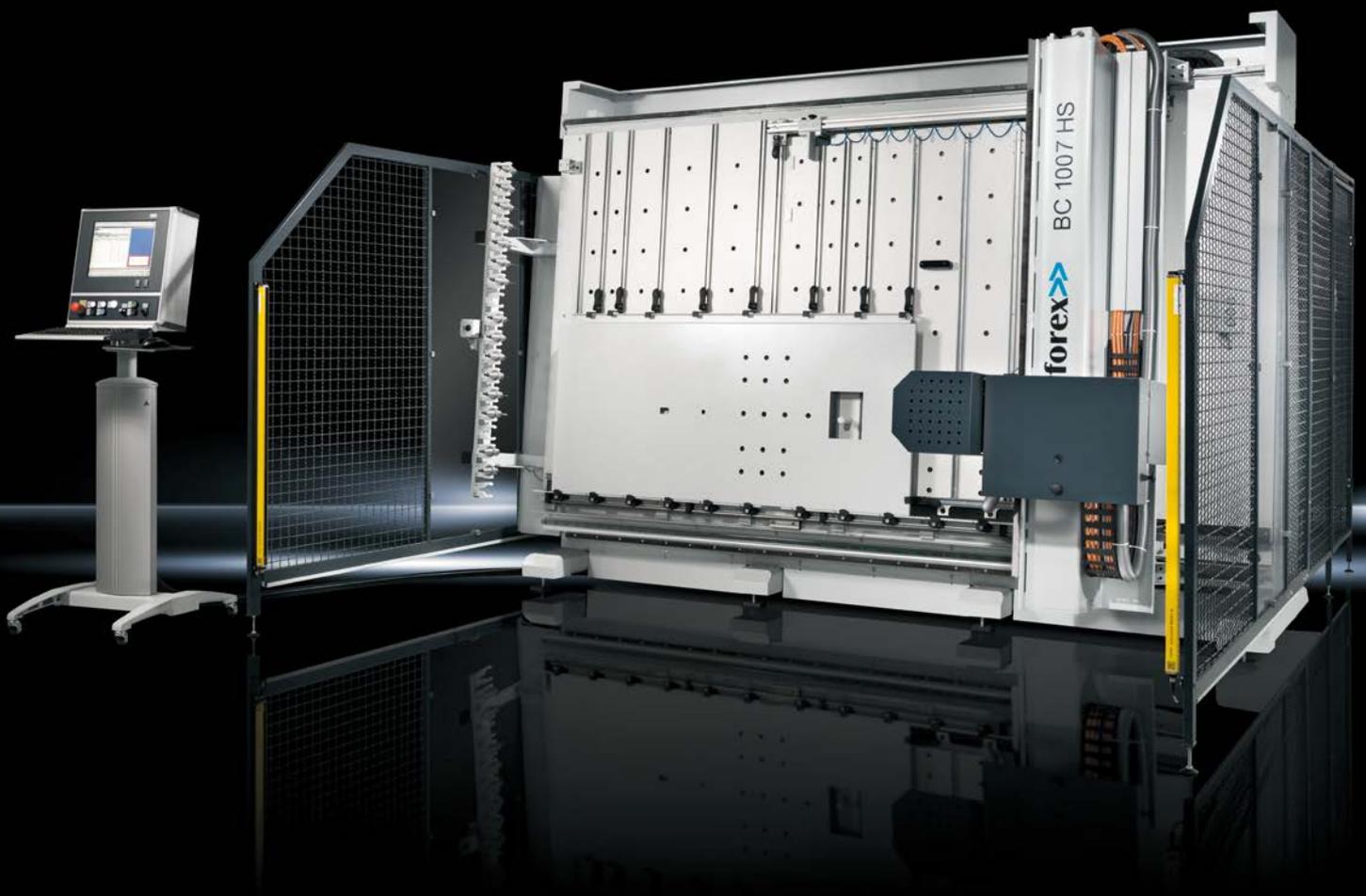


KIESLING

We automate the panel building.

