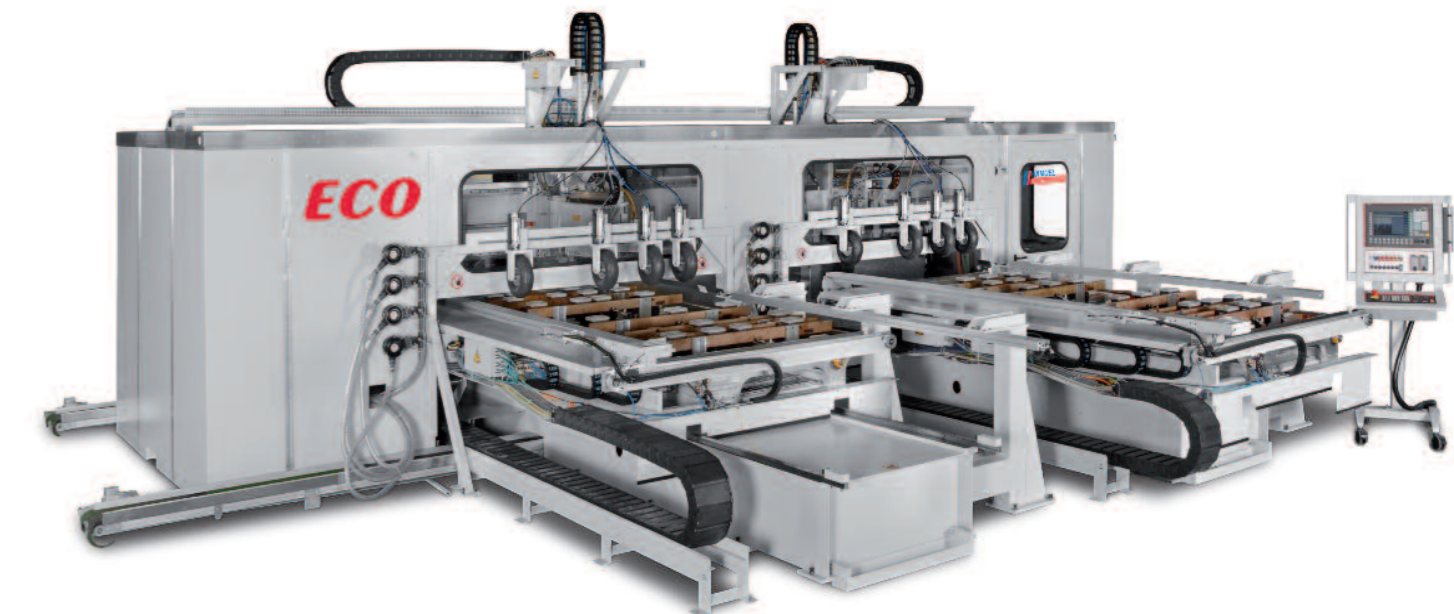


### Technical Features

<b>Working units</b>	The ECO can be equipped with several working heads, according to the specific requirements.
Routing heads	Vertically mounted routing heads with a performance of 10.0 to 24.0kW, number of revolutions from 1,500 to 40,000rpm, tool fixtures with hollow cone shank HSK-F40 or HSK-F63 (up to 24,000rpm), horizontal routing aggregate, cardanic working head with two numerically controlled machining axes (B- and C-axis) for three-dimensional drilling and routing (5-axis simultaneous machining possible), option: clamping unit at the routing aggregate for the use of additional heads from the tool magazine in any desired angle position in the X-/Y-plane.
Drilling unit	Multi-spindle drilling unit with 8/16/21 individually controllable drilling spindles, spindle distance 32mm, maximum performance 2.2kW for tracks of punched holes and constructional drillings. Horizontal spindle with two exits (displaced by 180°) for substitution with vertical spindles.
Sawing head	Sawing head with NC-turning axis, for saw blades up to Ø 300mm x 6mm, maximum performance up to 5.7kW, number of revolutions 3,000 or 6,000rpm at the drive shaft.
<b>Machine table</b>	Plate table or beam table with integrated vacuum and pneumatic system. Different stops, positioning rails and clamping devices extend the functionality. Table lengths 1,600/2,500mm Table widths 1,600/2,500/3,500mm Passage 400mm (4-axis machining), maximum 1,100mm (5-axis) Further dimensions on demand.
<b>Tool changer</b>	Automatic tool changing system, magazine plate with 12 or 24 tool places; if more tools are needed, a tool rack with up to 100 tools can be provided.
<b>Axis motions</b>	X- /Y- /Z-axis according to working area Z-axis 500mm (up to 1,300mm possible) C-axis 360° for angular heads B- /C-axis +/- 180°/360° with 5-axis heads (cardanic working head) B- /C-axis +/- 180°/360° with 5 axis heads (fork head)
<b>Additional equipment</b>	Special clamping devices, tool identification system, laser projection system, modem for telediagnostic, user software for the graphically supported program generation.
<b>Control</b>	Siemens Sinumerik 840D / 840D sl (Solution Line)



