Flexible, accurate and fully automatic printing system

FLEXIBLE, ACCURATE AND FULLY AUTOMATIC PRINTING SYSTEM

tucano. plus

essemtec.
be more flexible
SMART solutions for tomorrow’s electronic production

- Reliable and robust design with a small footprint
- Process alignment capability of 2 Cpk @ ±25 µm 6-Sigma
- Machine alignment capability of 2 Cpk @ ±12.5 µm 6-Sigma
- Board size up to 600 x 580 mm
- Cycle time of 10s + printing time
- Auto-setup functionalities:
  - New product setup in less than 10 minutes
  - Product changeover in 2 minutes with automatic stencil loading and positioning
- Dual camera vision system with selectable camera lighting color (RGB)
- Conveyor direction and speed freely programmable
- SMEMA protocol for auto up- and downline processing
- Under-stencil cleaner for dry, wet and vacuum cleaning
- 2D inspection for stencil and PCB post-print verification
- Easy operation with touch screen, keyboard and trackball
The Tucano-plus — sophistication is not magic

The trend towards smaller lead pitches and components makes it more difficult to achieve accurate, unflawed and perfectly printed PCBs. The print process defines the quality of the end-product. All subsequent process steps are based on initially printed structures, regardless of whether adhesive, paste, ink, etc. are used. A huge effort is necessary to correct defects from the print process later. Therefore, automation and process control are highly important.

There is a demand in the market for printers with the highest accuracy and the capability of accurate repetitive printing.

The Tucano-plus printer optimally combines the requirements of quality and accuracy with speed and reliability. Due to its flexibility, the Tucano-plus can be adapted perfectly to virtually every print task.
High-tech engineering for total flexibility and quality

The Tucano-plus comprises high flexibility as standard. This enables the process of the entire variety of the customer’s product range. Advanced options will be chosen and implemented to optimize the performance and repeatability. This allows the Tucano-plus to be configured precisely to every need and budget. The performance stability of each single module is decisive for the entire system productivity, especially in the case of inline operation. The Tucano printer is designed for continuous three-shift operation.

A main requirement is to provide the highest performance while simultaneously retaining the desired dynamics. The Tucano-plus is capable of processing virtually every print task in high-mix production environments.

**Reliable**
A very solid machine frame and a robust design guarantee a long lifecycle. Additional maintenance, except for the regular cleaning and service measures, is not necessary. The Tucano-plus covers a large printing area (600 x 580 mm) on a very small footprint of only 1.3 sqm.

**Flexible**
Board sizes from 40x40 mm up to 650x580 mm (1.57x1.57" - 25.59x22.83") can be processed. Furthermore, stencil frames with a width up to 737 mm (29") can be loaded. Smaller frames can be loaded with special adapters providing more flexibility to the customer.

**Accurate**
The solid structure and the high-tech vision system combined with a precise table movement ensure the machine alignment capability of 2 Cpk @ ±12.5 µm 6-Sigma.
Conveyor
The direction of the conveyor is freely programmable for stand-alone operation as well as for automatic up- and downline processing. The SMEMA protocol ensures fast, reliable inline communication. The conveyor speed can be programmed up to a cycle time of 10s. Additionally, extraordinary components can be provided in slower speed together with a programmable soft stop for sensitive products.

Clamping System
The design of the clamping system ensures full stencil contact with the PCB, which guarantees optimal print results. PCBs with thicknesses from 0.2-5 mm (0.0079-0.197") can be processed.

Camera Vision System
The highly precise dual camera vision system is capable of recognizing fiducials and pads in high resolution. Additionally, the camera lighting color itself is selectable (RGB) to adjust the vision perfectly to the board and pad color. This ensures accurate performance even with unusual and special products.

Board Support
The magnetic table offers a wide range of board support options. Single tooling pins in different shapes can be set manually. Using the integrated pneumatic system, the whole range of pneumatic support systems can be used e.g. Vacuum Nest, Vario Grid, Grid Lock, Quick-Tool Control Units, single Vacuum Tooling pins.

Double Squeegee System
The independently programmable double squeegee system meets the requirement of different print pressures on the front and rear squeegees.
Automated processes and easy handling

Whether integrated into a line or used in stand-alone operation, the automated setup functions of the Tucano-plus guarantee very short setup and changeover procedures. The time-consuming search and input of data for precise positions of PCB and stencil are no longer an issue. This not only reduces the setup time, but also ensures high precision from the very first print. A well structured software combined with a touchscreen, keyboard and trackball provides fast and easy operation.

