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Drive technology by AMKmotion moves DESTACO swivel units in car body construction:

**Productive partnership**

**Short cycle times, electromagnetic fields, limited space – car body construction is challenging This is why automotive supplier DESTACO relies on drive technology by AMKmotion. The combination of the decentralised power supply with integrated motion controller iSA and the synchronous servo motor with integrated inverter iDT5-5 makes the swivel units smart, robust and compact.**

A single movement from left to right or from top to bottom and then back again – that’s all a swivel unit is capable of. It sounds simple – but it isn’t! A closer look reveals sophisticated technology that not only makes this movement possible, but ensures it is performed to perfection.

After all, heavy parts often have to be placed in position with enormous precision – gently, quickly and to the nearest millimetre. This requires true professionals: DESTACO, part of the Dover Group, has made a name for itself as a developer and manufacturer of high-performance automation, clamping technology and remote handling solutions. The company serves customers worldwide in a variety of markets, including automotive, life sciences, consumer products, packaging, aerospace and nuclear.

In collaboration with car manufacturers and AMKmotion, DESTACO Europe in Oberursel near Frankfurt has developed electrically driven swivel units that have been in use for years. DESTACO is based in Auburn Hills (Michigan/USA): with an approximately 800-strong workforce at 13 sites worldwide, it is able to draw on 100 years of experience.

**High cycle rate**

Vehicle manufacturing is highly automated. Dozens of robots manufacture the car bodies in their cells on a production line without human intervention. Sheets are gripped, bent, punched, riveted, welded and put down again. All these actions require swivel units which hold and move the components. The individual sequences are tightly synchronised: in most cases, the processed sheet leaves the robot cell after just 45 seconds to make room for the next one. This means the swivel units have to function reliably: if the material transport stops, the production line comes to a standstill, too.

**Fluid power replacement**

Where pneumatic systems were once used to move and swivel parts, electromechanical solutions are now frequently the preferred option. The advantages are obvious: compressed air is expensive and recurring leaks do nothing to improve the cost structure. In addition, electrically operated components can be standardised by means of programming, thereby shortening what used to be a long installation process. “When I tell new customers how quickly we can get the systems up and running, I often just get incredulous looks,” says Uwe Lohage with a smile. He is Technical Sales Manager for Smart Technology at DESTACO. But numerous successful projects prove him right: “We recently installed a new system at an automotive supplier’s premises and we had the first products coming off the line after just a few hours. That was great,” says Lohage, clearly pleased.

Another advantage of electric drive is the fact that it is easy to control. “With pneumatic drives, the high pressure in the cylinder and the large flywheel mass on the arm would often cause the unit to spring back. This is currently compensated for by external mechanical stops and spring elements,” says the sales manager. “By using smart technology, we can reduce the speed of movement just before touchdown, ensuring a safe, controlled process flow.” This can happen a few degrees beforehand, so travel time is barely restricted. But this reduction takes the kinetic energy out of the movement, so there’s no longer any spring rebound at the touchdown point. Not only does this protect the material, it also significantly reduces the need for swivel unit maintenance.

**Compact and robust**

DESTACO has been using electromechanical solutions in its swivel units since 2014. The automotive supplier now works with drive technology and controls made by AMKmotion, too. “We got together with the car manufacturers to look around for space-saving solutions and quickly came across AMKmotion, who were able to offer a decentralised option,” says Lohage. Here, the control is located directly on the motor, saving the user a lot of space in the switch cabinet.

DESTACO installs the decentralised power supply with the integrated motion controller iSA and the decentralised synchronous servo motor with integrated inverter iDT5-5 in the swivel units. In the case of the iDT5, the inverter is installed directly on a synchronous servo motor, creating a mechatronic unit that saves a lot of space. Cabling work is reduced too, since the motor cables are done away with completely.

The decentralised power supply with integrated motion controller iSA makes it possible to modularise machines entirely without a switch cabinet. The iSA includes a three-phase connection and offers a DC bus supply for servo drives as well as an integrated 24-volt supply and control intelligence. As a powerful motion controller with the Linux real-time operating system, the iSA provides decentralised intelligence. EtherCAT is used for cross-communication in master-slave operation and for general gateway functions. In addition, there are optional connection options for CAN PROFIBUS, Ethernet IP and PROFINET. The iSA meets IP65, so it provides design flexibility and is ideal for modular machine construction. It performs three functions: it controls the movement, supplies the motor with power and serves as a gateway to the PROFINET line level.

**Five at a time**

In the current project, the iSA was designed to control up to five swivel units: it turned out that there were now so many moving applications in the body shop production line that the maximum possible number of PROFINET nodes had almost been reached. Clustering saved a lot of these nodes, so the system is now no longer operating at the performance ceiling.