Product portfolio



MACHINING

ASSEMBLY

WIRING

HANDLING

FRIEDHELM LOH GROUP



For a shared future

03 Company overview



Next level for industry

04 – 05 The alliance
Take value creation to the next level



Processes

06 – 07 Complete workflow automation



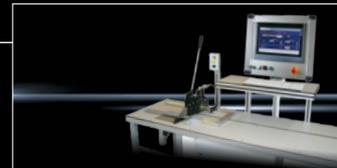
Perforex machining centres

08 – 09 Faster and better machining of flat parts
(mounting plates and doors) and enclosures



Secarex cutting centre

10 – 11 Cable ducts and support rails cut to length
without delay



Athex terminal block assembly machine

12 – 13 Automated assembly of terminal blocks



Averex wiring centres

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Panel Scout test control

18 – 19 Reliable switchgear testing



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For a shared future

Kiesling are internationally renowned specialists in automation solutions for switchgear assembly. Established in 1970, the company's core portfolio includes machining centres for enclosure assembly, cutting centres, assembly machines for terminal blocks, assembly frames and an enclosure testing centre. One particular highlight is the Kiesling automated wiring machine, which takes customers a huge step closer to automated production. In the past, people believed that switchgear and controlgear production could not be automated, due to their unique character. Kiesling has proved them wrong. Machinery and equipment from Kiesling support standardised production for batch sizes of 1 or more. Customer satisfaction, permanent innovation and maximum quality have always been our guiding principles in achieving this goal.

Kiesling joined Rittal in 2013. As a member of the global, family-owned Friedhelm Loh Group, Kiesling is a powerful service-provider and supplier with a strong commitment to continuity and reliability. Membership of this alliance offers Kiesling customers the highest degree of security, stability and innovative strength, thus providing a solid basis for a long-lasting, shared future.



WIRING

HANDLING

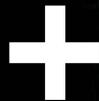


nextlevel for industry

The alliance between Eplan, Cideon, Rittal and Kiesling is the only one of its kind in the world. Take value-added to the next level and completely re-automate your processes, from engineering through to production.

Take advantage of our comprehensive consulting services founded on years of practical experience:

- Analysis of tasks for new and existing projects
- Drafting of a concept
- Engineering support
- Optimisation of workflows



Engineering

Discover the benefits of efficient engineering with real-life projects:

- EPLAN Data Portal – with more than 350,000 component data records for electrical engineering project management
- EPLAN Electric P8 and EPLAN Pro Panel – innovative project planning, documentation and administration of electrical engineering automation projects

System

Experience for yourself the benefits of our innovative system. Tested quality and optimum cost efficiency – available for immediate, worldwide delivery:

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- Enclosures
- Power distribution
- Climate control
- IT infrastructure
- Software & services

Automation

Be amazed at how quickly and precisely your requirements can be implemented with full automation:

- NC data from Eplan provides the basis for the professional machining of enclosures, cases and mounting plates
- Drilling, thread-tapping, milling – fully automated, fast, precise and reliable
- The cost-intensive, time-consuming manual machining of enclosure parts is now a thing of the past

WIRING

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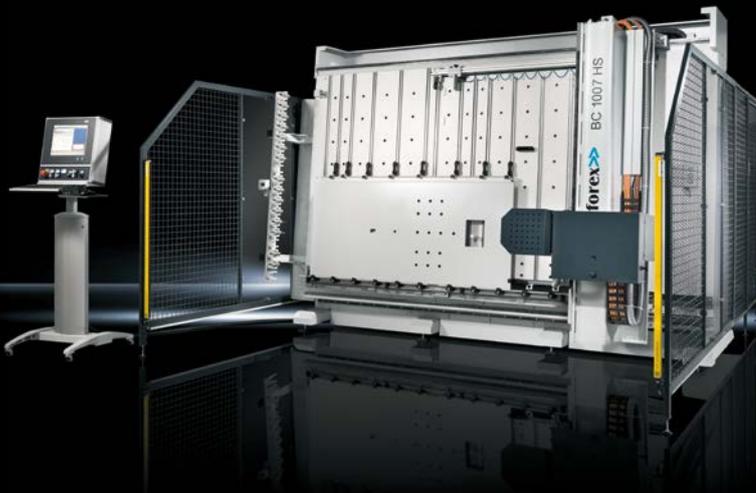
Optimisation of the complete workflow in enclosure manufacturing

