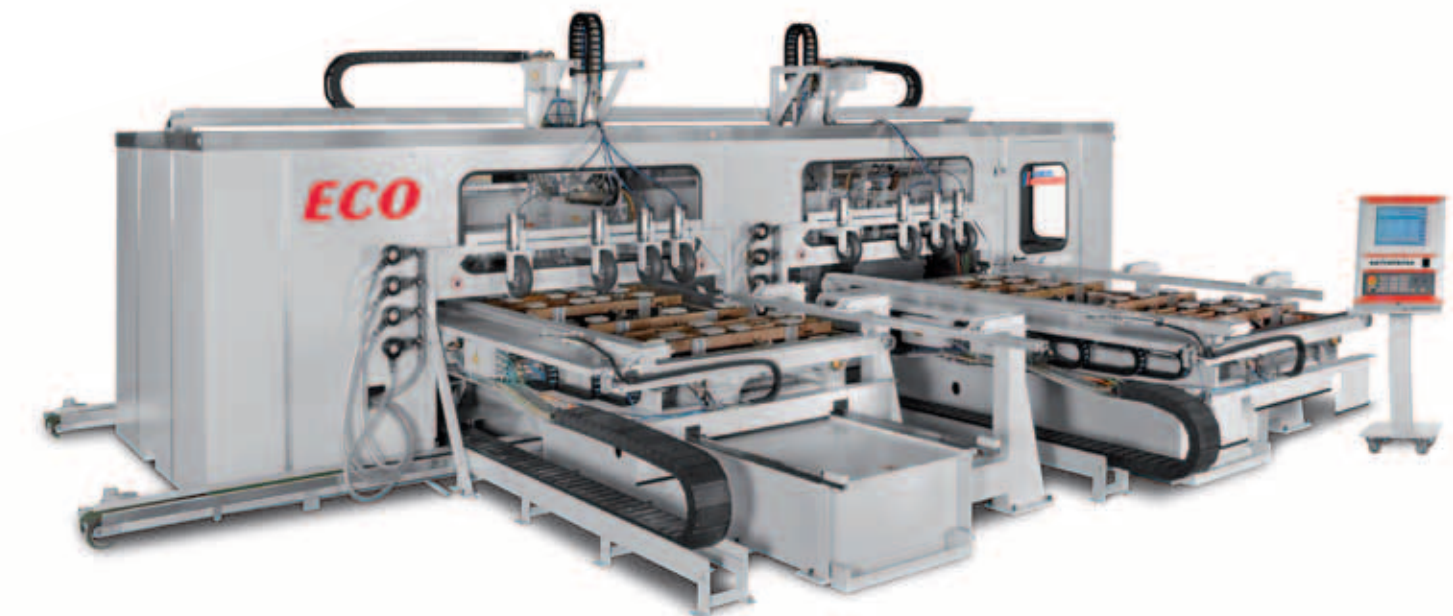


### Technical Features

|                             |  |
|-----------------------------|--|
| <b>Working units</b>        | The ECO can be equipped with several working heads, according to the specific requirements.  |
| <b>Milling units</b>        | Vertically mounted milling heads with a performance of 10.0 to 24.0 kW, number of revolutions from 1,500 to 40,000 rpm, tool fixtures with hollow cone shank HSK-F40 or HSK-F63 (up to 24,000 rpm), special designs, such as horizontal milling aggregate, cardanic working head with two numerically controlled machining axes (B- and C-axis) for three-dimensional drilling and milling (5-axes simultaneous machining possible), option: torque support at the milling aggregate for the use of additional heads from the tool magazine in any desired angle position in the X-/Y-plane. |
| <b>Drilling units</b>       | Multi-spindle drilling unit with 8/16/21 individually controllable drilling spindles, spindle distance 32 mm, maximum performance 2.2 kW for tracks of punched holes and constructional drillings. Horizontal spindle with two horizontal exits (displaced by 180°) for substitution with vertical spindles.   |
| <b>Sawing head unit</b>     | Sawing head with NC-rotary axis, for saw blades up to Ø 300 mm x 6 mm, maximum performance up to 5.7 kW, number of revolutions 3,000 or 6,000 rpm 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 1,600/2,500 mm. Table widths 1,600/2,500/3,500 mm. Passage 400 mm (4-axes machining), maximum 1,100 mm (5-axes). 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>Axes movements</b>       | X- /Y- /Z-axis according to working area<br>Z-axis 500 mm (up to 1,300 mm possible)<br>C-axis 360° for angular heads<br>B- /C-axis +/- 180°/360° with 5-axes units (cardanic working head)<br>B- /C-axis +/- 180°/360° with 5-axes units (fork head)   |
| <b>Additional equipment</b> | Special clamping devices, tool identification system, laser projection system, modem for tele-diagnostic, user software for the graphically supported programme generation.  |
| <b>Control system</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) of Siemens make, whose openness and modular system architecture perfectly match the design concept of the ECO. The machine is operated and programmed in a

