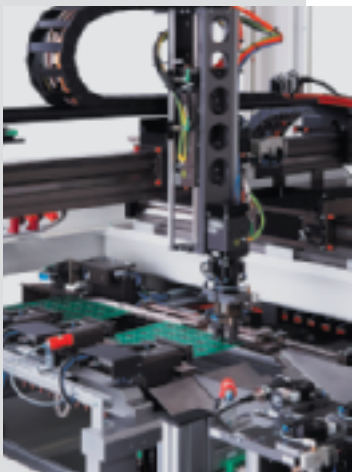


GAS-Depanelling Technology



Intelligence in Motion
– fast and precise

G A S – In-line Depanelling System ILR-2000 With Milling Bit Flexible Fully Automated Depanelling With Optional Palletizing The Universal Combination Of Depanelling System And Palletizer

In modern production lines, detachment of PCBs or residual bond bridges from multi panels takes place at the end of the production process. To avoid damage to PCBs and components, this detachment procedure nowadays often is carried out with a fully automated milling system.

The GAS depanelling system ILR-2000 with optional palletizing system PAL-1400 was designed specially for almost stress-free depanelling. The main focus was put on high flexibility and throughput. With the specially designed fast-acting PCB feeder and the use of highly dynamic actuators with continuous path control for detachment and handling of PCBs, the highest possible throughput is achieved. The simple and light-weight design of the PCB grippers minimizes tool costs and together with a gripper change system guarantees highest flexibility and minimum set-up time.

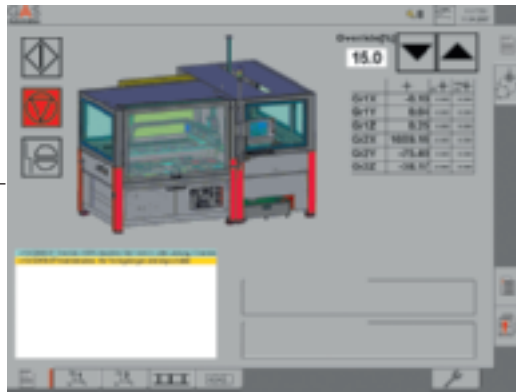
The GAS in-line depanelling system ILR-2000 stands out for following features:

- Linear motor driven fast acting panel infeed for minimum loading time
- Shortest possible detachment time guaranteed by highly dynamic milling gantry system with linear motor actuators with special milling brush hold-down
- Short handling time for detached components achieved by linear motor based handling system with continuous path control
- High flexibility and minimum set-up time with simple and automatically exchangeable multi panel grippers
- Optional expansion by integrated palletizing system



With the specially designed fast acting panel feeder, loading times of < 2 s at the panel infeed section are achieved.





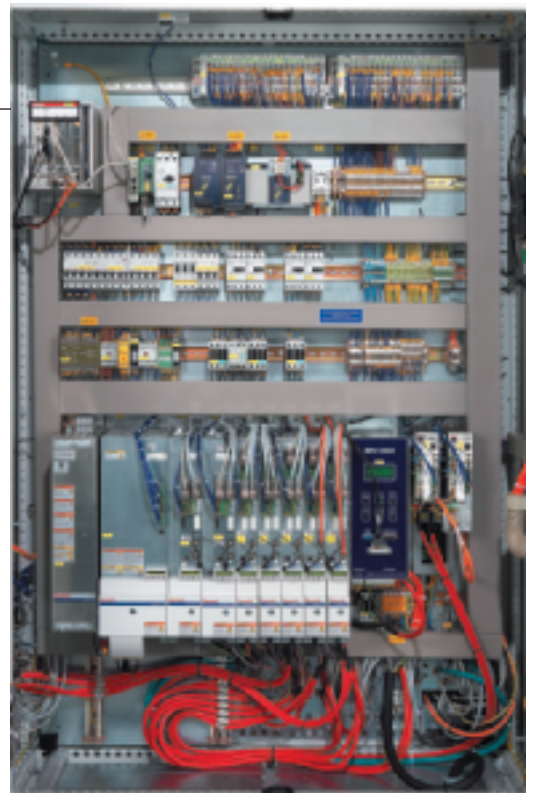
The ILR-2000 is also equipped with an intelligent control center having a standard user interface and can be operated using standardized DIN symbols.



With the expansion by the palletizing system PAL-1400, the detached components can be put down into trays directly for further processing.



By equipping the system with a fully automated gripper changing station, set-up time is reduced to a minimum.



Together with the GAS linear motor actuators, the digital drive controllers offer highest dynamics and positioning accuracy as well as best reliability and availability.

The Universal Combination Of Depanelling And Palletizing System: ILR-2000 + PAL 1400

If required, the in-line depanelling system may be equipped with a palletizing system PAL-1400. The detached components can be put down into trays with the dimensions of up to 600 x 400 mm directly for further processing. The trays can be fed either on trucks or on belts. With a tray encoding system optionally available, various types of trays can be handled safely.



Simple and light-weight grippers for PCB handling are cost-saving and guarantee shortest cycle time with highest flexibility.



*In-line
Depanelling System
ILR-2000*

Palletizing System PAL-1400



The linear motor based tray handling system detects the status of the tray with a light barrier and guarantees trouble-free operation also with various types of trays.



Depanelling and palletizing system offer optimal access to all functional units and best optical access to the running production process.

As the mechanical and electrical system of both machines are closed, they can work independently from each other. The depanelling system can also be supplied without palletizing system and linked to a belt conveyor or a transportation system provided by the customer. With plug-in connections, depanelling system and palletizing system can be disconnected easily for transport.