### Control system

#### Control system with integrated safety concept

The ECO is equipped with the latest generation of control systems, the Sinumerik 840D solution line (sl) from Siemens whose openness and modular system architecture perfectly matches the design concept of the ECO. The machine is operated and programmed in a time-saving and

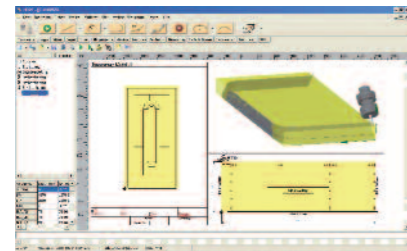
intuitive manner using a graphic user surface (NC-HOPS). Above all the control system is able to handle the short reaction times resulting from the high processing speed. This means that the ultimate machining precision is also guaranteed during high speed routing. The high speeds also require a sophisticated safety concept.

The Sinumerik 840D sl offers the best conditions in this regard with the safety concept Safety Integrated. As all the safety functions are directly integrated in the control and drive technology, this intelligent solution provides a high level of protection for man and machine whilst featuring convenient handling.

### Software

#### NC-HOPS

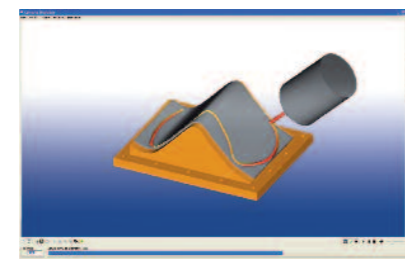
Using NC-HOPS as a CAD/CAM solution allows fast visual development of dynamic parts. Thanks to the machine neutral workpiece description, time-consuming movements, positioning processes and special functions do not need to be programmed at the machine



Door frame elements with 5-axis machining and layout, programmed in NC-HOPS

#### Licom AlphaCAM

is a modular CAD/CAM system for timber and plastics processing. The emphasis lies on programming on solid models, graphic parametric, excellent nesting solutions and much more, from the 2.5D up to 5-axis routing.



5-axis trimming with the tool edge, programmed in AlphaCAM

- quick learnability
- efficient working environment
- graphic identification (click to get)
- extensive processing functions
- reusable macros (libraries)
- side-neutral processing

- tool-specific positioning of the working head
- support of the positioning aids for pods and workpieces
- workshop-oriented system

### Application technology

The market is our customer. Customer service is crucial to our success. Only customer contact provides feedback about the success of our products. This is an extremely important incentive for our development and production team. Our application engineers are the interface between software and machine.

- Which unit matches your needs exactly?
- Which tools are suitable?
- How can you increase quality and speed up your processes?
- Which system will provide the best result?

We will be pleased to advise you on the appropriate, efficient and safe use of our CNC-machining centres.

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Universal application – for example for special profiles in the aeroplane, car or stair production, efficient allround-machining of formed parts and plates, machining of combined hybrid parts made of plastics and metal, machining of aluminium and plastic parts.

## Success through adaptability

With the ECO CNC-machining centre, Reichenbacher Hamuel have utilised all their know-how and experience in high performance machine construction to develop a series that offers the highest levels of flexibility and productivity. The ECO brings together the attributes of reliability,

speed and precision synonymous with the name Reichenbacher Hamuel. The ECO is a self-contained, rigid heavy-duty machining centre. Its vibration-free fixed gantry has two or three supports, depending on the table size, and it has one or more aggregate slides (optional at the rear of the gantry) which carry out the

transversal and vertical motions of the working heads. Depending on production demands, the ECO can have one or two machining units that can be controlled by separate NC-channels. The basic machine can be supplied with single or twin tables.



