

## Sensor-controlled EC servo screwdriver - now even better

*DEPRAG presents its new generation of screwdrivers to a public trade fair*

AUTOMATICA 2012, the 5th international automation and mechatronics industry show was held in Munich from May 22-25<sup>th</sup>. The key players in the automation solutions sector were showing off their wares on 55,000 square meters of floor space.

In the quest to manufacture higher quality products faster and more cost-effectively, this unique exhibition will be showcasing a host of innovative solutions, as well as the latest trends in product process optimization.

In the screwdriving technology section, DEPRAG SCHULZ GMBH u. CO. presented the latest generation of its successful MINIMAT-EC servo screwdrivers. This 311E series of transducer-controlled screwdrivers, with its AST40 sequence controller, replaces the current EC-Servo system, which has been proving its worth over many years in a wide variety of applications. Transducer-controlled screwdriver systems are used anywhere where there is a requirement for maximum process reliability. With highly sensitive screw assembly tasks such as those classified as category A in VDI Directive 2862, which specifies that where there could be a danger to life and limb, maximum precision is required from the screwdriving systems. They should be equipped with a direct measurement system. Traceability of the assembly results must also be assured. DEPRAG EC-Servo technology meets all these requirements.



Sales Manager, Jürgen Hierold quoted American inventor Thomas Alva Edison, "If there's a way to do it better - find it". Explaining, he pointed out, "Our new 311E screwdriver series is a system that we have developed entirely in-house. It incorporates the experience of EC technology in its entirety that we have gained in the past, and improves on areas where our users want extra functions or general advancements."

The screwdriver series consists of three components: the 311E screwdriver, the sequence controller and a motor cable. Hierold highlighted the main features, "The system is reliable, flexible and very efficient." The 311E screwdriver was developed and tested for heavy-duty industrial use. Robust, brushless, high-performance motors with resolver commutation provide reliable power to the screwdriver function. Signal transmission is fully digital via a single cable to the screwdriver. "Integrating signal and power transmission fully into a single cable less than 11mm in diameter has enormously simplified handling", confirms Jürgen Hierold. The connection plug to the screwdriver is appropriate for harsh industrial environments. Directly through an integrated heat sink, the passively cooled motor control system channels away operating heat. Its fanless operation reduces maintenance requirements.

Flexibility, economy, reliability, data logging and communications capabilities make opting for an EC industrial screwdriver an easy choice to make. "When developing the latest generation, our engineers considered all features in minute detail", said Jürgen Hierold. The new series is

particularly distinctive for its many different variants. The controllers are available as single controllers or multi-channel systems for integration with larger control cabinets." The AST40 accommodates several programming, control and data-logging interfaces. Multiple screwdriving programs (120 via 24V I/O, and virtually unlimited via fieldbus) are available with all standard industrial screwdriving sequence command sets.

The brushless EC motors ensure outstanding dynamics and high peak torques - the ideal combination for industrial screwdriving assembly stations. The power density of the new screwdriver is double that of its predecessor, which means that a screwdriver can achieve maximum torque of 50 Nm with a housing diameter of just 36 millimeters. Its machine capability index of CmK 1.67, specified for many applications, is achieved with a tolerance of  $\pm 7$  percent. The DEPRAG screwdriver is distinctive for its compact size and the modular structure of its components. The only maintenance needed is on the gear module and the drive module. With its modular design, any repairs can be made on site by replacing individual sub assemblies.

The new screwdriver generation is available in four models, each with several torque ranges. The range extends from the 311E27 screwdriver (27 mm diameter) for torques starting at 0.2 Nm, to the 311E63 screwdriver (63 mm diameter) for torques up to 500 Nm. Jürgen Hierold stated, "The range of variants means we can offer a solution for every screwdriving task, and the prices are attractive too. Despite the considerable increase in the range of functions and features, we have been able to keep the prices in line with our current EC servo systems."

The industrial screwdriver is controlled by the AST40, a similarly enhanced sequence controller. Not only does it permit free programming of screwdriving processes, it can also quickly and easily compile specific user screwdriving programs using the embedded command set as a platform. The control parameters allow the user to fine tune the fastener run-down sequence to the particular assembly task. The TFT display unit is distinctive

for its high 800 x 600 pixel resolution, providing good readability for the user. The touch screen ensures that process data such as screwdriving results, screwdriving curves and system parameters can be quickly accessed, and the required functions easy to manipulate.



The AST40 has even more capabilities than this. "The AST40 has an integrated web server, which means that it can communicate with a PC without the need for additional software", said Jürgen Hierold, explaining the advantages of the cutting edge DEPRAG control system. Optional fieldbus interfaces such as PROFINET, PROFIBUS and EtherCAT permit communication between the PLC and the PC for programming, data capture and analysis purposes. The AST40 stores operating data records for the previous seven working days, regardless of the duty cycle. The data analysis functions are compatible with standards of today's quality management systems. "All of the required quality control data is made available to users, which means that process reliability can be constantly analyzed and optimized", confirmed Hierold.

Automation means optimization - the credo at DEPRAG SCHULZ GMBH u. CO. For over 80 years, and with more than 600 employees in some 50 countries, this machine tool constructor from Bavaria, with its innovations and optimization, has been the talk of successful product lines. The core skills of the full service provider include screwdriving technology, assembly automation, air motors and air tools, as well as its latest group of Green Energy products. It means that DEPRAG is fully loaded and ready to meet the future.

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