And the AMKmotion solutions offer another advantage, too: the EMC-compliant design of the drive technology. “Strong magnetic fields occur during welding – so the technology used has to be able to cope with that,” says Lohage. AMKmotion has modified the motors for use in body construction and equipped them with a special cover consisting of a perforated plate that is capable of dissipating the electromagnetic fields. This protects the electronics and ensures safe use in the harsh environment of car body construction.

**It simply runs and runs**

“Movement in the production process can be very dynamic, but the final position has to be reached accurately and smoothly. Together with AMKmotion, we were able to optimise the interface and the motion sequence. And with this solution we can adapt the parameters to current requirements as necessary,” says Lohage. Cooperation with AMKmotion is very constructive and productive, he says: “We meet regularly and get all the technical support we need. We arrange meetings with the customer during project planning so as to arrive at optimum results,” adds the sales manager.

One issue that is always of particular interest to users is the question of component service life. Lohage thinks for a moment: “We don’t actually know how long our swivel units work for: they simply run and run without problems, as does the AMKmotion drive technology. That’s the way it’s been for years.” Car manufacturers and suppliers currently plan on using the swivel units for 15 to 20 years. “If a product is discontinued, we simply install the units in the next line,” Lohage says, adding with a twinkle in his eye: “It’s bad for business, but good for our customers.”

*7.981 Zeichen inkl. Leerzeichen*

***Meta-Title:*** *DESTACO swivel units with drive technology by AMKmotion in vehicle construction – compact and robust*

***Meta-Description:*** *Automotive supplier DESTACO uses decentralised drive technology by AMKmotion for its swivel units.*

***Challenge:*** *Limited space and electromagnetic fields*

***Solution:*** *A decentralised solution and EMC-compliant design of the drives*

***Keywords:*** *AMKmotion; drive technology; swivel units; DESTACO; body construction; vehicle construction; decentralised; synchronous servo motors; controls; inverters; power supply*

***Social media (for AMK channels):*** *Short cycle times, electromagnetic fields, limited space, controlled movement sequences – car body construction is challenging This is why automotive supplier DESTACO relies on drive technology by AMKmotion. The combination of a decentralised power supply with the integrated motion controller iSA and decentralised synchronous servo motor with the integrated inverter iDT5-5 makes the swivel units smart, robust and compact.*

***Social media (for editorial staff):*** *Short cycle times, electromagnetic fields, limited space, controlled movement sequences – car body construction is challenging This is why automotive supplier DESTACO relies on drive technology by AMKmotion. The combination of a decentralised power supply with the integrated motion controller iSA and the decentralised synchronous servo motor iDT5-5 makes the swivel units smart, robust and compact.*

**Captions:**

Ein Bild, das Maschine, Werkzeug enthält.

Automatisch generierte Beschreibung

**Image 1:** In the swivel units, DESTACO installs the decentralised power supply with integrated motion controller iSA and the decentralised synchronous servo motor with integrated inverter iDT5-5 by AMKmotion.



**Image 2:** “Movement in the production process can be very dynamic, but the final position has to be reached accurately and smoothly. Together with AMKmotion, we were able to optimise the interface and the motion sequence. And with this solution we can adapt the parameters to current requirements as necessary,” says Uwe Lohage, Technical Sales Manager for Smart Technology at DESTACO.

Ein Bild, das Elektronik, Kamera, Kameras und Optik, optisches Instrument enthält.

Automatisch generierte Beschreibung

**Image 3:** The synchronous servo motor with the integrated inverter iDT 5 saves installation time. The inverter is directly wired to the servo motor.

Ein Bild, das Elektronik, Elektronisches Gerät, Kamera enthält.

Automatisch generierte Beschreibung

**Image 4:** The decentralised power supply with integrated motion controller iSA is robust and space-saving. It is simply installed directly in the machine – so the user no longer needs a switch cabinet.

**Image credits:**

**Image 1 + 2:** DESTACO Europe GmbH

**Image 3 + 4:** AMKmotion GmbH + Co. KG

**About AMKmotion**

AMKmotion specialises in the development and manufacture of electric drive systems and sees itself as a long-term partner in the field of industrial mechanical engineering and plant engineering. The company’s aim is to help its customers achieve technological leadership by integrating individual and sustainable solutions.

The basis for this is AMKmotion’s hands-on mentality, combined with expertise acquired in more than 60 years of company history. We attach particular importance to personal advice and trusting cooperation with customers.

The company was founded in 1963 as AMK Arnold Müller GmbH & Co. KG. It has belonged to the Arburg family since 2021 and has operated under the name AMKmotion GmbH + Co KG since then. The portfolio includes electric drive technology, control technology and industrial automation technology. AMKmotion has a total workforce of 500 people. In addition to its headquarters in Kirchheim unter Teck, AMKmotion has production sites in Weida (Thuringia) and in Gabrovo, Bulgaria, as well as twelve branch offices around the world.

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