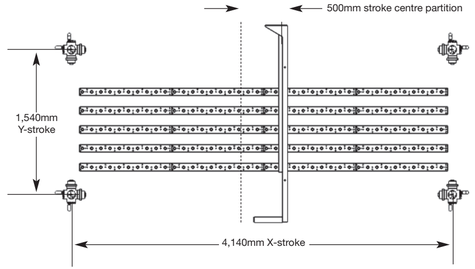
Control

Simplified machine control: Safety integrated

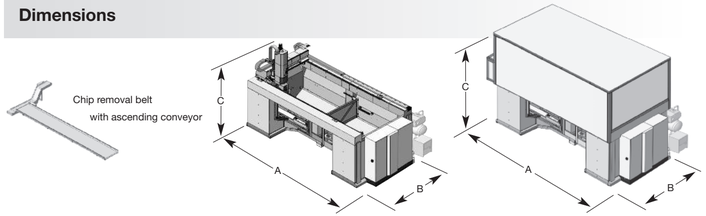
Owing to the latest control generation Sinumerik 840D solution line (sl) by Siemens even demanding workpiece machining is no problem: All operation and programming steps are carried out time saving and simple by a graphic user surface. With “Safety integrated“ the ECO-NT machining centres have an integrated safety concept. Thus programs can be run in automatic mode even with the door open under adherence to the safety regulations. Reichenbacher Hamuel machining centres seamlessly fit in existing production areas. A basis for this are the machine conception as an open system and the exclusive use of established industrial standards.

Working area



A centre partition is provided for independent machining in area 1 and area 2. The centre partition is moveable by 500mm in X-direction. Hereby the working area is extended by 250mm in X-direction.
The free inserting width is reduced by 250mm in the opposite station. The centre partition only moves with a change of station.

Dimensions



	ECO-NT 3610-1K standard	ECO-NT 3610-1K with sound insulating cabin
Measure A mm	7,100	7,200
Measure B mm	3,300	3,300
Measure C mm	4,600	4,800

DB 10

ECO-NT

Technical features

Working heads	5-axis machining with 4.6kW high performance frequency spindle, number of revolutions up to 60,000rpm, HSK-F 32 tool fixtures, (corresponds to tool cone HSK-E 25 in combination with handling ring HSK-E 32) alternatively 15kW spindle with HSK-F 63, further alternatives on demand.
Tool changer	Movable tool changer plate with 8 or 16 places (alternatively fixed chain magazine with 40 places), further alternatives on demand.
Machine table	Tables in tubular frame construction with vacuum and pneumatic system. Machining dimensions 1x 3,600 / 1,000 / 700mm (X / Y / Z) or with division of the machining area for reciprocal machining with 2x 1,200 / 1,000 / 700mm (X / Y / Z) with fixed centre partition or with division of the machining area for reciprocal machining with 2x 1,200 ±250 / 1,000 / 700mm (X / Y / Z) with moveable centre partition
Axis motions	X = 4,140mm = transversal motion – maximum 80m/min Y = 1,540mm = longitudinal motion – maximum 80m/min Z = 1,000mm = vertical motion – maximum 40m/min B ± 135° = swivelling motion – maximum 180°/s C ± 360° = turning motion – maximum 180°/s
Installation conditions	Weight approximately 10t Required space 7,100 x 3,300 x 4,600mm (L x W x H)
Feed drives	Maintenance-free, high-dynamic three phase servo motors with modern digital drive technique and integrated absolute value transmitter (measuring system). Direct measuring system in the Z-axis.
Chip removal	Machine substructure with integrated chip chutes and sliding belt conveyor, conveying direction to the right.
Control	Sinumerik 840D Solution Line HT2-hand control device for manual operation Moveable control panel with • PC-keyboard • 17“ TFT-monitor • Machine control panel • PC-mouse (only in connection with NC-HOPS)

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ECO-NT

CNC-technology at its best

HAMUEL REICHENBACHER
A member of the SCHERDEL group

ECO-NT

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.

With a required space 22 m² and 6 m³ working area extremely handy

With the ECO-NT series Reichenbacher Hamuel sets new standards in the machining of plastics, aluminium and composites: Perfect 5-axis machining and universal applicability are combined with maximum operator convenience and very compact design.

This newly developed fixed gantry concept by Reichenbacher Hamuel allows an especially low vibration operation. Due to the fixed machining table on a solid substructure and the very high Z-axis every routing process can be realized with absolute contour accuracy, highest surface quality and precision. The workpiece can be machined from all sides and thus be entirely machined in one machining process. The Reichenbacher Hamuel coordinate table conception with integrated setting bushes and fixing holes cares for a quick and safe workpiece change. With the 3D-measuring pin the reference points are read and directly memorized in the control. In practise this means highest workpiece accuracies.

Efficient and versatile:
With double working area or with reciprocal loading

The working areas of the ECO-NT machining centres flexibly adapt to each machining task and offer optimum machining conditions in every single case. The loading area is shut by two separate sliding doors, the machine is completely enclosed and chips can fall freely to the chip removal belt even with demanding free from machining in five axis operation. With reciprocal operation the doors can be opened separately. If a larger working area is required, for the machining of long parts for example, the centre partition can be removed and the working area be doubled.

