Electrom Instruments

OFFERS MOTOR TESTING TECHNOLOGY

The electronic devices used to test and analyze electric motors and other equipment have become much more powerful than in the past. Yet, in many instances these sophisticated devices have also introduced a high degree of complexity for users, requiring that highly trained and experienced personnel perform the testing.

Many of today's devices are feature rich and capable of measuring and analyzing many factors, including surge comparisons, resistance, impedance and more. Unfortunately, not all of these potent systems are very user friendly, and some require a substantial investment.

"Today, you can spend up to $100,000 on a winding analyzer," says Mark Peden, president of Alliance Pump and Mechanical Service (Independence, Missouri), "but at the same time you could find a very robust model at a much lower price."

Peden, whose company services utilities including water and wastewater treatment plants, as well as municipal, commercial and industrial pumping equipment, elected to do the latter, investing in a powerful portable winding analyzer and motor tester. Not only was the price in the lower range, but also the system is user-friendly and is easy enough to use that highly trained specialists are not required to operate it.

Living up to customer guarantees

"We're a motor shop, which means we clean motors and install or service windings," Peden explains. "We use an electronic analyzer to test the integrity of the motor windings, to ensure that they are going to provide our customers with dependable performance."

The motors Alliance Pump and Mechanical service have sometimes been subjected to harsh conditions, including excessive heat, debris, or occasional lightning strikes, all of which mean that windings have to be replaced. When a damaged or simply worn out pump and motor assembly arrives at the shop, Alliance technicians disassemble and thoroughly inspect the motor. The windings are then cleaned, baked and surge tested to make sure they are good.

"We have to be certain that the windings are good or six months later a motor could fail, and due to the comprehensive warranty we provide, we'd end up eating the cost of repairing the unit," Peden explains.

Peden says it takes a good analyzer to do a thorough test on the windings to make sure that the integrity of the motor windings is good. "I looked at several different models, and decided that the iTIG II looked like a pretty user-friendly unit that performed all of the tests and reports that we needed."

The iTIG II is a winding analyzer and motor tester from Electrom Instruments (Longmont, Colorado) that comes with varying options and output ranges from 4 kV to 12 kV. By adding power packs one can go to even higher voltages.

Peden adds that using this winding analyzer and motor tester is like an insurance policy.

"Once we've run the analyzer and everything passes there is no doubt that the motor is good. And it also assures the customer that we did comprehensive testing, and that everything checked out," Peden says. "After the testing the device gives us a printable report that we provide to our customer as documentation of what we found. It's part of the procedure we follow in motor repair."

Power plant applications

Clark Myers, an electrician at Twin Oaks Power, L.P. (Bremond, Texas) a division of Optim Energy LLC, has been using Electrom winding analyzers for several years at the coal-fired power generation plant. The Electrom testers use high-frequency 60 Hz surge pulses eliminating ionization dissipation and thus better simulating what motors are subject to during operation.

"This is really the only testing and analyzing device we use for checking motors," Myers says. "We also use it on the back of switchgear to ensure proper protection of the motor and the line. Typically this testing is done during a scheduled outage."

Myers, a 35-year veteran of power plant construction and operation, adds that the iTIG is quite user friendly, and does not require engineering expertise or extensive training to operate it successfully. "I'm not what you would call an expert as far as instrumentation is concerned," he says. "This particular instrument is pretty straightforward. Basically, the company just showed us how to use the device, and ever since it has been pretty much second nature."