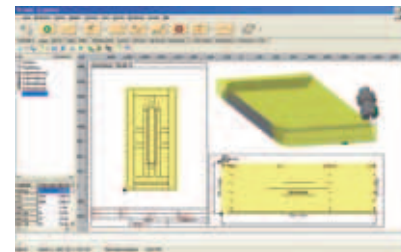
time-saving and intuitive manner by means of a graphic user surface (NC-HOPS). Above all, the control system is able to handle the short reaction times resulting from the high processing speeds. This means that the ultimate machining precision is even guaranteed during high-speed milling. The high speeds also require a sophisticated safety

concept. With its safety concept Safety Integrated the Sinumerik 840D sl offers the best conditions in this regard. As all the safety functions are directly integrated into 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

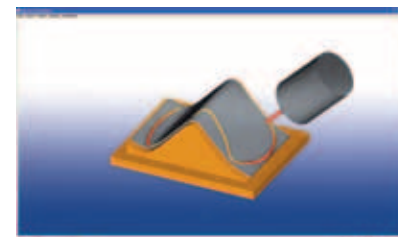
Using NC-HOPS as a CAD/CAM solution permits the visual development of dynamic parts within a very short time. Thanks to the machine-neutral component description, time-consuming movements, positioning processes and special functions do not need to be programmed at the machine.



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

#### Licom AlphaCAM

is a modular CAD/CAM system for wood and plastics processing. The emphasis lies on the programming on solid models, the graphic parametric, excellent nesting solutions and many other highlights, from the 2.5D up to 5-axes milling.



5-axes 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 components
- 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.

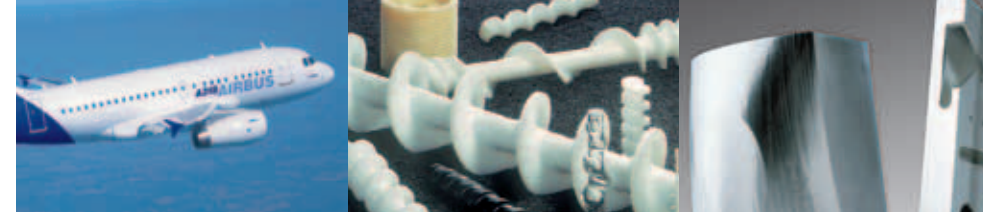
- Which unit matches your needs exactly?
- Which tools are suitable?
- How can you increase quality and speed up your processes?
- Which process will provide the best result?

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.

## A synonym for flexibility

With the ECO machining centre, Reichenbacher Hamuel have employed all their experience in the field of special-purpose machines to develop a series that offers the highest levels of flexibility and productivity. For all machining applications, the ECO brings together the attributes of reliability,

speed and precision synonymous with the name Reichenbacher Hamuel. The CNC-machine is self-supporting. Depending on the machine size and thus table size, its vibration-free portal rests on two or three columns and carries one or several aggregate slides (at the rear of the portal as an option),

which perform the transversal and vertical movements of the working heads. Depending on production demands, the ECO can be equipped with one or two machining units controllable via separate NC-channels. The basic machine can be supplied with one or two movable machining tables.



