Automatisierungstechnik
Niemeier GmbH

XBUS-FA

Induction soldering of interconnections of solar modules

- *fully automated cutting, stretching and placement of the ribbons*
- *induction soldering*
- *robust process for continuously high quality*
- *high precision in soldering and positioning*
- *high volume and short cycle times*
- *low wear*

Induction soldering for interconnection (BUSING)

One of the most important processes in manufacturing solar modules that determine the modules quality is soldering the string interconnections. In order to achieve high-quality joints, the tab ribbons need to be mechanically pressed together when being soldered.

This is achieved with a ceramic hold-down that incorporates the induction coil. Both parts are pushed against each other and heated inductively until the joint has been created.

Induction soldering with an integrated hold-down has numerous advantages:

- Heating power can be switched on and off within a very short time.
- The ceramic hold-down is not heated, i.e. after switching off power it only insignificantly affects the solidification of the solder while still applying pressure.
- Heat transfer is contactless and is not affected by contamination.
- The heat source does not touch the solder joint and thus is not significantly subject to wear caused by oxidation or burn-off.
- Because the hold-down is electrically insulating, accidental short-circuiting of solar cells is prevented.

Soldering Head for 3BB/4BB/5BB

HF generator

Controller

Water cooling system

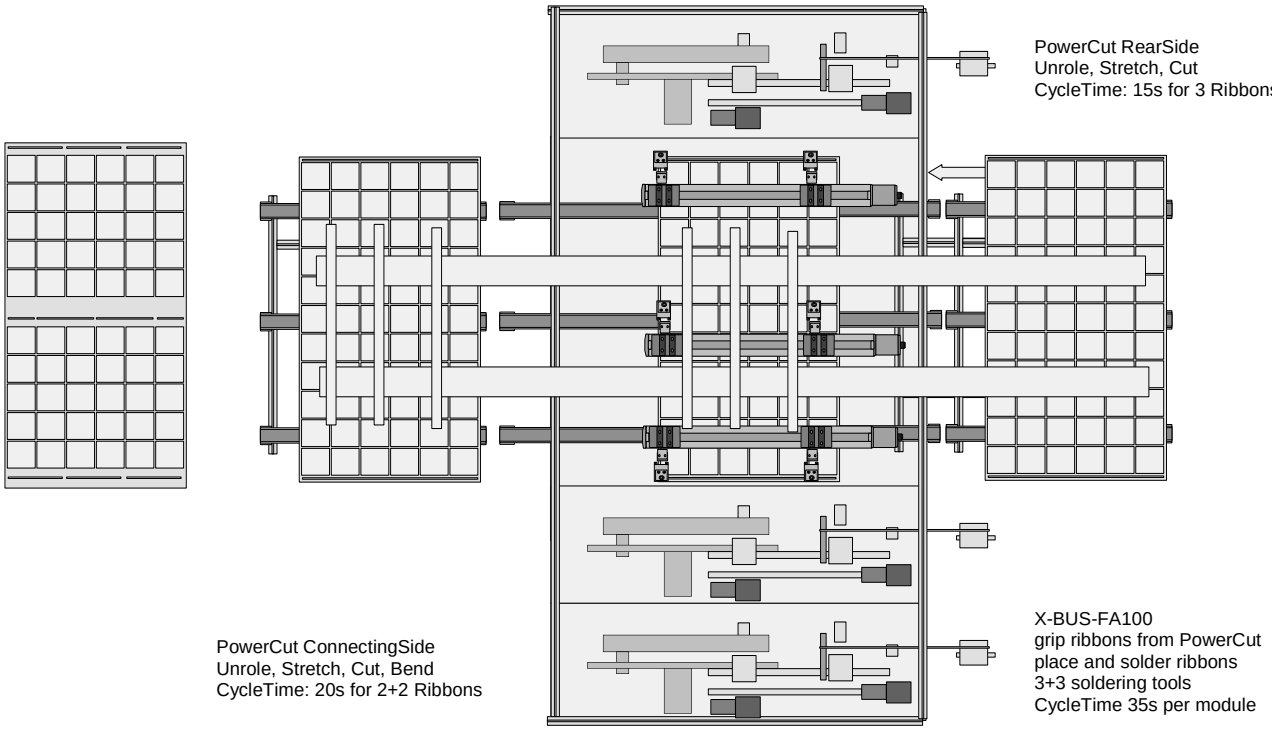
Ribbon handling: stretching, cutting, bending, …

Automatic soldering of string interconnections

The cross connectors are fed from the role. The copper strip is pulled off the role with a gripper. With a second gripper, the ribbon is stretched by a relative movement. This allows a defined stretching of the ribbons. The precision cutter with a leading pressure clamp ensures a precise, right-angled and burr-free cut. A handling pushes the assembled cross-connectors with template under the cell connectors onto the panel so that they can be soldered with induction. The coils and generators have been optimized in such a way that several soldering points can be soldered at the same time.

Model	XBUS-FA60	XBUS-FA100
throughput	60 modules/h	100 modules/h
soldering method	Induction	
PowerCut	1x extern	2x intern
Cell types	3BB / 4BB / 5BB / 9BB / 12BB	
max. module size	2.000mm x 1.000mm (6 strings a 12 cells)	
min. module size	1.600mm x 650mm (4 strings a 10 cells)	
Working heigth	950±20mm	
Control	Industrial-PC with WinControl	
power suply	400V, 50-60Hz	

XBUS-FA100



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