

# Working space, availability and a guaranteed future were key factors

The world market leader in ropeways places an order for multi-functional machining center

The Austrian leader in ropeway quality and technology, Doppelmayr Seilbahnen GmbH, has invested in its future. The company has purchased a type FOGS D40 multi-functional machining center from DST. The cableway manufacturer intends to take delivery of the machining center in autumn 2008 at their manufacturing facilities in Wolfurt, Austria.

Doppelmayr was seeking a multifunctional machining center essentially to carry out precision machining of large components for cableways, such as the cable pulleys and cable supports. Since in future it is intended to machine even bigger components, the specification also included a requirement to mill parts 12 meters in length and 2 meters high, and alternatively to be able to turn a diameter of 5 meters. In its specification, the company, based in Wolfurt, Austria, stressed the value of a good ratio between machine working area and the amount of floorspace required. The production engineers anticipate machining accuracy with an average spread of maximum 15 µm over the entire X-axis, 7 µm on the Y-axis, 4 µm on the Z-axis, and 4 arsec on the A, B and C axes. Following a visit to DST's Droop + Rein product plant in Bielefeld, and after holding technical consultations with other users, Production Manager Karl-Heinz Zündel and his colleagues were convinced of the high availability rate provided by the FOGS series of machining centers. Zündel also placed importance on a comprehensive customer service. "We believe that the Total Cost of Ownership is more crucial than the actual cost of the investment. This is why we place value on high quality, a comprehensive diagnostic system, and a qualified teleservice." The machine is sub-divided into two working areas as standard. However the partition wall is removable so that large pieces can be machined on the floor plate.

The basic design of the machine is the Droop + Rein upper gantry design FOGS D40C milling center. The Z-ram unit accepts fork type milling heads, angular or face milling heads as required. When blocked, i.e. when the spindle is without load, the milling head can also be used for turning operation. This product incorporates a turning table manufactured by the Dörries product range based in Mönchengladbach. In this way the client is benefiting from machine tool synergies and from the expertise provided by both divisions. The machining center contains an automatic toolchanger. The Siemens Sinumerik 840D control system handles all the CNC functions. "By investing in this expansion we are very much looking forward to being able to offer our customers even greater benefits," said Karl-Heinz Zündel.

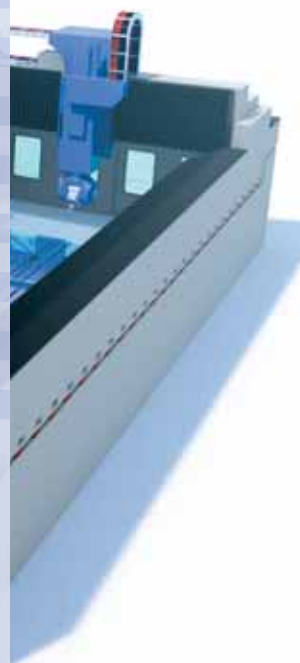


The purchaser of the multifunctional machining center, Austrian manufacturer of safe transport systems, Doppelmayr Seilbahnen is also world leader in producing ropeways.

## Technical Data

X-axis		13,000	mm
Y-axis		4,500	mm
Z-axis		2,000	mm
Swing diameter		5,000	mm
Ram unit	(head change)	D40	
Power	(100 % ED)	40	kW
Speed	(100 % ED)	20 – 6,000	rpm
Torque	(100 % ED)	1,800	Nm
Tools		120	
Control		Siemens Sinumerik 840D	

The Droop + Rein machining center is multifunctional both as regards operation – turning, drilling and milling – and the type and size of workpiece it can handle.



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Information and news from Dörries Scharmann Technologie GmbH

## Heading new technologies

**Machining strategies at the EMO:**  
 From axle journals to landing gears and compressor rotors to cylinder heads

Our main focus is on the application, the component and its efficient production. For this reason, Dörries Scharmann Technologie GmbH (DST) will present successful production solutions implemented by our customers. In this context, successful is a synonym for: utmost productivity, reliability, availability and quality in heavy-duty chip removal as well as in high-speed machining. With the example of various workpieces that differ in material, size, chip volume and accuracy requirements, DST experts will demonstrate appropriate machine tool concepts and machining solutions.



High-precision machining with large diameters is one of the outstanding characteristics of the product range of Dörries.

The Scharmann DBF 630 machining center offers utmost productivity in machining complex components and a fast Return on Investment.



The Sprint Z3 machining head designed for the high performance machining of aluminium aircraft parts, is of interest especially to the aircraft industry production engineers. Its new spindle offers a power of 100 kW (100% DC) at 30,000 rpm. It thus establishes a material removal rate of 10 l/min in the field of aircraft construction e.g. in machining structural parts for the Airbus. In addition, the machine tool engineers from Mönchengladbach, Germany, will present a new concept for machining titanium: the ECOFORCE line. Alongside, DST will present the results of heavy-duty chip removal in machining high-strength steels with the example of aircraft landing gears.

Machining strategies for high-strength materials are much in demand with the automobile industry as well as with mining suppliers and suppliers to the Oil and Gas Industry. Axle journals, track rollers, valve housings and drill bit segments are all complex components with high tolerances. Especially for sophisticated components of this kind, DST has developed the Scharmann DBF 630 machining center, for example. It facilitates drilling, turning and milling operations on stationary, non-rotation-symmetrical, complex work pieces.

Wind energy plants are booming and they are being designed for increasing power. This is also reflected in increasing gear dimensions. Crown gears with relatively low cross-sections but large diameters must still exhibit extreme running accuracy. Even with a few meters in diameter, Dörries vertical turning centers still achieve radial and axial runout values in the micron range. At the EMO, interested parties will have every opportunity to satisfy themselves of these facts.

