

# CRAE - Connector Robotic Assembly Equipment

P/N: 01-03-0006



**StoneShield**  
ENGINEERING



CRAE is a semi-automatic connector assembly equipment designed to pick up individual components and automatically assemble them into a complete connector.

It is equipped with rotating trays in order to ensure nonstop production, allowing the machine to operate in one side of the trays, while the operator is loading or unloading components on the other side.

The components are handled by a robot equipped with a clamp in a very fast way.

A vision system, with multiple cameras, is used to detect components and their orientation and to verify the accuracy of the assembly.

By using a vision system to perform these tasks instead of the traditional probes and pins and tight tolerance jigs, a practically maintenance free machine is obtained.

The trays can be changed, allowing the machine to be used for other assemblies.



#### Flexibility:

Handling, insertion and assembly of different parts, sub-assemblies and complete assemblies using one robot with one clamp.



#### Productivity:

Assembly of 3 complete sets in one cycle  
Rotating trays for non-stop production



#### Error-Proof:

Vision system with multiple cameras to validate components' position, orientation and assembly accuracy, identifying OK and NOK assemblies



#### Connectivity and Traceability:

Network connection via OPC-UA to KSK servers  
Batch production  
Production reports and dash board analysis  
Interface with touchscreen and barcode



#### Controlled Process:

Controlled assembly depth and position  
Protocol to discard NOK parts  
Calibration of vision system



**STONESHIELD** - ENGINEERING, LDA

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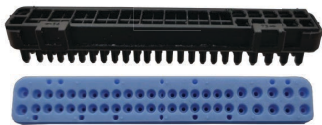
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### Applications:

Assembly of individual components into connectors



### Technical Features:

- ▶ 3 loading areas with rotating trays, to ensure non-stop production;
- ▶ All components and assemblies done by a single robot with a clamp;
- ▶ Automatic detection of component's presence and position, using a vision system;
- ▶ Vision system to perform final visual inspection, to mark OK and NOK parts;
- ▶ NOK parts automatically segregated;
- ▶ Constant monitoring of vision system;
- ▶ Controlled assembly depth and position;
- ▶ Maintenance free machine, since it doesn't use jigs or pins to detect presence, position and accuracy of components and assemblies;
- ▶ Trays can be replaced to perform other assemblies;
- ▶ Selection of production orders using barcode readers or remotely by KSK servers, via OPC-UA protocol;
- ▶ Configuration and maintenance mode password protected;
- ▶ Partial and global connector's counters, including down-counter associated to the production: batch production;
- ▶ Working time counter;
- ▶ Several system's languages, including English, German, Portuguese, French...;
- ▶ Easy upgradable software, that can be done through a USB stick or remotely.

### Industry 4.0 Features:

- ▶ Analysis of production data and statistics via dashboard (local or remote);
- ▶ Remote assistance and troubleshooting;
- ▶ Network connectivity and remote configuration;
- ▶ Saving of KPIs to USB and/or remote location;
- ▶ Automatic and immediate error reporting.

### Technical Data:

#### Dimensions:

Length:	1350 mm
Width:	1820 mm
Height:	1900 mm
Weight:	500 kg

#### Connections:

Electrical:	230 VAC @ 50 Hz - 1 IEC standard male socket
Consumption:	1.5 kW (peak)
Air pressure:	5 to 7 Bar - quick-coupler socket - Ø 8 mm
Interface:	Touchscreen, barcode, USB, Ethernet and tower LED.



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