

Going Green on the High Seas

LOAD ADAPTOR LEADS TO ENERGY SAVINGS FOR COMMERCIAL FISHING

Saving thousands of gallons of fuel while battling through thunderous 50-foot waves are challenges for today's commercial fishing boats operating in the Bering Sea. Those challenges are met by the Gen-Tech system, a patented workboat power generation improvement that is a major energy and fuel saver. The Gen-Tech system eliminates running a separate auxiliary engine for generator operation when the main engine is in travel mode. When equipped with the Overhung Load Adaptor (OHLA) from Zero-Max, the two hydraulic pumps connected to the primary engine work effortlessly, providing generator power so auxiliary engine operation is unnecessary. A fuel cost savings of \$2,300 or more in an eight-day fishing excursion is typical using this system according to Gen-Tech.

"The auxiliary engine is not fuel efficient when in the travel mode," reports Erling Skaar, president of Gen-Tech. "Our system maximizes the operating efficiency of the primary engine with the help of the Overhung Load Adaptor so running a secondary engine is unnecessary. The additional load on the main engine from operating the Gen-Tech system is negligible, and therefore highly efficient and fuel saving. There is no added wear to the engine or connecting components. Thanks to the OHLA's rugged design, we're assured of smooth and reliable pump and generator operation. That's extremely important in the adverse and hostile environments that these fishing vessels are subjected to."

The first application for Gen-Tech system was a state-of-the-art workboat called the North American, a 35-year-old, 110-foot house forward fishing vessel capable of carrying a full load of king crabs weighing 170,000 lbs. The North American is a crab boat that

ventures forth for the Alaskan king crab fishing season. As movies and TV shows have accurately depicted, the king crab season is a high-risk business where crews and boats frequently face catastrophic storms, injury and death. The equipment needed to deal with these conditions requires the best and most robust technology, exactly the way the North American was designed and outfitted. What makes the North American's power system so unique is the Gen-Tech system aboard. According to Skaar, that system is a product of over nine years of innovative research, rigorous testing, the development of new technology and a dedicated mission statement. "When the fishing vessel isn't risking it all for a quick fortune and the continuation of an epic lineage," according to the North American's website, "it's being put to use as a working model for the environmentally conscious vessels of the future." Its fuel savings and pollutant reduction features make for a greener fishing operation, which has a positive global impact.

Gen-Tech's secret is in the patented controller and software design. The controller actually "learns" the power requirement for the input to the hydraulic pumps from the ship's main engine. Using that information, the controller then adjusts the displacement of the hydraulic pump to maintain stable frequency and voltage through the entire

RPM range of the main engine.

In the Gen-Tech system, the OHLA from Zero-Max provides a solid, permanent mounting surface. It transmits rotary motion from the main engine to the hydraulic pumps. Using the OHLA in the system eliminates the need for a secondary gearbox to operate the hydraulic pumps that can be more costly. Also, the OHLA adds much more stability in the drivetrain than a gearbox. Most important, the OHLA enhances motor operation by eliminating



product news

premature motor or pump failure due to overhung loads (axial or radial) on the pump and motor shaft. In high seas, violent shifting motion multiplies power train stress so the OHLA's stability role is even more important than in calm operating conditions. It allows the Gen-Tech system to operate flawlessly in wildly fluctuating conditions.

The OHLA (Model 1036S) is belt driven off the main engine (Caterpillar Model 399-1,125 hp) via a 2.8 to 1-speed ratio using a Gates polychain drive. With a SAE-D face mount, the OHLA has a 13-tooth 8/16 spline input, a 2-1/4 inch output shaft and a seven-inch pitch diameter on the OHLA's pulley. For added durability, spherical bearings were selected for this application. Extra

rugged to meet all operating conditions, the OHLA housing is made of 25,000 PSI tensile cast iron with shafts of 130,000 PSI stress-proof steel. Weight is 195 lbs.

The OHLA operates at 1,540 idling rpm, 2,500 cruising rpm and 3,360 maximum rpm. Connected to the two variable displacement hydraulic pumps mounted "piggyback," the pumps produce 3,000 psi pressure and deliver 120 gallons per minute. "With Gen-Tech, the North American cruises at 10 knots using only 21 gallons of fuel an hour," reports Skaar. "Without Gen-Tech, the North American cruises at 10 knots using 25 to 26 gallons of fuel an hour. While the dollar savings for an actual eight-day fishing excursion is

huge at \$2,300, also huge is the reduced carbon emissions and pollutants that help preserve our fishing environment. We're pleased to have discovered the Zero-Max OHLA and having it integrate so effectively in the Gen-Tech system."