Friendly but powerful

One of the big advantages of some of today's most advanced instruments is

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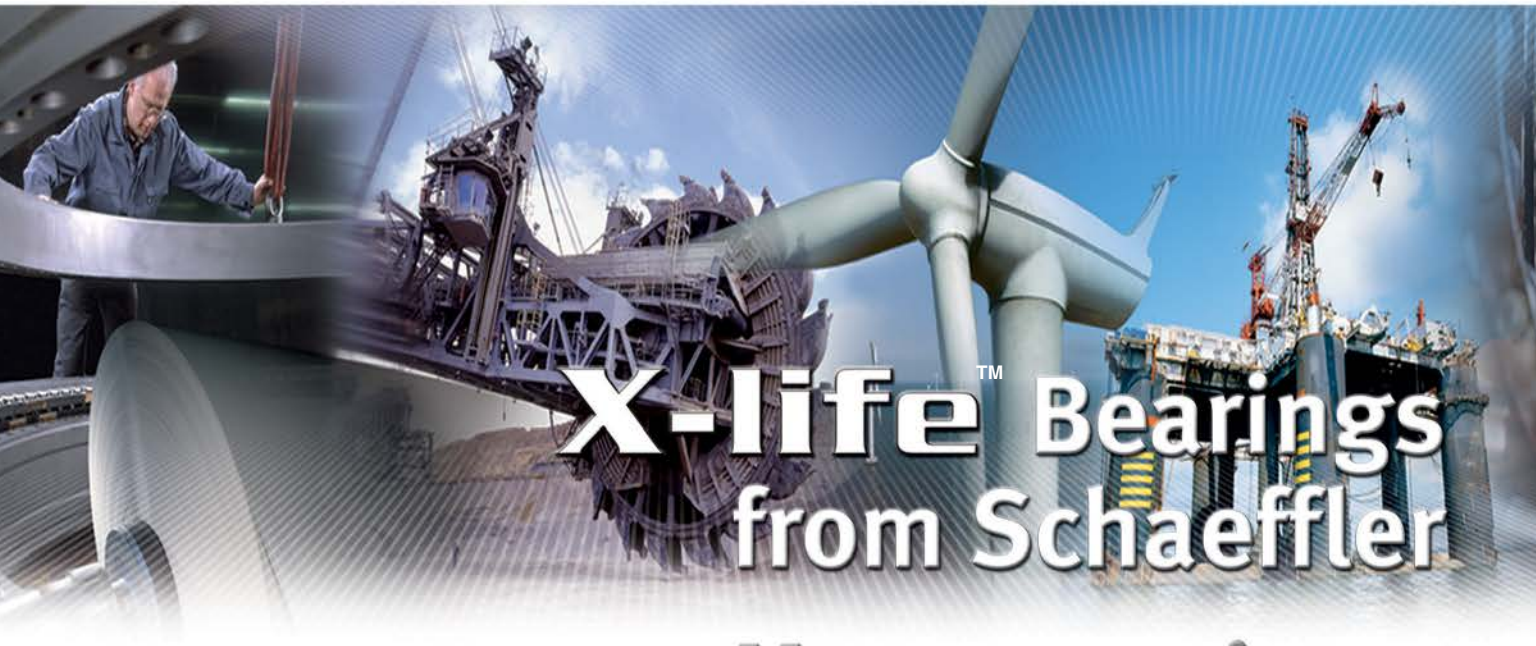

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that they are both easy to operate and interpret, but also contain powerful features. The iTIG II that Alliance Pump and Mechanical purchased gives users the ability to perform a variety of tests from the most simple low resistance tests to Megohm (also called insulation resistance), Hipot and advanced Surge testing.

One of the key advantages of all iTIG models is that they use a 60 Hz surge pulse frequency, the same frequency as most motors operate at. This high pulse rate provides a sufficient frequency to overcome ionization dissipation and can thus isolate insulation weaknesses with more sensitivity, predicting future faults before low frequency testers, and also better simulates motor operating conditions.

One of the most significant ease-of-use features is that the iTIG II enables users to enter the surge test voltage, push a button, and let the machine run the test independently. Surge waveform ranges are automatically set for all models, which eliminates the need to specify configurations, push multiple buttons, or turn dials.

All tests can be done with one instrument; they are available in manual to fully automatic models. No additional items are required other than accessories, which can be added on at any time. Tests that can be performed on this system include Surge Comparison, DC Hipot, Step Voltage, Insulation Resistance (Meg test), Dielectric Absorption (DAR), Polarization Index (PI), Low resistance (Ohms), Impedance (Z), Phase Angle, Inductance (L), and Capacitance (C). Models have different features included and all can be upgraded to any higher-level model.

For more information:
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www.electrominst.com

Bosch Rexroth

EXPANDS DELIVERY PROGRAM

Bosch Rexroth's GoTo Focused Delivery Program, originally launched in the United States in 2009, is now expanding throughout North America into a single program, with identical product offerings and lead times for customers in the United States, Canada, and Mexico. New manufacturing and logistics infrastructure at various locations in North America have made the expansion possible and reflects the increasing customer need for faster access to Rexroth technologies throughout the NAFTA region.

The GoTo Program, which started in the United States with just over 1,000 part numbers in April 2009, now offers more than triple the original offering and creates an identical program for all customers in the NAFTA region. Nearly 400 new products have been added for the Spring 2014 update. Rexroth also continues to shorten lead times within the program; 97 percent of the products in the program ship in fewer than 10 days. Key new additions to the program include a wide selection of internal gear pumps, many directional and proportional valves, and a strong foundation of BODAS mobile electronics for flexible, real-time control of electrohydraulic components. Overall, more than 250 new hydraulics products have been added to GoTo. The extensive electric drives and controls offering has expanded with new IndraDrive and safety

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controls products; and assembly conveyor products in the GoTo program now include popular TSplus Stop Gates for the first time. Rexroth is also adding more sizes of tightening systems products to the GoTo program; and the linear motion product offering has been upgraded with the latest generation of roller rail runner blocks for higher load capacities.