Machines and solutions from Kiesling facilitate the optimisation of the complete workflow in enclosure manufacturing – from machining of the panel parts to testing of the finished enclosure, supported by a diversity of corresponding handling systems. The consistent use of CAD data and systems accelerates processes and safeguards their reliability. In this way, Kiesling generates valuable cost and competitive advantages for its customers and provides tools for better satisfaction of modern demands such as just-in-time delivery, cost reduction and quality management.

1 Perforex Machining

2 Secarex Cutting to length

Handling



For fully automated, fast, precise and reliable machining (drilling, thread-tapping and milling) of mounting plates, doors, roof plates, side panels, gland plates or complete non-dismantlable enclosures. All standard materials used in controlgear manufacturing, such as steel, stainless steel, aluminium, copper and plastic, can be machined very cost-effectively, even with a batch size of just 1. Users also benefit from significantly enhanced precision and repetition accuracy.



With the Secarex cutting centre, wiring ducts, cable duct covers and support rails can be cut to length quickly and reliably. Alongside the considerable time savings, the user profits from the greatly reduced costs of cutting waste thanks to optimisation of the cutting process.

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▶ **3 Athex Assembly**
Cutex Cutting to length

▶ **4 Averex** Wiring

▶ **5 Panel Scout** Testing

Handling



With this system, configuration with a wide range terminals from all well-known manufacturers is automated, accelerated and far more reliable. The generous magazine capacities of up to 40 terminal magazines help to minimise downtime and waiting time, while boosting flexibility. In conjunction with the Cutex (also available separately), prior to configuration the support rails are automatically fed from the magazines, cut to length and labelled.



The wiring centre accelerates the wiring process by more than 400%, while at the same time minimising man hours. The patented machine head, which can be rotated through 270 degrees, lays the wires in the cable ducts and connects them to their respective components. Wires are replaced automatically, and can also be printed if required.



Automated testing reduces the time required by up to 60% and, through constant repetition of the test sequence, also contributes to reliable, documented test results.

WIRING

HANDLING



Automation in enclosure assembly

Perforex machining centres

Focus:

Perforex machining centres were designed specifically for controlgear assembly and plant manufacturing to optimise the machining of enclosure panels and cases in the workshop and boost efficiency.

Machining operations:

Perforex machining centres can automatically create holes, threads and milled surfaces in the workpiece. Other operations such as engraving, circular thread tapping, deburring and countersinking are also supported.

Flexibility:

All standard materials used in enclosure manufacturing, such as steel, stainless steel, aluminium and copper, as well as various plastics and other machinable materials, mounting plates, chamfered and spray-finished doors, covers, console plates, housings etc. may be machined.

Article numbers:

BC 1001 HS: 4050.101

BC 1007 HS: 4050.107

BC 1008 HS: 4050.108

BC 2007 HS: 4050.207

Hardware

There are 4 Perforex machine models. Depending on the model, enclosure panels up to (W x H) 3,400 x 1,700 mm (BC 1007 HS) and enclosures up to (W x H x D) 2,200 x 1,600 x 2,200 mm (BC 1008 HS) may be clamped and pneumatically fixed. As standard, the tool magazine can simultaneously accommodate 18 or 20 tools (with BC 2007 HS). Up to 40 tools are optionally available. With the motorised depth adjustment for enclosures and a wide range of options, Perforex machines are equipped for the optimum handling of all parts. The comprehensive safety features satisfy all the recommendations of the TÜV-Rheinland testing agency.