G A S – In-line Depanelling System ILR-2000

Description of the basic machine

- Rigid, low-vibration machine frame with metal sheeting and protection hood
- Compact system with integrated, closed electric switch cabinet
- Milling gantry with fast and precise linear motor actuators arranged at the bottom
- Cantilever system with fast and precise linear motor actuators for PCB handling arranged above
- Fast-acting PCB feeder for panel length 100 mm to 400 mm with automatic indexing and clamping at the panel edges
- Precision milling spindle and holding-down device
- Waste chute for trimming waste with waste cart
- Manual width adjustment for panel widths 100 to 300 mm with 2 linear modules with ball bearing screws, adjustment with handwheel with locking device
- Beckhoff IPC control with Windows XP operating system, continuous path control, programming of milling steps in accordance with DIN 66025 as well as swivel-mounted touchscreen 15"
- SMEMA interface at the infeed
- 3 colour signal indication
- Air preparation unit with valve units for controlling the pneumatic actuators

Technical Data

Machine dimensions

- Length 2050 mm
- Depth 1950 mm
- Projection of the operator panel to the front 230 mm
- Height 2020 mm
- Infeed height of PCBs 940 + X
- Weight appr. 2000 kg

Actuator types/Speeds

- Milling cross axis (X, Y) with linear motor actuator and AC-servo drive 2000 mm/s
- Vertical milling axis (Z) with linear motor actuator and AC servo drive 1000 mm/s
- PCB handling (X,Y) with linear motor actuator and AC servo drive 2000 mm/s
- Gripper axis (Z) with linear motor actuator and AC servo drive 1000 mm/s

Accuracy

- Repeat accuracy ± 0.02 mm
- Positioning accuracy ± 0.02 mm
- Milling accuracy ± 0.15 mm

Work space and PCB characteristics

- Panel length (in direction of the line) 100 mm to 400 mm
- Panel width 100 mm to 300 mm
- PCB thickness 0.5 to 3.2 mm
- Component height Upper side: 40 mm (others on request)
Lower side: 20 mm (others on request)
- Remark for palletizing system PAL-1400:
Maximum height of trays: 50 mm

- PCB material CEM 1, FR 2, FR 3, FR 4, FR 5
- Front and rear transportation edge 3 mm
- Edge distance of components 3 mm

Availability and CE standard

- Technical availability ≥ 95 %
- Machine capability study
- CE type

Noise level

- Measured at a distance of 1.2 m ≤ 72 db (A) from the machine

Dust removal

- External
- Micro-dust filter
- Dust explosion protected
- Continuous and cyclic suction
- Vacuum indicator

Panel infeed

- Change time < 2 s

System control

- Beckhoff IPC control with DIN 66025 programming
- Windows XP operating system
- 15" TFT swivel mounted touchscreen

Power supply

- Voltage 400 V / 50 Hz / 63 A
- Compressed air 0.6 mPa (6 bar), oil-free, filtered and dry
- Consumption max. appr. 210 l/min. average appr. 130 l/min.
- Ambient temperature $+ 18^{\circ}$ C to $+ 30^{\circ}$ C
- Relative air humidity 15 % to 80 %

Options

- Scanner at the panel infeed section for reading the panel codes
- Manual fast gripper exchange head for PCB handling
- PCB specific grippers with manual fast gripper exchange system with gripper encoding
- Magazine for spare gripper
- Automatic fast gripper exchange head for PCB handling
- PCB specific grippers with automatic fast gripper exchange system with gripper encoding
- Gripper magazine for automatic gripper exchange
- Servoelectric rotary actuator RD 08 for PCB handling
- Automatic and continuous bit control for different levels
- Monitoring of milling brush
- Dust exhaust
- Ionisation
- Belt conveyor (width of belt 190 mm, length of belt 2000 mm) with light barrier monitoring used as indexed belt for rejected parts

- Automatic tool exchange with 10 stations
- Remote servicing
- ESD covering
- CAD-CAM system for milling gantry
- Detection of good or bad parts according to the customer's specification
- Palletizing system for trays 600 x 400 mm with pallet trucks
- Special painting
- Supply of traceability data according to GAS format
- Supply of production data for production data processing
- Motor powered width adjustment for PCB width 100 to 300 mm with with 2 linear modules with ball bearing screws, adjustment with servo motor

Description Of Palletizing System PAL-1400

- Rigid, low-vibration welded steel frame with metal sheeting and genuine glass panes.
- XZ line gantry with linear motors and pneumatic parallel gripper for handling the trays
- 2 pallet trucks with guides and indexing devices
- 2 linear motor actuators and tray support with centering device as double tray shuttle for tray infeed

Technical Data

- The individual PCBs are put down into customized trays.
- The shape of trays for all types of PCBs is identical (independent from the PCB nests)
- Size of trays 600 x 400
- Weight of trays up to 3 kg (higher weight on request)
- Maximum height of tray: 50 mm
- Maximum stacking height: 680 mm

Dimensions

- Length 1420 mm
- Depth 2460 mm
- Height 2020 mm
- Height of Z-axis of the tray handling in upper position 2570 mm

Autonomy:

- Max. stacking height 680 mm

Tray trucks / slide-in spaces for tray trucks

- 2 tray trucks with 2 guide rails for tray stacks. Rear tray guide can be swivelled aside to unload the truck with tray lifting device.
- Light barrier monitoring for maximum filling of truck and truck empty
- Request button for change of truck

Options

- Further tray trucks
- Monitoring of correct position and presence of tray
- Tray encoding for 14 trays maximum with monitoring of correct tray position and presence of tray

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