

Press Release

Overcome planning uncertainties

E-Mobility picks up speed

Flexible assembly systems for every requirement

Electro mobility is the definitive key technology for the sustainable transport system of the future. The policy-assisted development of E-mobility is moving in the right direction. The automotive industry and its suppliers, however still find themselves in a dilemma regarding the design and project planning of their production and assembly systems. Uncertainties in planning for volume and unknown practical values continue to be the greatest challenges.

“This cutting-edge sector faces a conflict regarding the planning of assembly systems. The chosen technology must be able to flexibly adapt to increased capacities resulting from rising volume, reaching all the way up to fully automated systems. However, today’s assembly of smaller quantities must also ensure top processing reliability, because – as always in vehicle manufacture – errors in assembly are a real danger to life and limb”, explains Jürgen Hierold, Sales Manager at the machine builder DEPRAG SCHULZ GMBH u. CO. from Amberg, Germany.

E-mobility imposes certain requirements on the assembly process: top processing reliability for safety-related components, high flexibility due to the wide variety and targeted reliable electro-static discharge (ESD capability) of system components utilised. In addition, these components require an assembly environment which fulfils the guidelines of technical cleanliness and also scores highly on ergonomic aspects. The customer may face difficulties in coming up with an economical solution to this complexity.

“That, which for the customer may seem difficult to solve, can be realised cost-effectively with our in-house standard components and solutions. Our components are already all coordinated and compatible with one another. Integration runs smoothly and there are no time delays, in contrast to situations where the customer needs to align and adjust components from varied manufacturers” explains Jürgen Hierold. All components, such as sensor-controlled screwdrivers, feeding systems, position control portals or stands, electronic control and evaluation systems, tool change supervision, pick & place units, etc. can be selected from the company’s standard programme.

The automation specialists at DEPRAG offer flexible assembly solutions for all grades, which can all be adapted to the current market situation: from components and manual work stations, up to semi or fully-automatic assembly systems. This flexibility specifically counteracts planning uncertainties and is continually responsive to modification demands.



Screw assemblies of vehicle manufacture elements are principally category A screw joints in accordance with VDI standard 2862. Processing reliability is the top priority and all processing steps must be documented and monitored. This is true for fully automatic systems as well as manual work stations which are equipped with control portals made from high quality steel profiles. These precisely control the screwdriving procedure and ensure the reliable vertical guidance of the EC-servo screwdriver. The operator is guided step by step through the screwdriving task: The sensor technology activates the appropriate screwdriving parameters for each screw position, releases the fasteners, indicates the required bit change for the screw position, monitors the screw assembly and evaluates the screwdriving results. The portal can be adjusted to be used in a seated or standing work station using the height-adjustable work surface.

One such guarantee of success is the "intelligent manual work station". It can be flexibly adjusted to any economic situation and is particularly beneficial if automatization appears uneconomical. This is particularly relevant for E-mobility where production rate trends are difficult to predict. For the assembly of E-mobility components, it is preferable to opt for a flexible, upgradeable assembly line with intelligent manual work stations which combine manual handling with top processing reliability.



Sword feeders are used for the feeding of varied fasteners. Jürgen Hierold: "For this sector, we use feeding technology which fulfils the requirements of technical cleanliness. In contrast to vibratory spiral feeders, only low friction is generated during the transport of fasteners. In addition, at the points where friction can occur, vacuum fittings are connected. Damaging dirt particles are largely eliminated through suction."



DEPRAG is known for their user-friendly and self-explanatory control and measurement technology, which controls and documents the assembly processes. The tried and tested software “recognises” the different screw sizes and types, the preset parameters and the tightening procedures to be used, as well as the tightening tool required for each position. The screw assembly sequence is set out in detail. Whether torque or angle tightening procedures, friction value procedures, clamp force control or special tightening procedures, the operator uses the clear and coherent touch screen to precisely record whether the screwdriving task has been carried out successfully.

It is not only the control and measurement technology which guarantees excellent interaction between man and machine (HMI). The MINIMAT®-EC servo screwdriver with proven sensor-controlled screwdriving technology even gives the operator the option of push-to-start or button start. The screwdriver is extremely smooth due to the bearing on the position control portal and the reduction of mass. Operator fatigue is reduced to a minimum. The ergonomic screwdriver handle is also instrumental. Furthermore, optimal visualisation of the screwdriving task also contributes to successful operator guidance of the complete system.

As well as standardised manual work stations, DEPRAG also supplies automated, extremely flexible assembly cells of their DCAM product family (DEPRAG COMPACT ASSEMBLY MODULE). Equipped with one of the modern DEPRAG screwdriving function modules, and appointed with high quality industrial spindle screwdrivers and combined with a screw feeder, you can depend on the DCAM to complete any screwdriving task. “The modular assembly cell is particularly suitable for fluctuating production rates, diverse product ranges and short product life cycles. As a system solution, the DCAM combines efficiency with the best possible processing reliability. The modular, flexible platform concept, in combination with the freely programmable X-Y axes, justifies the implementation of this assembly cell for the most varied of assembly tasks”, says Hierold.



DEPRAG has another notable screwdriving system in their program, specially designed for bodywork construction screw joints (Body in White): the adaptive DEPRAG Fastening System. The selection of the correct fastening technology for lightweight construction is of utmost importance and consequently flow hole screw assemblies are the established technology for bodywork construction in the automobile industry. The adaptive assembly unit Adaptive DFS combines EC-servo screwdriving technology with EC-servo feed technology. This enables automatic piercing detection throughout the flow hole assembly, independent from screw and component tolerances. The processing parameters are automatically adjusted and the procedure is continually optimised. A robot can also easily be connected to the screwdriving system. Finally, all customer specifications for E-mobility are fully satisfied by DEPRAG standard components: processing reliability, flexibility, ESD-capability, technical cleanliness, ergonomics and economic efficiency.

DEPRAG SCHULZ GMBH u. CO. is one the market leaders in the manufacture of air motors. Based on the development and production of a wide variety of pneumatic drives over the past decade, they have expanded their expertise into the new field of turbine technology. Their innovative solutions can now be applied to an entirely new range of applications. DEPRAG, based in Amberg, Germany has around 700 employees in over 50 countries. Innovation and the continuous advancement of their existing product lines has meant that DEPRAG is always ready with a solution to the latest challenges of the market.

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