Result:

Automated machining of metal parts in enclosure manufacturing.



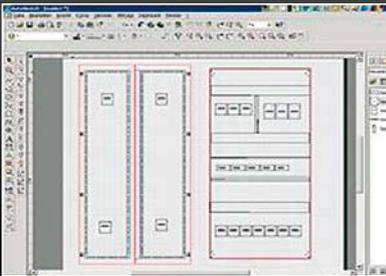
MACHINING

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Software

The user interface of a Perforex machining centre is an intuitive workshop programming system which supports remote maintenance. The software is networkable, uses a central database, and may be used on an unlimited number of different PCs within the company. This means that all programmed jobs are immediately available on the machine and can be reused. Alternatively, almost any standard CAD and E-planning system can be used for programming. Ask about our interfaces.



WIRING

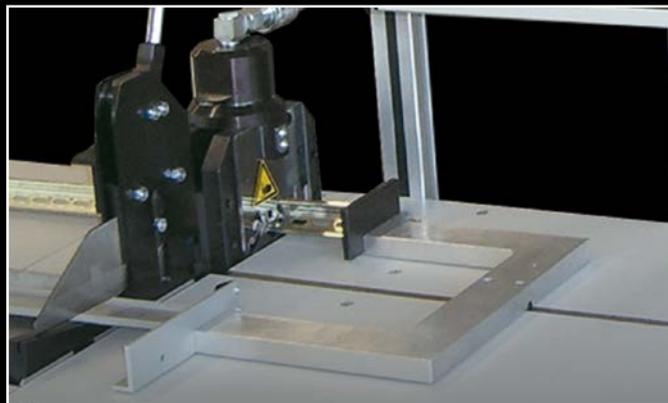
HANDLING



Automation in enclosure assembly

Secarex cutting centre

No lengthy times spent on measuring and cutting, and no complicated handling – the Secarex cutting centre is convenient to use and cuts wiring ducts, cable duct covers and support rails to length quickly, precisely and reliably. Data can be accepted from various CAD systems or taken from the Perforex workshop programming. The cutting centre contributes to improved quality, an optimisation of cutting waste, lower costs and an accelerated overall process.



Article number: 4050.400

Reliable data input

The acceptance of data from CAD systems or the Perforex workshop programming ensures precision and avoids incorrect cutting.

Simple handling

After cutting, the machine stop retracts automatically to release the cut parts for simple removal.

Options

- Hydraulic profile cutter for support rails
- Label printer
- Operation by way of a foot switch



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➤ User benefits

- Industrial PC with touchscreen terminal and straight forward user interface
- Very low costs for cutting waste thanks to optimisation of the cutting process
- Significant time savings compared to manual cutting
- Clean cuts with high-performance tools
- Support rail cutter with 5 standard templates for all popular support rails without changing the template
- Optical and acoustic display for material changes



WIRING

HANDLING



Automation in enclosure assembly

Athex terminal block assembly machine

Cutex support rail cutting centre

Focus:

The Athex assembly machine is the flexible, universal solution for automated production of terminal blocks in controlgear manufacturing. The Cutex cutting centre is designed for the automatic cutting of support rails, including labelling. The Cutex is available as an option with the Athex terminal block assembly machine.

Machining operations:

The Athex configures and prints terminal blocks according to a CAD template or manual configuration on the support rail. The terminal magazines may be exchanged and refilled with the system operational, and can accommodate different terminal types from all well-known manufacturers. During assembly, they may optionally be labelled with an inkjet printer. The Cutex transports support rails out of a magazine into the infeed unit, cuts them to the correct length, and likewise labels them with an engraved needle matrix for a solvent-resistant finish.

