts anticipate a boom in repowering towards the end of the decade.

The machine housing comprising gear steel from Wetzlar is assembled on the ground – The complete power house is fitted in one piece – The complete 5M wind power generator (from left to right)



**Increasing Output with Buderus Edelstahl**

Buderus Edelstahl is a leading company in the field of innovative product development. More than 440,000 tonnes of crude steel were produced in Wetzlar in 2005, a good 20 percent of it case hardening steels; the export share is 55 percent. Demand from Asia, especially India and China, from the USA and European countries such as Spain and Scotland continues to grow. Björn Rech, head of the structural steel sales department, comments, “The excellent quality and high reliability of our special structural steels and gear steels is appreciated by Buderus Edelstahl customers throughout the world. Machine builders who give high priority to safety and reliability build on our leading edge know-how in materials development. One example is our gear steel 18CrNiMo7-6 ISO-B High Grade that gear maker Renk has ordered for its large transmission for installation in one of the largest wind farms in the world.”

**126 Metre Rotor Diameter**

The Repower 5M wind farm in the town of Brunsbüttel in the north German state of Schleswig-Holstein has a rated capacity of 5 megawatts, and a rotor diameter of 126 metres. The heart of this colossus is a transmission made by Renk AG in Rheine, one of the world’s leading transmission suppliers for wind farms. The company has been a customer of Buderus Edelstahl for many years; in 2001 it intro-



The special structural steel sales team: Björn Rech, Nicole Kreutzer, Diana Schmidt, Diana Spaja, Reiner Fritsch (from left to right)

duced its newly developed “AERO-GEAR” transmission, distinguished by long service life, high operational reliability, high efficiency and extremely quiet running. That can be achieved only with steel of exceptional quality.

A special “high grade” category was created in the Det Norske Veritas (DNV) guidelines for the material used in this application – grade 18CrNiMo7-6. DNV classifies materials such as gear steels and their production. Under the technical direction of Ralf Rech, General Manager Open Die Forging, the first-class Buderus Edelstahl material is converted into the forged gear steel that helps convert wind into electricity.