Machining at its highest level

## Table types

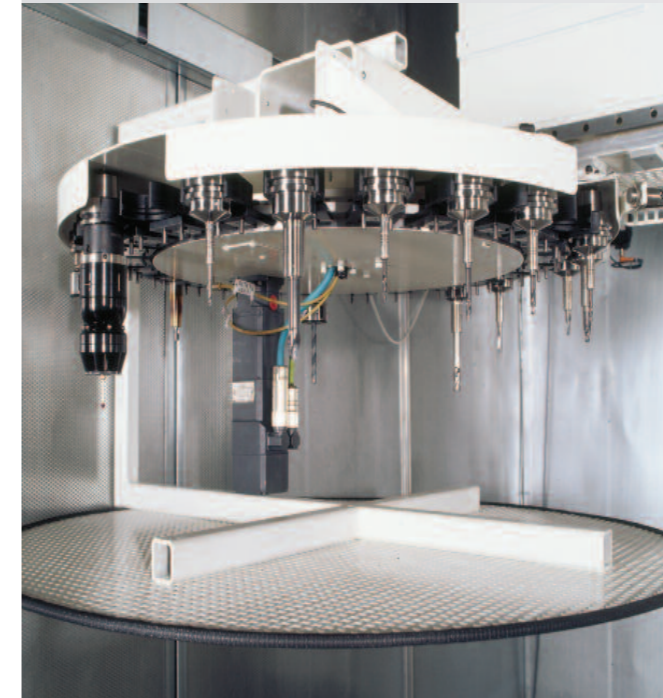


The different aggregate groups are composed to individual CNC-machining centres after an intensive expert advice. We help you to realise your machine technical production targets and your vision concerning the production technique.

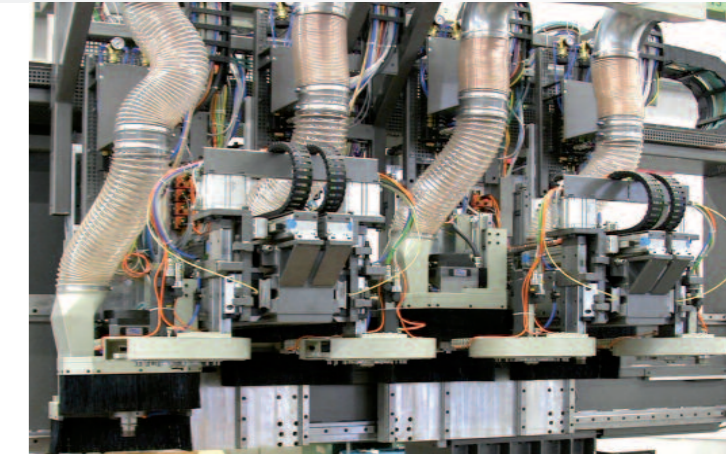
More efficient production can be achieved with tailored machining concepts that utilise features such as a coordinate table, a programmable beam table with quick-setting clamping devices or an automatic selfsetting PIN-table for production

of one-off workpieces or batch production. The ECO is not an off-the-shelf machine. Your suggestions and production needs are fully considered and incorporated into the planning process prior to preparation of our proposal document.