Flexibility:

The use of different terminal types and magazines, coupled with automated support rail machining, leads to enhanced productivity. Idle time and waiting time are minimised, and throughput times are reduced.

Article number: 4050.500

Cutex fitted with:

- Horizontal storage module with 20 storage spaces for support rails
- Standard module for a rail length of 2 m (optionally extendible up to 3 m)
- Electric cutting module for the use of standard market cutting plates
- Needle marking system for labelling the rail undersides
- Management of offcuts from a minimum length of 230 mm

Athex fitted with:

- Assembly arm for manufacturer-independent machining of terminals in the following sizes:
Terminal width 40 – 110 mm
Terminal height 5 – 80 mm
Terminal thickness 3.5 – 12 mm
- Up to a max. of 40 terminal magazines on 4 levels
- Machining of support rails from a length of 100 mm
- System-independent XML data import, including data from EPLAN Pro Panel



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Technical specifications

- Machine dimensions (W x H x D):
1,600 x 2,200 x 2,300 mm
- Weight (excluding terminal magazines): 1,400 kg
- Connected load:
3 x 400 VAC + N + PE; 8 kW (incl. Cutex)
- Air pressure: 6 – 10 bar, dry and uncoiled
- Air consumption:
approx. 40 l/min (at full load, incl. Cutex)
- Network connection: Ethernet RJ45
- Machine dimensions Cutex (H x W x D):
1,350 x 3,500 x 1,300 mm
- Weight of Cutex (excluding terminal magazines): 600 kg



User benefits

- Process automation for quantities of 1 or more
- Consistent quality, thanks to fully automated process
- Flexible process management, thanks to universal applications and manufacturer-independent terminal processing
- Uncomplicated connection to third-party systems/ software for importing existing terminal block data
- Optimum accessibility across the entire workspace
- Simple installation options for extensions in the terminal magazine
- Saves manpower, thanks to process automation
- Fully automated cutting of support rails using imported CAD data or manual configuration
- Impressive time savings, e.g. no need to adjust the end stop to the correct length
- Consistent quality and avoidance of measurement errors, thanks to controlled axes
- Direct printing of user-defined information onto the support rail for subsequent reuse
- May be used just to cut support rails to the required length
- Large storage area for rails up to 3 m in length
- Fully automated measurement of rail offcuts for excellent cut optimisation

WIRING

HANDLING



Averex wiring centres

Focus:

Averex wiring centres were developed specifically for the fully automated wiring of mounting plates in controlgear manufacturing.

Machining operations:

The Averex cuts the wire to the correct length, strips the insulation, crimps it with wire end ferrules, runs the wire through the cable ducts, and connects it to the components on the support rail.

Flexibility:

The wiring centre supports most standard mounting plates, components and wires used in controlgear manufacturing. A laser scanning function records and automatically corrects assembly tolerances.

Profitability:

With an automated capacity of 300 wires on a mounting plate, the Averex can reduce the amount of manpower required per enclosure by up to 15 hours (compared with purely manual activity). With work speeds of up to 4 times faster, the entire throughput time is also reduced by up to 11 hours.

Article number: 4050.600

Hardware

- Possible plate sizes 2,100 x 1,200 mm
- Patented 270° rotating machine head with cable routing, cutting, insulation stripping and crimping unit plus torque-regulated screw fastening and a tool changer with space for six tools, log report on all connections and attachments, securing to screw connections and push-in connections
- Laser scanning of components
- Cables from 0.5 to 2.5 mm²
- Automatic wire change with space for up to 16 different wires
- Automatic wire labelling