Competence islands for the areas Aerospace, Oil and Gas, Power Generation, Automotive and General Engineering demonstrate the diversity of the DST products.

Pay us a visit at the EMO. We are exhibiting in hall 13 / booth A-36.



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# Review and outlook

## Airbus cutting plant puts its faith in DST technology

In 2006, the employees at the Airbus plant in Varel were able to look back on 50 years of metal cutting. The plant has confirmed its leading position in the sector in various benchmark tests. In 2007, 90 % of the machining centers in large component production come from Dörries Scharmann Technologie GmbH. Their modern technology contributes to the Varel plant's competitive advantage.

Customers primarily judge the plant in terms of delivery performance, quality and value for money. These criteria and their interrelationships are constantly being optimised. Externally a very critical view is taken when it comes to choosing appropriate technologies and partners.

One of the plants objectives at the end of the 1990's was to achieve a significant competitive advantage in machining parts from high strength, aircraft grade aluminium. To achieve this they acquired ECOSPEED, a revolutionary new product from DST and supported by WZL at the RWTH Aachen. This unique head provides the Z-axis for the machine as well as the ability to move the spindle within a cone of 80 degrees. This is achieved using three parallel linear axes, which creates many advantages over traditional rotary axis designs. The head, known as the Sprint Z3 is just one feature of the machine, which enables it to achieve metal removal rates up to 10 litres per minute.

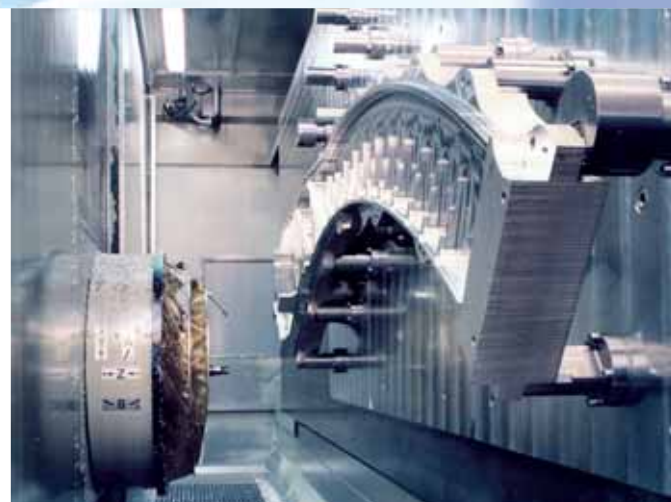
Early in 2001 the Varel production engineers commissioned the first two ECOSPEED 2500 machines. The third followed just a year later. The three machining centers now operate in a linked cell, with two load – unload stations and six buffers. Two operators look after this manufacturing cell on site. This organisation and division of tasks guarantees excellent productivity in producing the structural components for the fuselage and tail of the Airbus A318 to A321 and the A380.

To expand its capacity for producing large parts, Airbus acquired an ECOSPEED 2600 and an ECOSPEED 2500 in 2003 and 2004 respectively. Both machining centers process structural components up to 7,000 mm in length and 2,500 mm in width. They are linked by transport system with a load-unload station and four buffer stations. The components produced by the machining centers include the lower fuselage section for the A380, section 18/19. From serial number 23 of the aircraft onwards, Airbus switched from extruded flats to drop-forged blanks. In addition to the benefits in terms of the work-piece volume, machining time and strength, this innovation also brings savings in the subsequent fuselage assembly at the Airbus Nordenham location.



Machining of aircraft structural parts with the innovative parallel kinematic machining head Sprint Z3.

Technical Data		ECOSPEED 2500	ECOSPEED 2600
Axis	X-axis	3,300	7,800 mm
	Y-axis	2,500	2,600 mm
	Z-axis	670	670 mm
Rapid traverse	X-axis	50	65 m/min
	Y-axis	50	50 m/min
	Z-axis	50	50 m/min
Acceleration in all axis		9.81	9.81 m/s <sup>2</sup>
Pallet size		2,000 x 2,500	2,500 x 7,000 mm



Particularly with the ECOSPEED, the Airbus Varel plant has consistently broken new ground. Today there is absolutely no doubt that the decision was spot on. This is clear to the production experts in a variety of ways. The quality requirements of their customers – external companies in addition to Airbus itself – are extremely high, as the components almost always have a bearing on safety. The materials and production methods need to be traceable with pinpoint accuracy for many years, from the batch to the dimensioning and tolerances right through to the accepted part. As well as meeting the quality standards, reliable delivery is also crucial. The Varel plant is very satisfied with the availability of all the machinery. If a fault does occur, the integrated diagnostic system helps to quickly identify the fault and analyse the cause. This reduces down times and the

associated costs. Alongside the actual technology, the ease of operation makes a major contribution to the high availability.

Another important trend is composite technology. The use of composite and titanium components in aircraft is on the increase. For composite, special high-powered trimming machines are needed, while titanium calls for heavy-duty cutting. At the same time, there is a growing demand for machine tools with greater rigidity, increased dynamics and, of course, the maximum possible cutting power. The Varel plant is aiming to maintain and expand its market share in this area of metal processing for the Aviation Industry in Germany. For this demands DST offers a brand new machine line called ECOFORCE.



ECOSPEED 2600 process aircraft structural parts up to 7,000 mm in length.



Also machines of type ACM are in use at Airbus Varel. Operators and manufacturer are convinced that this is the largest four-spindle machining center in Europe.



The three ECOSPEED 2500 operate in a linked arrangement, with two load - unload stations and six buffers.