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Wittenstein

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Building on a base of direct drive and extreme motor options, Wittenstein

has expanded its housed motor range to include the traditional premium motors as well as industrial motors specifically designed and developed to support the needs of the OEM market. The new standard industrial housed motors are designed for precise positioning applications, with simplified selection and implementation. Featuring high dynamic performance and energy savings through optimal weight and power density, products include one of the world's smallest high pole AC-servomotors.

Wittenstein motors are produced with the highest quality materials with well proven brushless three-phase technology,

according to the company's press release. Minimum weight and high-power density allow designers to create compact, high-performing machines for application in robots, medical and automation.

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Bosch Rexroth

EXTENDS INDRALOGIC PLC FAMILY

Bosch Rexroth's IndraLogic XLC PLC family enables scalable, controller-based and embedded PC solutions in conjunction with the company's

latest IndraControl device platform. Industrial PC-based hardware variants will round off the device portfolio later this year. Rexroth advanced the PLC programming using state-of-the-art PLC kernel, IndraLogic 2G, integrated homogeneously into the company's *IndraWorks* software tool and the multitasking runtime system. This

allows users to take advantage of many new functions for creating modular software projects in an end-to-end overall system in less time than before. Functions include convenient editor tools, object orientation as an extension to IEC 61131-3 and comprehensive function libraries as well as fast compilers for efficient generation of machine

Fanuc Controls

DELIVER HIGH-SPEED LASER PROCESSING

Fanuc Factory Automation America (Fanuc FA America) recently introduced

the Series 30i/31i-L Model B high-speed laser controls capable of supporting advanced levels of high speed laser processing. The new Series 30i/31i-L Model B CNCs have the capacity to deliver seamless choreography between axes motion and power modulation,

continued



codes. The modular GATcompact (Generic Application Template) project template simplifies the process of designing new machines with enhanced software quality while reducing effort considerably.

End-to-end communication between the controller and decentralized system peripherals, such as inputs and outputs or drives, takes place via real-time Ethernet Sercos III. Fast PLC cycles to 250 μ s enable optimum response times for handling time-critical process signals. IndraLogic XLC controllers come with versatile motion control functions, integrated into the run-time systems, to enhance the previous IndraLogic systems.

With its motion control functionality, the XLC handles machine applications ranging from simple point-to-point motion to the syn-chronization of multiple axes that use Rexroth's FlexProfile to integrate complex motion sequences. The graphical profile editor in the Rexroth *IndraWorks* software tool offers numerous offline and online functions for this purpose. Master and slave interfaces for Profinet RT, Profibus and EtherNet/IP are also available, in addition to Sercos III, for integrating into a wide range of communication networks.

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even in cases of extremely high speeds when processing thin-gage materials. Impressive internal laser power stabilizing characteristics deliver edge conditions on thicker materials which redefine the norm of RZ and RA (measured length of surface roughness). Truly unique in laser processing, smooth edge cross sections with superior edge finishes quantify smoothness rather than surface roughness.

Relative to other CNCs in its class, the Fanuc Series 30i/31i-L Model B laser control has update rates of 125 microseconds, arguably 40 times faster than the rate at which a single neuron can fire within the human brain. These technological features translate to superior

cut quality and accuracy; which translates into premium quality parts and a realized competitive distinction.

In line with other new Fanuc CNC offerings, the Series 30i/31i-L Model B provides up to eight MB of high-capacity, non-volatile internal memory that is available to store constant inventory nests, which need not require network access to activate and run during surplus machine availability. External interaction via ATA or Compact Flash memory cards bump up an additional 2 GB of part program storage. Added flexibility includes a USB port, where any commercially available USB storage device may also be connected to store and transfer large programs. For increased processing capability, a fast data server can also be installed in the CNC, providing up to 4 GB of flash memory and a 100-GBit Ethernet connection. A high-speed, error-immune fiber optic connection between the CNC and an integrated PC front-end allows the hard disk be used for part program storage.