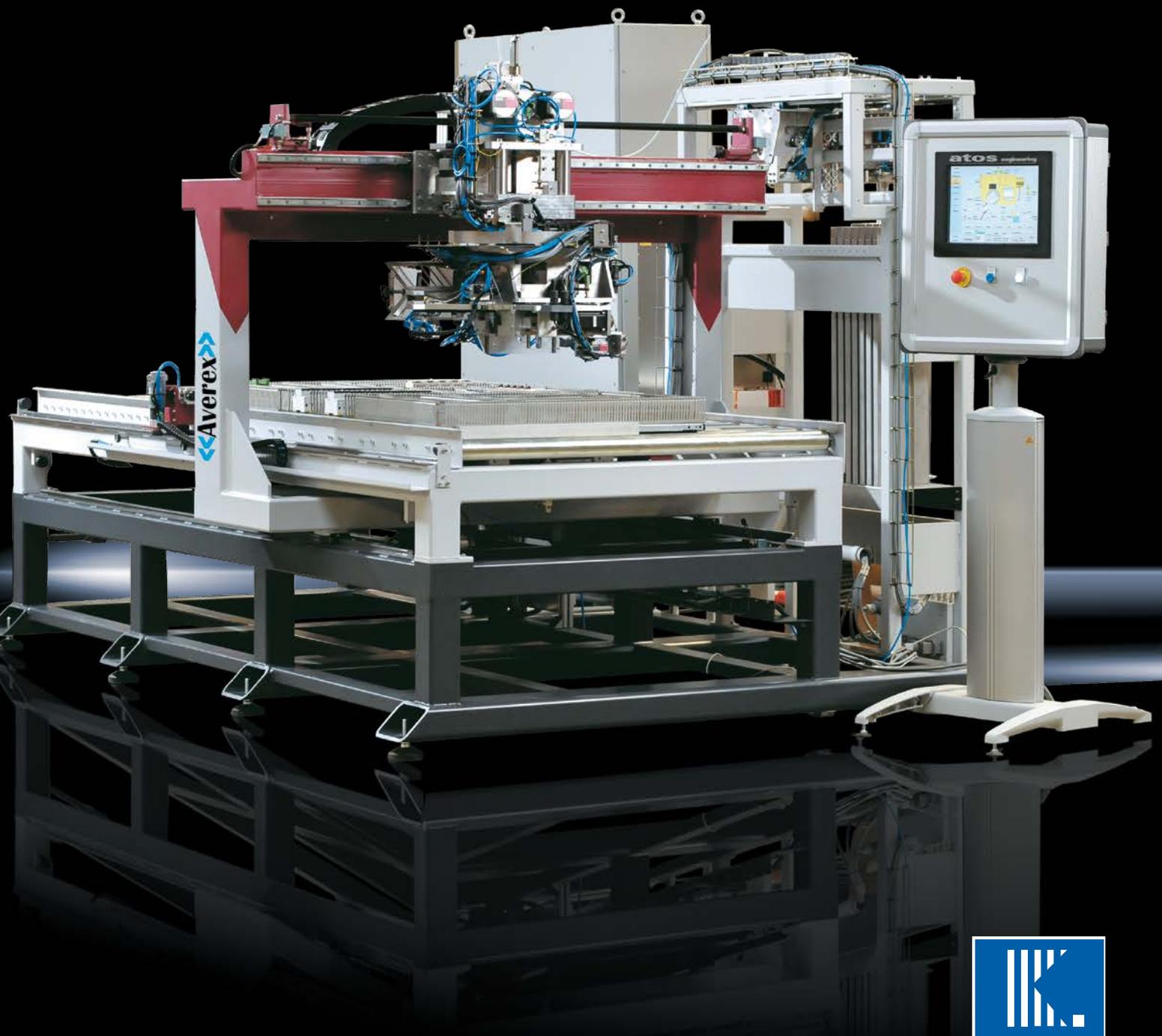
Software

- Intuitive, graphics-based control software with its own routing module
- Software interface to EPLAN Pro Panel, allowing the planned layout and pre-routed data to be read directly. This reduces the amount of work involved in operating the machine



MACHINING

ASSEMBLY



WIRING

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Assemblex assembly frames

When it comes to the automation and rationalisation of processes throughout every stage of machining, assembly, wiring and testing of enclosures, we have the right ergonomic solution for you. Our Assemblex assembly frames are mobile, tiltable and (depending on the version) height-adjustable assembly frames for mounting plates (optionally 1,900 x 1,900 mm) and enclosures. All types offer simple, variable fixing of mounting plates using quick-release fasteners, are independent from the mains power (no risk of "running over the cable"), and take up minimal space when not in use.



