

LDW News

Information and news
from Lloyd Dynamowerke



LDW
Lloyd Dynamowerke

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EU project: LDW develops powerful generators for offshore wind farms

European Commission supports continued development of the transverse flux technology for the generation of wind energy



Left: Lighter, more compact generators can make offshore wind energy more efficient. Above: Dr. Norbert Götschmann, Head of Development, and engineer Wilhelm Hüneberg with a part of a transverse flux generator's first prototype. Photos: P.E. Bondestad (left), A. Caspari (above)

Lloyd Dynamowerke (LDW) and the Bremen Center of Mechatronics (BCM) have started a joint project with four other European partners to push a new technology for wind energy generators towards marketability. Using this technology, electrical machines can be 50 percent smaller and up to 70 percent lighter than current state-of-the-art machines with the same torque.

This will not only allow the industry to build and operate wind power plants at much lower costs, but also help to increase the plants' performances significantly in the medium term

The new type of generator is based on the so-called transverse flux technology, which is utilised for the first time. It greatly reduces the need for materials such as copper and dynamo sheets in the machine itself, but also – and more importantly – of steel and other materials in the tower and its foundation.

These advantages are particularly important for offshore wind farms because the

foundation has to be rammed deep into the seabed.

In addition, significant costs are saved for specialised vessels, cranes and assembly. Maintenance efforts are reduced as well, since the direct drives are subject to less wear and tear due to the absence of gears. No gearbox oil needs to be cooled and checked.

The project "Wingy-Pro", which received a 2.5 million euro grant from the European Commission, is scheduled to last four years. The kick-off meeting was hosted by Lloyd Dynamowerke in Bremen, Germany, in December 2009.

Over the last years, LDW and the Bremen Center of Mechatronics have already developed and built the generator's first prototype with a power output of 50 kW. Therefore, the operational reliability has already been proven.

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Editorial



Dear readers:

it becomes more and more important to get the maximum results from the available resources. The efficient use of materials is one side of this, the development of new ideas and innovative approaches the other. Together with the Bremen Center for Mechatronics we have been working on the improvement of the transverse flux technology for several years. Now the European Commission has also recognised this technology's potential for climate protection. The EU therefore supports our new joint project, which started in December.

We are very optimistic about bringing this powerful technology to market. Not only the wind energy industry will benefit, but all companies that want to produce large amounts of energy under difficult conditions. You will find more information about this topic on pages 1 and 2.

Please also read the notice regarding our new service brochure, which contains many useful diagnostics tips (page 4). Enjoy this edition of LDW News!

Berthold Groeneveld
Managing Director

Visit LDW at the following trade fairs in 2010:

01/20-01/24/2010

ELECRAMA, Mumbai (India), at the stand of Kirloskar Electric Co. Ltd.

02/09-02/11/2010

Middle East Electricity, Dubai (UAE)

03/24-03/26/2010

Russia Power 2010 - HydroVision Russia, Moscow (Russia)

06/08-06/10/2010

TOC Europe 2010, Valencia (Spain)

09/27-09/29/2010

HYDRO 2010, Lisbon (Portugal)

More information about the LDW stands and the various trade fairs is available on the Internet at www.LDW.de (click on „English“, then „News“ and „Fairs / Events“).

Important certifications extended until 2012

In the course of last year, LDW was again certified according to DIN EN ISO 9001 and 14001. The certifications according to KTA 1401 (nuclear plants) and ATEX (explosion-protected machinery) were extended as well. All new certifications are valid until 2012.



Efficient generators for wind power plants

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The next step now is to increase the output by a factor of twenty to 1 MW. The scientists are certain that they will be able to reduce vibrations and control the forces which are caused by the extremely high drive torque. Once that is accomplished, the project partners expect further output increases to three, six or more Megawatts within a relatively small time frame.

Next to LDW and BCM, four additional partners from three EU countries are involved, including Atlas Magnetics Europe from The Netherlands, SC Tritecc SRL from Romania and CENTIV GmbH as well as Convertteam from Germany.

The EU Commission supports this project because it can make a substantial contribution toward reaching the European climate protec-

tion goals. By 2020, the share of wind energy among the general energy mix is supposed to increase from its current level of 3.7 percent to a total of 12 to 14 percent.

More information: www.wingpro.com



The first prototype of the new generator.

Background: Transverse Flux Generator

In a transverse flux generator (TFG) the magnetic flux is directed laterally to the movement. The transverse flow helps to utilise the generator's volume more efficiently. In a multi-pole machine with high force density – and a relatively small diameter – the power-to-weight ratio is reduced significantly.

The main disadvantages of compact transverse flux generators are high torque pulsation, noise and vibrations. They are caused by variations in propelling forces and normal forces. However, intelligent control of the phase currents helps to avoid these variations almost completely.

Thirty-year-old AEG motor in Chinese coal mine replaced

LDW manufactures and assembles direct-current machine for Dongpang Coal Mine / Original was built 1978 in Berlin

If you own a computer, you probably know the problem: A few short years after the purchase it becomes extremely difficult to get spare parts or peripheral devices. Medium- or even long-term thinking is rare today in many industries.

