

Press Release

The DEPRAG Position Control Stand Provides Maximum Processing Reliability

Guidance and software now integrated in the base stand

Although today many industrial procedures are already automated, the automation of applications is still becoming ever more popular, particularly in sectors where human hands are used to assemble products, tighten screws or glue together components. Nevertheless the flexibility of an employee working on assembly remains a key factor for competitive industries. For that reason the engineers at DEPRAG SCHULZ GMBH u. CO. are continually optimizing and improving currently automated solutions whilst also advancing into sectors where automation has not previously been an efficient option. The solution, an innovative semi-automatic manual work station, is extremely productive, reliable and economically designed to provide an outstanding working environment for the operator.

The "intelligent manual work station" combines manual work with processing reliability which is in no way inferior to automated production. In a well-conceived solution processing reliability is constantly guaranteed despite changing personnel on shift. DEPRAG, the specialists in screwdriving technology and automation have a range of sophisticated standard modules which can be used to design an efficient and ergonomic manual work station. One essential component is the new position control stand.



PKS – Precision Control Stand

The position recognition feature increases processing reliability in applications where several screw positions need to be assembled in a certain order on one product. As soon as the position control stand is in the correct position screw tightening will begin. Equipped with guidance hardware and software, the stand will only allow activation of the correct function once situated in the correct position.

The position control is able to guide inputs and outputs depending on the application. This includes functions such as clamping and locking workpieces, feeding connection elements and activating measurement functions. If there are a large number of screw positions the position control stand can be used to determine and monitor the relevant operating mode required and the order of positions, the screw can only be tightened if the worker has kept the order in the correct sequence.

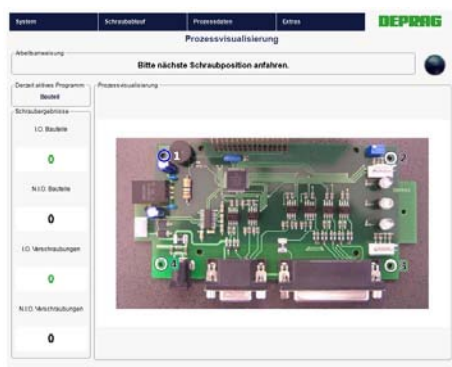
In an improvement to previous models, this position control stand has many new innovative features. The electronics integrated in the base stand do away with the need for an additional external controller. The following hardware components are included: Linux-based Mini-PC, 24 volt inputs and outputs for PLC, Toolbox and ASTxx sequence controller and an HDMI connection for a standard PC monitor. There is an Ethernet bushing for access to an integrated web server. Other features are the serial interface for field bus module and connection options for up to three positioning sensors and a part sensor.

There are four LEDs on the base stand displaying the status of the procedure, they signal the status of the screw assembly, a correctly assembled position is displayed as green, an incorrectly assembled position as red and further work on the workpiece is prevented until the error is sorted and corrected by the operator. Only then can the operator carry on and assemble the next screw position. An orange LED indicates the "power signal" and blue is for "system ready".

The monitor, used for visualization of the process, can be connected via the HDMI on the base stand of the position control stand. The monitor gives the operator exact instructions and shows in color which positions on the product have already been assembled. If the screwdriver mounted on the stand is at the pre-set X-Y coordinate, then this is marked on screen in color and with a text display "OK" or "NOT OK". The lit up status LEDs on the base stand also inform the operator of the current status of the screw assembly.



PKS – integrated into a Workstation



Process Visualization

The web interface is used for adjustment of the processing sequences where the operator can adjust all settings as well as setting controller configurations. An additional module "processing display web interface" can also display the current status in quasi real time on the HDMI monitor. This enables assembly processes to be monitored on a remote PC or via Smartphone or tablet.

The position control stand can be controlled by four different operating modes. Stand-alone operation with an ASTxx sequence controller is one of these. This could be with or without a Toolbox. The operator can download an image of the product and using program creation with "teach mode" each screwdriving position on the image can be indicated by the stand at the actual original positions. Up to 1000 screwdriving positions can be set per program whereas the number of possible programs in operation with the input and output interface is limited to 120 programs and 120 screw positions. A MICROMAT-F/MINIMAT-F screwdriver can optionally be used with additional pneumatic controller and another option is operation with an external field bus module (Profibus, ProfiNet, EtherCat, EthernetIP).

The stand can be operated with screwdrivers of the EC or EC servo series. They enable free programming of the screw tightening – torque, angle, speed, waiting time and rotational direction are individually adapted to the screwdriving task. The integrated torque and angle recording enables the exact control of the screw tightening as well as the documentation of important processing parameters.



These features result in a position control stand with the best possible processing reliability and the complete production sequence can be coordinated, optimized and controlled. When assembling several screws on one component the correct order of screw tightening is guaranteed, again ensuring processing reliability. At the MOTEK trade fair 2015 which takes place in Stuttgart, Germany from October 5th to 8th, DEPRAG is presenting their new innovations in hall 5, booth 5310. The company demonstrates varied detailed solutions focusing on processing reliability in

screw assembly.

When developing the "intelligent manual work station" DEPRAG have used their standard components, each successfully tried and tested in worldwide production. This enables customized design of any assembly system at an optimal price-performance ratio. With 600 employees in over 50 countries DEPRAG SCHULZ GMBH u. CO. is a well-respected partner known for the development of innovative automation designs. As well as a full service provider in the areas of screwdriving technology, feeding, control and measuring technologies the machine builder combines their products to create complex semi or fully automated assembly systems. From consultation to service and maintenance everything is available from one source, the automation experts DEPRAG.

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