Assemblex assembly frame 150 MN

- Assembly frame, infinitely adjustable inclination using a crank handle or cordless screwdriver
- Appropriate inclination of the support frame also permits working on the mounting plates while seated
- Fixed working height 1.00 m, adjustable angle approx. 0-80°
- Maximum load 150 kg
- 4 swivel castors with lock

Article number: 4050.150

Options:

- Widening set
- Enclosure set
- Wire routing

Assemblex assembly frame 200 EN

- Assembly frame, infinitely adjustable inclination by way of a battery-powered electric motor
- Appropriate inclination of the support frame also permits working on the mounting plates while seated
- Fixed working height 0.90 m, adjustable angle approx. 0-80°
- Maximum load 200 kg
- 4 swivel castors with lock

Article number: 4050.200

Options:

- Widening set
- Enclosure set
- Wire routing
- Wire reel holder

MACHINING

ASSEMBLY



▶ Assemblux assembly frame 300 ENH

- Assembly frame, infinitely adjustable in height and inclination by way of battery-powered electric motors
- Appropriate inclination of the support frame also permits working on the mounting plates while seated
- Variable working height 0.80-1.10 m, adjustable angle approx. 0-80°
- Maximum load 300 kg
- 4 swivel castors with lock

Article number: 4050.300

Options:

- Widening set
- Enclosure set
- Wire routing
- Wire reel holder
- Roller track for side insertion



▶ Storage/transport trolley LUT 1000

- 8 wide storage slots
- 2 height-adjustable dividing rakes
- 100 mm tube clearance
- Maximum load 500 kg
- 4 swivel castors with lock

Article number: 4050.000

WIRING

HANDLING



Panel Scout – Automatic test control system for enclosures

Focus:

The Panel Scout was developed specifically for testing enclosures. This automated test control system allows you to quickly and reliably test enclosures for correct functioning, with documentation to the relevant regulations and standards.

Machining operations:

Wiring checks, spot measurements, activation of electronic and electromechanical components (functional checks).

Flexibility:

The Panel Scout test control system can be linked to most standard controlgear currently available on the market and communicate via OPC link. Controlgear without bus system (e.g. relay controller) or cable connections can also be fully tested.

Article number: 4050.700

Hardware

Basic configuration:

- 72 connections (floating, wear-free solid state relays up to 40 V DC/AC, 2 A)
- 288 test points (0 V; 24 V or potential measurement 24 V logic)
- Connection of test piece via connector or terminal connections and/or via standard bus systems
- Neat supply of test cables, thanks to the adaptor carriage
- No tangled cables, and adaptation times are dramatically reduced

Option of adapting to individual requirements:

- Floating connections with non-solid-state relays for higher voltages/currents
- Test points with alternative voltages and/or potential measurements
- Number of connections and test points may be freely extended

Software

PSEdit: Creation of test sequences

- The intuitive, supporting software PSEdit allows test sequences to be quickly and easily recorded by hand using the wiring diagram. The number of measurement and connection points is limited only by the hardware configuration of the Panel Scout.

PSExec: Execution of test sequences

- The PSExec software guides the tester through the generated test sequences. The integral log function allows the recording of required items in the test sequence. The software and log function are available in both German and English.

Result:

- Test time savings of up to 60%
- Repetitive test procedure guarantees quality assurance
- Testing of different enclosure types
- Order-specific test records for quality documentation (optional)
- Error statistics/error evaluation



WIRING

HANDLING



KIESLING

We automate the panel building.

- Machining
- Assembly
- Wiring
- Handling

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