Efficiency not only stands for the printing process but also includes the perfect assistance for the operator.

Customized Printing
Highly sensitive products can be in the need of special care e.g. slow transfer and soft stop positioning on the conveyor or they are robust and the parameters can be adjusted to achieve the highest throughput. Printing parameters such as print pressure and speed, table separation or paste preparation are adjustable to fit every requirement regarding aperture size, stencil type or solder paste specification.

Automated Product Setup
The standard version of the Tucano-plus is already a highly dynamic system that covers an impressive product range. Establishing the setup of a new product in less than 10 minutes, setup guidance leads the operator through every stage. Important setup stages are processed automatically and the information is saved for each product.

Time-saving Changeovers
Product changeover is simplified due to the auto setup functions: all required print parameters will be instantly adjusted according to the changed product. The stencil is automatically drawn into the machine, positioned and clamped. In addition the transport system automatically adjusts to the correct width of the following PCB. This enables product changeovers within two minutes or less.

Production Monitoring
During production the actual fiducial recognition on the PCB and stencil is displayed on screen. Furthermore, the status of cleaning solvent and paper is shown and additional customized messages can be programmed. Giving maximum assistance for the operator the production can be scheduled in batches and the number of remaining PCBs can be monitored.
Advanced options for high-end production

**Under-stencil Cleaner**
The cleanliness of the stencil is very important for the quality of the print results.

The automatic under-stencil cleaner of the Tucano-plus is easily programmable and ensures proper cleaning of the stencil. The system offers dry, wet and vacuum cleaning.

**2D Inspection**
The post-print verification of the board and stencil are important for two main reasons. First, the printed substrate can be analyzed and PCBs with insufficient results can be removed from the production line. Second, to provide for the cleanliness of the stencil, an automated cleaning according to the stencil blockage can be programmed and saved for each product.

**Tooling Mapping**
The precise positioning of tooling pins is important for products with underside components or multiblock PCBs. Usually this is a time consuming process. Therefore, the Tucano-plus offers an advanced Tooling Mapping. All positions are saved while a laser pointer guides the operator to the exact position of each pin. The camera system confirms the proper positioning.

**Temperature and Relative Humidity**
To process moisture-sensitive devices (MSD), production facilities are under climatic control. Tucano-plus offers additional monitoring of the temperature and relative humidity inside the printer. Freely definable thresholds for warning notifications can be activated to provide process security for these highly sensitive components.
Essemtec support and services – global, local help

We are here to help you if needed. Essemtec has experienced, globally distributed service engineers that maintain and support over 6000 installations worldwide.

**Investment protection**
Essemtec offers predefined investment protection programs. If the additional modules do not fit your growing requirements and you need faster or different machines simply trade in your current equipment for a predefined attractive price.

**Hotline support 24/7**
Furthermore, our thoroughly trained hotline engineers will answer your questions around the clock and quickly resolve most issues via phone.

**Regional support and spare part hubs**
Local service staff will support you and ensure help in the shortest possible time.

**Application support**
Our application support can help you to find the right solution for all your problems. We have highly skilled, cross functional teams in most areas of SMT production. Our solutions may entail process development for jet dispensing or simulating oven profiles for a given substrate load. Furthermore we do not shy away from hardware modifications, special tooling & automation, customized grippers and nozzles as well as other specialities.

**Lowest cost of ownership**
Essemtec machines are designed with the entire assembly process in mind to achieve lowest cost of ownership. Price and placement speed are only two factors in the COO calculation and must be weighed up against others. These include reliability and low maintenance time, number of serviceable parts, quick job setup, fast changeover times, low defect rates, operational efficiency and reduced waste cost for dispensing applications.

**Do you have a particularly tricky SMT application?**

**Trainings**
Dedicated equipment and process training takes place during installation. Follow up training for new employees and brush up courses can be provided at our training centers or directly at your site. Computer based training courses are also available for self assessed learning.

**Maintenance**
Get a maintenance contract directly after the warranty period ends. Benefit from properly maintained equipment and spare parts at a reduced price.
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