The ECO-NT machining centers can be equipped with integrated tool changing systems which are mounted movably to the X-slide. Optionally eight or sixteen places are available for tools up to a length of 140mm and a diameter of 40mm.

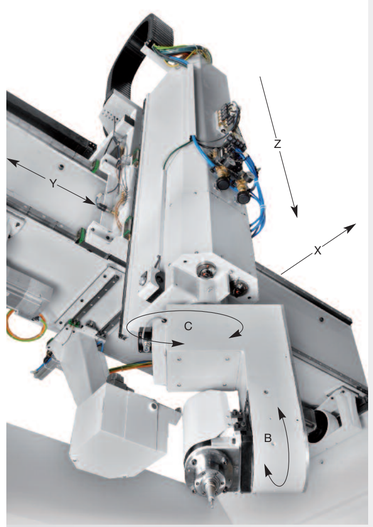
Depending on the application also a chain magazine with 40 places or other special versions are possible. The high performance frequency spindle with up to 60,000rpm, the blast nozzle (with air ionization to avoid electrostatic charging of chips) that can be activated by the NC-control and the program-controlled minimum quantity greasing assure an efficient entire machining.

Robotic head

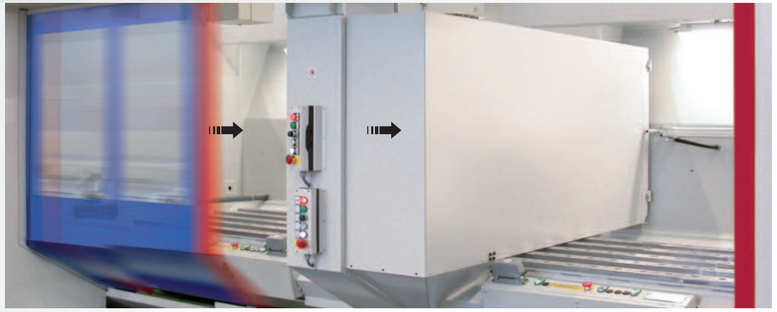
Working head, one-sided bearing, with integrated HSC routing spindle. The position of the routing spindle is changed by two NC-axes which are standing 90° towards one another. The gears are free from backlash. The freedom from backlash of the gear train is guaranteed to the maximum admissible wearing (life cycle) by the pre-clamping that is generated by spring elements.

The high-precision special pinion gears are hardened and ground. The special toothing together with the high surface quality and accuracy class of the pinions guarantee an extremely low-noise and smooth run of the gears which directly shows in the routing surface.

Working head



Working areas

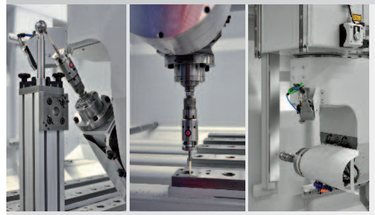


The loading area is shut by two motor-driven sliding doors (option). With reciprocal loading each door can be opened individually. A centre partition between the working areas provides protection against flying parts from the opposite working area. Alongside the tables chips fall onto the machine bed. The construction of the sheet metal coverings prevents the formation of chip clusters.

The chip removal belt in the machine bed conveys chips out of the machining area in X-direction. Two tubes with nozzle bores are provided in the left and the right area of the front doors which prevent chip accumulation on the machine frame between the door edges and the cabin wall.

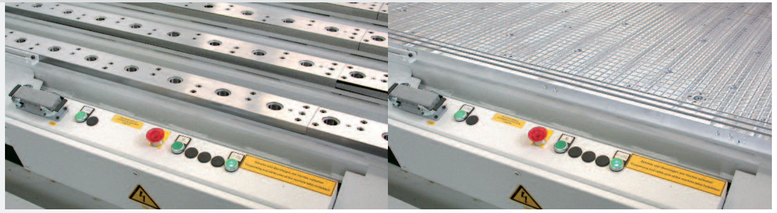
Fork head with high performance frequency spindle, spindle speed 60,000rpm, with movable tool changer which is protected against dust and flying chips.

Machine geometry measuring



By a 3D measuring pin (option) the machine geometry is checked at a reference bolt in the machine table. In case the geometry deviates to a certain extent, an error message is shown at the control. This guarantees a quick adjustment of the machine, for example after a crash or in order to improve quality.

Table types



The open tubular frame has a surface loading of up to 1,000kg. The supporting beams are mounted in a grid of 200mm in Y-direction and equipped with threads and setting bushes in a grid of 100mm in X-direction.
Clamping of devices mechanically by insert bushes in the machine table. Special profiles in the automotive and aeroplane construction, 6-sided machining at formed parts and boards – the application range is almost unlimited. In order to cover any requirement different table systems are available. The table option grooved aluminium plate, also with different clamping areas, is a proven universal system.