Users of Rexroth's popular GoTo Products apps for iPhone, iPad and Android devices can retrieve all of the updates instantly by using the apps' sync-on-demand feature. The app will be enhanced for Canadian and Mexican customers with the release of version 4.0 in the coming months, including sales channel look-up and local pricing.

For more information:
Bosch Rexroth Corporation
Phone: (800) 438-5983
www.boschrexroth-us.com

Maxon

EXPANDS DCX MOTOR SERIES

Like all motors in the DCX series, these brushed DC motors feature high power density and low vibration. In addition to the technical highlights,

the program's appeal lies in the configuration options. Motors, gearheads and encoders may be selected and ordered online. After only 11 working days, even complex drive systems are ready to be shipped. Detailed product data can be viewed online immediately, and 3-D data for the configuration is available for downloading.

The center of the Maxon motor is the unique ironless winding, Maxon System. This motor concept has unique advantages, including low electromagnetic interference and a complete lack of magnetic cogging torque. The efficiency is unrivaled by other motor systems.

The Maxon X drives family is being expanded to include two additional motor sizes: 16 and 32. The new 16 DCX 16 S is available with precious metal and graphite brushes and can be combined with the new GPX 16 planetary gearhead in the customary modular system. Combinations with ENX encoders round off the modular system for demanding control tasks. The new DCX 32 L is also available with graphite brushes and can be combined with the GPX 32. This 32 diameter DC motor is a powerhouse with excellent parameters that can easily hold up to the competition. The high thermal resistance helps it achieve higher continuous power.

Three more versions are also being added to the GPX gearhead family. The GPX 16 and GPX 32 gearheads are available with diameters matching those of the motors, in 1-stage and 2-stage versions. The planetary gearheads have

scaled gear stages. That means the geometry has been optimized for the load in each stage. With the compact design and the welded connections at the motors, the length may be kept to an absolute minimum. The GP 16 A planetary gearhead, manufactured by Maxon, has been part of the company's product program for many years, with great success. On the GPX 16, it was possible to install larger ball bearings. This increases the maximum permissible radial load by several factors. The maximum permitted input speed was also significantly increased to 14,000 rpm. The GPX 32 planetary gearhead features higher input speeds of up to 7,000 rpm and higher continuous torques of up to 2.9 Nm. The previous values were 6,000 rpm and 2.25 Nm. The 22 planetary gearhead is now also available as a low-backlash version, the GPX 22 LZ. In total, there are now four different gearhead versions available: standard, ceramic, reduced noise level and reduced backlash.

For more information:
Maxon Precision Motors, Inc.
Phone: (508) 677-0520
www.maxonmotorusa.com

Sakor Technologies

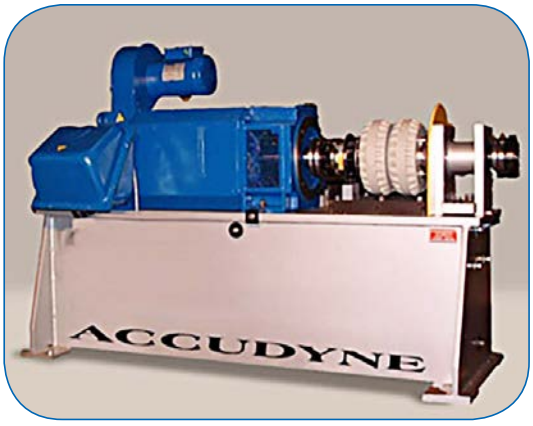
ANNOUNCES ACCUDYNE AC DYNAMOMETER FOR WIND TURBINES

Sakor Technologies, Inc. recently announced the availability of its complete AccuDyne AC Dynamometer system for wind power testing applications. The system can be used by multiple engineering groups to test and verify designs, as well as for quality control testing after manufacturing.

Ideal for testing both active and passive wind power driveline components, the AccuDyne dynamometer system can be used to test turbines and their associated blade pitch control motors, generators and wind-sensing devices and motors, and transmissions. The system can also be used for testing water coolant pumps and other ancillary components.