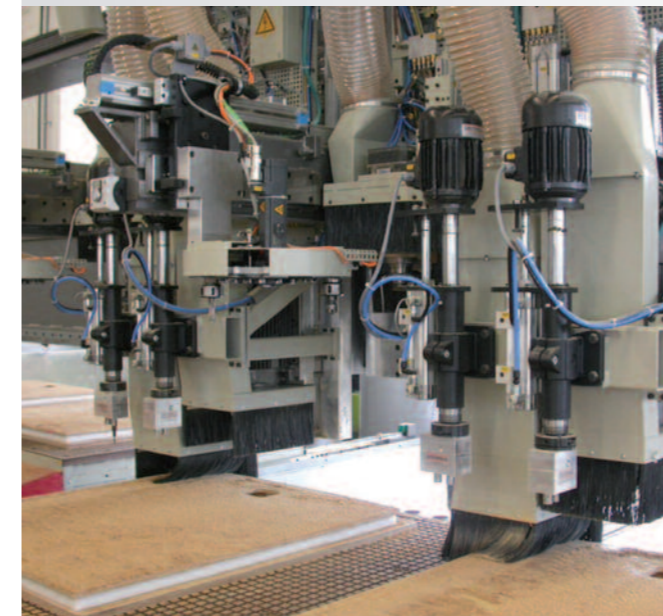
## Machining units



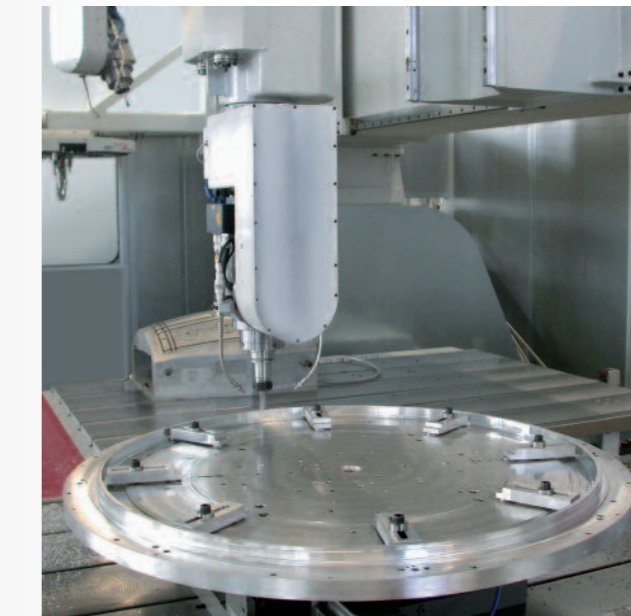
Depending on the customer's needs the heads with automatic tool changers are adapted to each individual case. If more tools are needed, a tool rack with up to 100 tools can be provided. Especially designed machining conceptions are the basis for an efficient production. For these individual cases customised clamping devices and units are available. A 5-axis machining head on separately movable slides and specific clamping devices are some examples of the variety of functions.



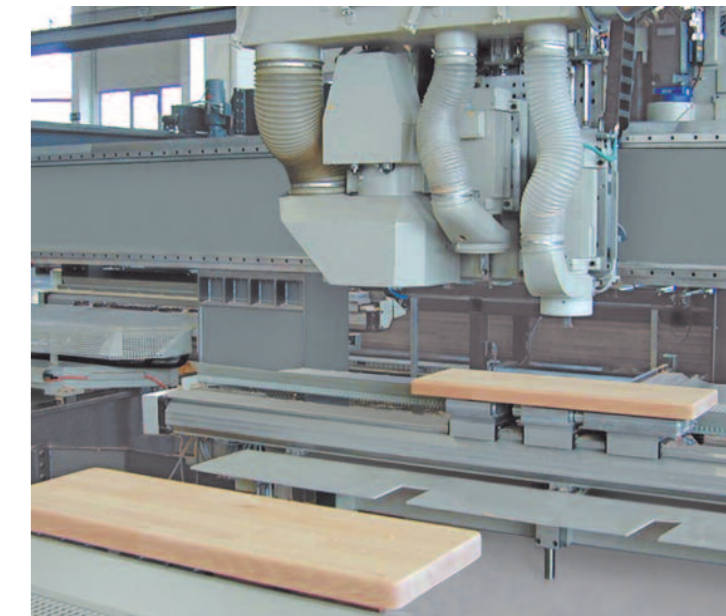
These four working heads with automatic tool change for vertical routing, drilling, sawing and grinding, including cooling unit and greasing unit, are designed for aluminium machining. An automatic tool changer for 10 tools is mounted in front of each routing spindle and moves with the transversal axis.



Six vertical routing heads and four vertical drilling units are mounted to the front of the gantry on two separate supports which are adjustable by NC-axis. In front of each of the two routing spindles with automatic changing system, an automatic plate magazine for 10 tools is mounted and allows tool changes during machining.



This ECO has been constructed especially for the high demands of the aviation industry and has two T-groove tables, made of cast steel, and an NC-rotary table for precision turning of components. The tables can be electronically connected for the machining of large components.



Four beams are mounted in X-direction as a machine table. There are two movable beams at each loading station and each beam has five vacuum cups which can be adjusted by NC-axis. Before the cups are positioned, they are run together 'on block' at a reference position and then re-positioned by master-slave system.