The Series 30i/31i-L Model B CNC has an embedded Ethernet interface, allowing the user to integrate the CNC control system into a company network for data collection or for high-speed part program transfers. Links can be set up via the Internet, making remote diagnosis, maintenance and online training possible. Because the integrated Ethernet interface does not use a public operating system, it is practically “hacker-free” and immune to viruses, providing a safe and worry-

free connection to business networks. Minimal training and programming are needed with the new Series 30i/31i-L Model B CNCs for operators that already use Fanuc controls. Upward compatibility is guaranteed and older part programs will run smoothly on the new controls.

The Series 30i/31i-L Model B CNCs for laser cutting can be combined with rugged, energy efficient, high-performance servo drive systems that are specifically designed to deliver the industry’s leading reliability and performance—even in dusty, high-vibration environments of the most challenging fabricating shops. Laser systems with Fanuc technology benefit from Fanuc’s world renowned reliability and energy efficiency, delivering increased productivity.

The laser control series has dual energy savings settings which interpret short term and long term beam off times and adjust the laser current and energy consumption accordingly, once cutting resumes, the laser quickly engages full production. Power save features result in reduced energy costs without a loss in part production and part quality.

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Meggitt Accelerometers

SUITABLE FOR A VARIETY OF APPLICATIONS

Meggitt Sensing Systems, a Meggitt group division, recently introduced the Endevco model 7251A series, a family of small, lightweight, hermetically sealed piezoelectric accelerometers with integral

electronics. The centrally located thru-bolt mounting hole of this series provides both 360 degree cable and connector orientation, allowing the sensor to offer a flat mounting surface, even when not fully perpendicular, for ease of use in a variety of applications. Available in standard model sensitivity ranges from 500 mV/g to 10 mV/g with optional high-temperature (to +150 degrees C) and TEDS versions, design of the Endevco model 7251A series incorporates an annular shear piezoelectric

sensing element, along with an internal hybrid signal conditioner, within a two-wire system. The system transmits its low-impedance voltage output through the same cable that supplies constant current

power, with high-output sensitivity and wide bandwidth, while exhibiting low base strain sensitivity and excellent output stability over time. Its lightweight construction, weighing just 10.5 grams, effectively minimizes mass loading effects. Signal ground is connected to the outer case of the unit and, when used with the supplied isolated mounting screw, it is electrically isolated from ground. Units are supplied with a 10-foot cable, isolated mounting screw and installation wrench. Recommended signal conditioners for the Endevco model 7251A series include the model 133 three-channel signal conditioner, the model 2775B benchtop amplifier, the model 6634C vibration amplifier and the model 4990a (Oasis) multi-channel system. Recommended mounting accessories include the model 2987 adhesive mounting adaptor and the model 2950M3 triaxial mounting block.

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in low frequency applications with loads ranging from 0.11 to 165 lbs. per mount. AAC provides products related to the elimination of vibration, energy absorption and protection of components and devices from shock and possible destruction. AAC stocks a wide range of shock and vibration isolation products which

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Boca Bearings

EXPANDS
ONE WAY SERIES

Boca Bearings recently announced the release of their new and expanded One Way Bearing series. One Way Bearings have a small radial section height and are also commonly known as Anti-Reverse Bearings. This design uses the same small radial section as drawn cup needle roller bearings which make better use of reduced space. One Way Bearings are compact, lightweight, operate directly on a shaft and are also suitable for transmitting high torque. These bearings are designed to transmit torque between the shaft and housing in one direction and allow free motion in the opposite direction. One Way Bearings with and without bearing assemblies are offered both in an inch and metric series.

One Way Bearings without bearing assemblies are available in HF, FC and RC versions. One Way Bearings with bearing assemblies are available in HFL, FCB and RCB series. The HFL series has two integral radial bearings arranged on both sides of a needle roller clutch. They can therefore support radial forces in particularly tight or small areas. Plastic springs (HFL...KF) are available for some sizes. Partially knurled outer rings (HFL...R) are also available upon request. The clutch and bearing assembly



can be used in a temperature range from -30 degrees C to 120 degrees C. For a working environment above 70 degrees C, oil lubrication is recommended.

Boca Bearings also offers the OWC and the EWC One Way Bearing Series. The One Way Clutch bearings (OWC), also known as Origin One Way bearings are extra narrow and high performance bearings available as small as a 5.4 mm width. These bearings allow free overrun in the opposite direction; they consist of drawn cup roller clutch and cage and springs. Lastly the CSK series is available in two different designs: PP-two keyway notch or the P-one keyway notch series. The keyway allows the bearing to perfectly and securely fit into the shaft and give the machine, conveyor belt or appliance extra torque.

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