Machining at its highest level

## Table types



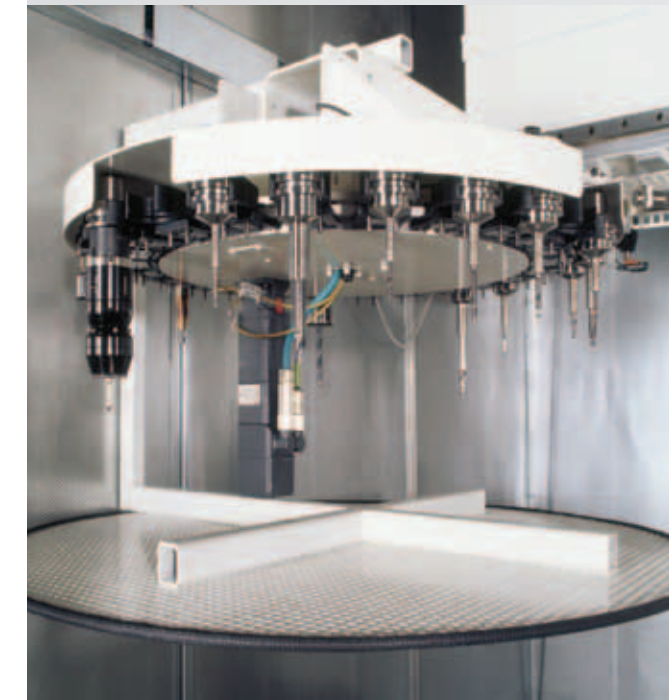
Based on intensive expert consultation, the various aggregate groups will be combined to form individual CNC-machining centres. With the suitable machine for your application, we will assist you in realising your production targets, as well as your

ideas regarding manufacturing technology. The manufacture of order-related components in batch size 1 will be possible to the same demands as those made on serial production, using a coordinate table, a programmable beam table with quick-setting

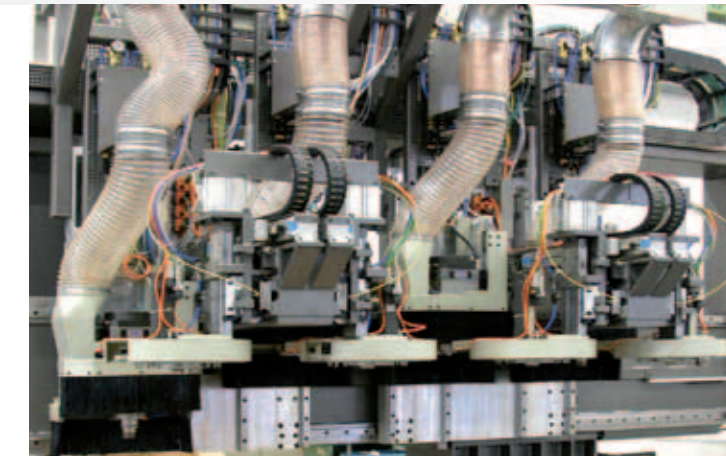
clamping devices or a self-setting PIN-table. The ECO is not an off-the-shelf machine. Your suggestions and production needs will be incorporated into the planning process prior to the preparation of our elaborate offer.

Upon request, special machine sizes and customised solutions for the table design or the CNC-control system will be projected and submitted in your particular offer. At Reichenbacher Hamuel, the ECO isn't simply a machine, but rather part of a system.