In addition to independent component testing, the system can also be used to test groups of components simultaneously to see how they work together. For those conducting research and development, the AccuDyne can be used to simulate the generator itself during early design stages, before a physical generator or gear box unit exists.

With the AccuDyne, wind power test centers need only one dynamometer to test a wide range of model sizes and verify design specifications for mul-



tiple product categories and driveline mechanisms. The system is also perfect for research and development groups working on new turbine and generator designs.

The AccuDyne comes packaged with the DynoLab EM test cell control system, making it a complete turnkey system to measure all mechanical and electrical wind power system components and simulate real world conditions in a fully automated test system.

Available in sizes ranging from 3 kW to 10 MW, AccuDyne dynamometers are appropriate for all wind power rotational testing needs. Modern vector drive technology allows the AccuDyne system to provide true 4-quadrant capability, with completely seamless crossover between motoring and loading modes. It also offers the most precise speed and torque control available, especially in low speed applications where full torque can be applied all the way to stall (zero speed).

The DynoLAB EM system offers many advanced features, including the ability to simulate inertia to test a wide range of large and small loads, torque pulse simulation for simulating components that exhibit cogging (such as PM generators), and noise, vibration, and harshness (NVH) testing.

For more information:
Sakor Technologies, Inc.
Phone: (517) 332-7256
www.sakor.com

SKF

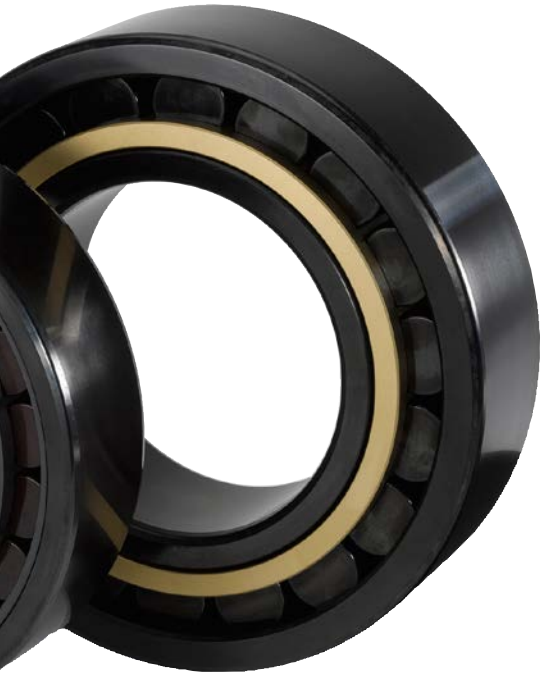
BLACK OXIDE BEARINGS PROMOTE RELIABILITY

SKF black oxide bearings add a surface layer of protection to promote higher reliability and performance for wind turbines. The coating can be specified for all types of critical bearings in wind turbine systems to help promote higher reliability against widely varying temperatures, speeds, and loads and to resist contaminants, moisture, and chemicals that otherwise could limit bearing lifecycles and increase costs of turbine operation and maintenance. The coated bearings can be introduced into new installations or serve as replacement upgrades.

Black oxide bearings ultimately can increase turbine uptime by enhancing resistance to corrosion and smearing; improving performance in low-lubrication conditions; limiting risk of fretting, micropitting, and cracking; reducing potential damage from aggressive oil additives; and reducing the effects of friction and wear.

The black oxidation surface treatment is applied to a bearing's rings and/or rollers. The process – involving a chemical reaction at the surface layer of the bearing steel – is performed in an alkaline aqueous salt solution at defined temperatures. Up to 15 different immersion steps create a thin, dark black surface layer delivering a significant performance upgrade for the broad range of bearing types and sizes in wind turbines (up to 2.2 m in diameter and up to 1,000 kg per individual bearing component).

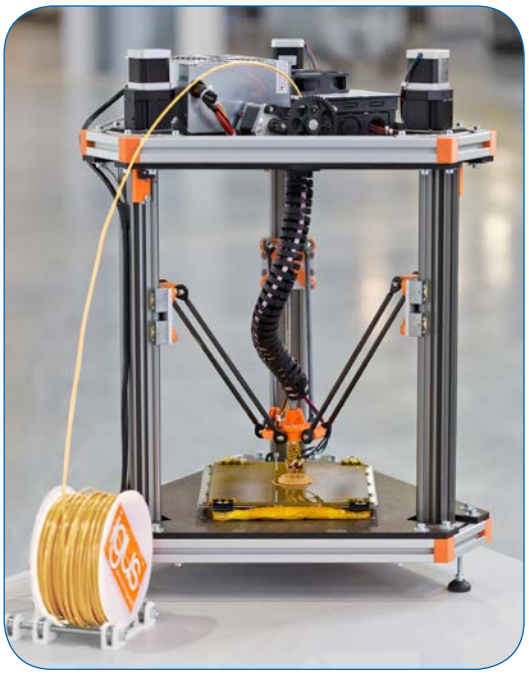
Suitable bearing types for the coating include tapered roller bearings, cylindrical roller bearings, spherical roller bearings, and CARB toroidal roller bearings, among others playing vital roles in wind turbine systems.