Companies that have acquired large AEG machines in the past now get a completely different experience than that. Even though the AEG corporation was dissolved more than

Motor type: GLC 3297/49/16g
(Replacing AEG motor GLC 8165.79/16)
2100 kW / 47.75 RPM / 900 V / 2675 A
Diameter: 4.5 m / Total weight: 41 t

ten years ago, it is no problem to maintain and repair its electrical machines or to replace them with almost identical models today. LDW frequently receives these requests. We own the original drawings of AEG's large electrical machines and can therefore help without much difficulty in these cases – regardless of whether you need maintenance work or a reproduction of an older model.

Most recent example: The Chinese energy corporation Hebei Jinniu Energy Resources needed a replacement for a 30-year-old machine of the type GLC 8165.79/16, which



The new mining motor at LDW's test stand in Bremen. Guo Liang Huai (left), our representative in China, and Holger Rubach manage the project for LDW.

had been built at the AEG plant in Berlin. The motor drives a hoisting plant at the Dongpang Coal Mine. We manufactured the new machine last year and delivered it to the site, where the

parts were inspected and placed in storage. In the course of the year 2010, LDW personnel will assemble the machine onsite and manage the start-up.

LDW supplies 190-ton AC rolling mill motor

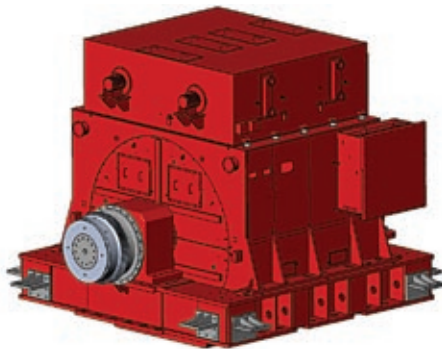
Large order from HOESCH Spundwand und Profile GmbH for a finishing mill train in the Dortmund factory

Lloyd Dynamowerke has been awarded the contract by HSP HOESCH Spundwand und Profile GmbH for the delivery of a complete new rolling mill main drive using modern AC technology.

HSP has been one of the leading manufacturers around the world for more than 100 years, producing hot rolled sections such as steel piles, mixed steel sheet pilings, ship-building sections, mine support sections and structural steel sections.

After being taken over by the Salzgitter group in 2000, comprehensive investments were made to secure the technological lead of the company and to significantly expand the sheet piling range.

Together with the company FLSmidth Koch (Saarland) and Lloyd Dynamowerke, HOESCH Spundwand is currently modernising their finishing mill train in the Dortmund factory. This modernisation includes the installation



The new AC synchronous motor has a particularly high degree of efficiency.

of a new DUO reversing mill with a modern AC synchronous motor, which is characterised by its high degree of efficiency, and a pinion stand gearbox and joint shafts.

The LDW order comprises the full engineering, production, delivery, assembly and commissioning of a complete rolling stand

drive (including documentation) operating continuously and also constructed to be maintenance and repair-friendly.

The drive basically consists of:

- Three 4000 kVA AC medium voltage converter transformers in cast resin design, connected in series to a 30 kV factory power supply.
- One 27 MVA AC medium voltage frequency inverter system with water-cooled design.
- One medium voltage AC synchronous motor, 10 / 22 MW (1417 / 3000 kNm) at 70 / 116 rpm

The order also comprises the complete power cabling, installation of all drive components and the complicated and time-consuming transport on water from Bremen to Dortmund. The drive will be delivered in summer 2010. Commissioning has been agreed for September.

Service brochure offers advice for machine diagnostics



Downtime and expensive repairs can often be avoided when the maintenance of machines and plants is optimised. Frequently, however, the required know-how or the appropriate tools are not available.

Our new service brochure therefore focuses on diagnostics. We explain the setup and the benefits of the eleven most important machine tests that we recommend our customers. The brochure is conceptualised as a guide to be kept for reference whenever insight into the various testing methods is needed.

Of course we are also happy to support you with the implementation of these measures in order to help you get the most out of your machines. Our service staff can always help you with its rich know-how and a complete set of diagnostics tools.

To get a free copy of the brochure, please contact our service team at:

Service@LDW.de
Phone +49-421-4589-0
Fax +49-421-4589-305

New team optimises supply chain

Separate division accelerates the processes between order and delivery



The manufacturing of large electrical machines includes numerous logistical processes. In order to further optimise these tasks and deliver the products even faster, LDW has set up the new division Supply Chain Management with a total of 25 employees. The team is led by Uwe Deeken (top left in the photo), who is new at LDW. Thomas Weber (top right) heads Strategic Purchasing, Erich Schlemmer (bottom right) is in charge of the Procurement Center and Michael Wenzelis supervises Production Logistics. *Photo and design: Michael Jakob*

Nobody is tired in the “Long Night of Industry”



Night-time visitors at the LDW works.

About 100 visitors – many students among them – took advantage of Bremen’s first “Long Night of Industry” to get an impression of our work at LDW. The participants were particularly interested in the huge machine parts in our manufacturing area. A delayed work shift was scheduled to arrange for 40 employees to be on the job during the visiting hours. In the

afternoon a large number of our employees’ family members had already taken the opportunity to get to know LDW and the workplaces of their relatives. Overall, ten companies from Bremen and about 500 visitors participated in the event, which took place on the evening of November 5, 2009. It is scheduled to be repeated in 2010.

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