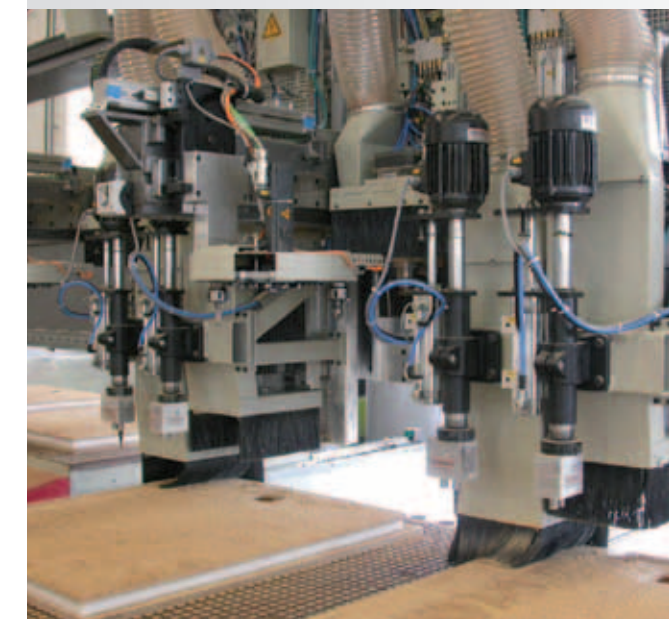
## Versions



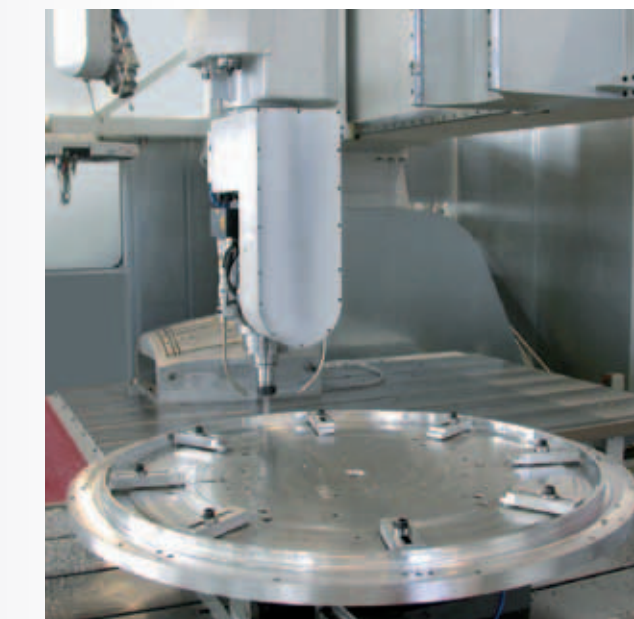
Depending on the customer's needs, the heads with automatic tool changers will be adapted for each individual case. If more tools are needed, a tool rack with up to 100 tools can be provided. Customised machining conceptions are the basis for an efficient production. For these individual cases particular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



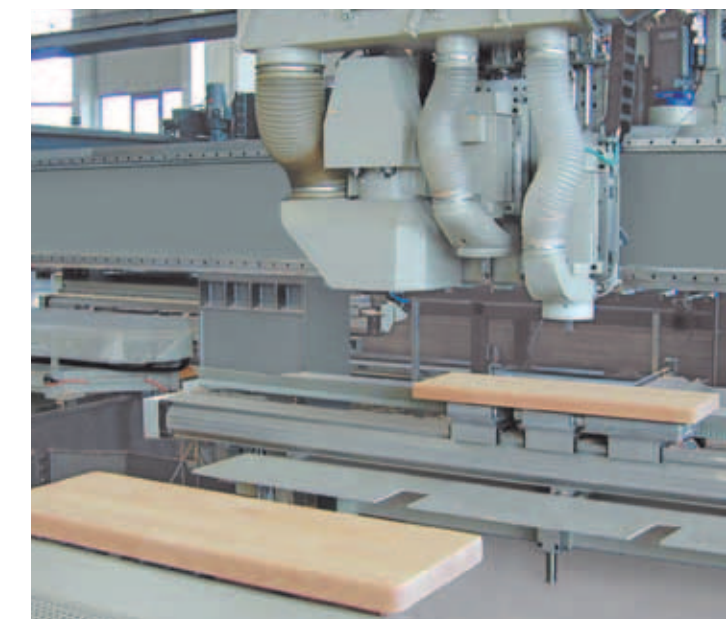
These four working heads with automatic tool change for vertical milling, drilling, sawing and grinding, including cooling unit and greasing unit, have been designed for aluminium machining. An automatic tool changer for 10 tools is mounted in front of each milling spindle and moves with the transversal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



Six vertical milling heads and four vertical drilling units are mounted at the front of the portal on two separate sub-frames, which are adjustable with respect to each other by NC-axes. In front of each of the two milling spindles with automatic changing system, an automatic plate magazine for 10 tools is installed and permits tool changes during machining.



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



Four support beams are mounted in X-direction to form a machine table. There are two movable beams at each loading station and each beam has five vacuum cups, which can be adjusted by an 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.