For more information:
SKF USA Inc.
Phone: (267) 436-6000
www.skf.com

Igus

INTRODUCES PLASTIC FILAMENT FOR 3-D PRINTING



Plastics expert igus has introduced the world's first plastic filament for 3-D printers enhanced with tribological, or low friction, properties. The material, 50 times more resistant to wear and abrasion than conventional 3-D printer materials, is ideally suited for creating custom bearings.

Igus has been researching filaments for 3-D printers in order to provide customers with more flexibility in their design ideas. Now, for example, customers can design custom parts or manufacture prototypes, while still being able to rely on the dependable, tested service life of igus plastic materials.

This exciting new product, which has already completed countless tests in the Igus test lab, is the first filament for 3-D printers specifically developed for motion control applications. Currently, Igus carries 45 different high performance plastics as optional materials available for Iglide products, with a further 100 custom materials suited to specific, demanding customer needs. Moving forward, the new filament will give customers more flexibility for the design of their application's bearings, even prototypes can be produced quickly and cost-effectively. Igus also offers access to 3-D models of Igus products in STL format, which can easily be downloaded and used directly as input data for 3-D printing.

For more information:
Igus, Inc.
Phone: (877) 974-0264
www.igus.com

Leine & Linde

INTRODUCE HIGH CURRENT OUTPUT CIRCUITRY

The ability to drive long cables and meet the high and low level voltage requirements for the transmitted signal is what sets the Leine & Linde High Current TTL (HC-TTL) output circuitry apart from its competition. The length of cable an encoder is capable of driving depends upon many factors. The cable type, mechanical properties, and overall length determine the capacitance and resistance the encoder output drive electronics must handle. This type of load will ultimately limit the amplitude and frequency of a signal transmitted.In the 700 or 800 series encoders, the HCHTL outputs can drive a 0-30 V square-wave signal with frequency of 100 kHz. Signal quality exceeds industry standards for voltage amplitude and signal rise-time while driving as much as 350 meters (~1150 ft) of cable when terminated into a 40 ma resistive load. Signal integrity is maintained with temperatures ranging from -40 to 85 degrees Celsius. Lower frequencies would allow for even longer cables.

For more information:
Leine & Linde (Heidenhain)
Phone: (800) 233-0388
www.heidenhain.com

NSK

LAUNCHES BEARING SOLUTIONS APP

NSK has launched a Solutions App that works alongside the company's Added Value Program AIP to improve efficiency, reduce breakdowns and improve profitability for industrial users. The NSK Solutions App guides users through a series of application scenarios to illustrate how substantial savings can be made by applying the right Solution in challenging industrial situations.

Effectively a window into the AIP program, the App is designed to help identify the root causes of problems and provide a guide to real-world applications where savings have been made. A range of potential solutions can be explored that have been achieved by using the structured AIP approach in combination with NSK's high quality products.

Progress through the App begins by choosing industry sectors; they range from food & beverage to steel production, machine tools and quarrying & mining (more to come). Users can then decide to investigate solutions based around specific applications, or select the prevailing conditions that relate to their own production site. Within each sector there are a range of different application scenarios to choose from allowing users to match their own equipment or conditions with examples provided by the App.

The App then provides detailed Success Stories on different industrial applications. Each application describes the issue that has been solved and provides details of the product that solved the problem; it also provides a figure for the financial savings achieved. The savings take into account a combination of factors such as replacement costs, maintenance costs, consumables and downtime.

AIP is designed to deliver real benefits in operating costs, efficiency and profitability across all industry sectors. These benefits are achieved by delivering tangible savings to assets, such as equipment and machinery, and also by improving the working knowledge of maintenance and engineering personnel.

The NSK bearing solutions App is a free download available from iTunes for Apple devices and Google Play for Android and Windows based mobile devices, there is also a desktop PC version which is available to download from the NSK website below.

For more information:
NSK Americas
Phone: (888) 446-5675
www.nskamericas.com