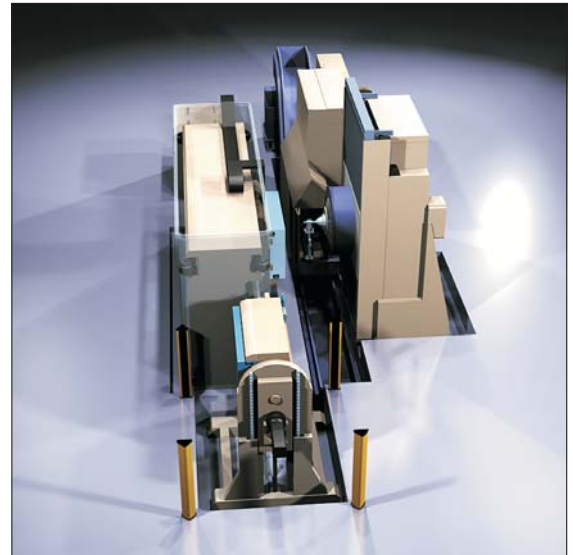


The masters offspring

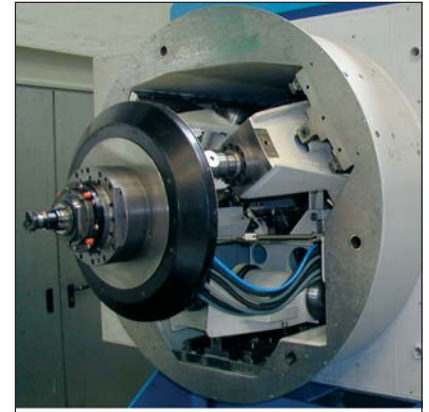
DS Technologie launches ECOSPEED F

The development of ECOSPEED, a high performance machining center from Moenchengladbach based DS Technologie Werkzeugmaschinenbau GmbH is widely recognized as a masterly stroke of innovative product development. Specifically designed for the high performance machining of large aluminium alloy structural Aircraft parts, this machine has broken all records in the field of high speed cutting. The story of this success began with the machines development which was completed in a remarkably short 15 months from start to market maturity. The goal set by the European Aircraft Industry was daunting – "to reduce the production cost of major structural components by 50 %, without compromise to quality or accuracy". "In the beginning, the challenge seemed to be impossible", says Dr. Norbert Hennes, Technical Director at DST. "However, the development was started with a small inhouse design team, supported in specific areas by Siemens AG and the TU Aachen. From day one it was recognized that a successful conclusion to the challenge could only be realized by finding a completely new approach."



The need for dramatically increased productivity can be seen clearly in the current situation facing all Aerospace manufacturing companies. General worldwide recession, coupled with the reaction to the events of the 11th September 2001 has resulted in a significant decrease in the number of air passenger traffic. Although some improvement is now evident, orders for new passenger Aircraft fell by 20 %. In an industry which is highly competitive, in a market where price is still the major factor in deciding upon a supplier, reducing dramatically production costs is the only way to survive long term. This fact applies equally to the large subcontractor base which supports the major O.E.M.'S. Reducing machine cycle time alone would not be enough. Part handling, tool management and chip control, all have a major influence on overall productivity. Last but by no means least, surface finish quality would have to be improved in order to remove the necessity to manually fettle and polish machined parts, a time consuming and costly practise which is still universally employed, through necessity, by the Aerospace Industry

Attempts to bring about improvements were made using existing traditional Machine Tool concepts, these attempts were unsuccessful due to the limits and restraints imposed by the Machine Tool Technology available. The main problems were associated with speed and dynamics in the rotary axes during the process of high speed simultaneous 5-axis machining. In order to overcome this the design team applied the concept of 3-axis parallel kinematics to develop a machining head which almost at a stroke provided the required solution. Using a variety of "State of the Art" design tools the ECOSPEED was developed. The new head christened "Sprint Z3", was integrated into an all new machine structure and concept which provided the highest possible dynamic stiffness, acceleration / deceleration, control and drive technology. The machine was configured with a horizontal headstock and vertical pallet which facilitates chip evacuation and control. ECOSPEED has in fact exceeded the challenge laid down by the industry. EADS, the first customer to purchase the product, reports a 5-fold productivity improvement over conventional 5-axis Machine Tools and machined surface finishes which now remove the need for hand finishing. The exceptional benefits provided by ECOSPEED are indicated by its success with 18 machines sold since its introduction in 2000. Following the machines undoubted success DST decided to develop a smaller version which would carry a much lower investment cost. This new development would widen the market potential for the product by bringing the new technological advantages within the investment range of the Aircraft industries sub-suppliers.



The facts: ECOSPEED F shares the same concept of the original ECOSPEED with horizontal spindle and vertical pallet. It also features the innovative Sprint Z3 head and the same performance ratings of acceleration / deceleration and feed. In contrast to ECOSPEED however, the column is fixed. The "X"-axis movement is achieved via the pallet group. An indexable, twin position, load / unload station is situated at one end of the machine "X"-axis where parts can be loaded in a horizontal attitude prior to being automatically moved to the vertical and transferred into the machine

With this concept of part handling a rail guided vehicle is not needed which reduces the floor space requirement for the machine and also introduces significant cost savings. The pallet size of ECOSPEED F varies from 2.5 m x 1.5m up to 3m x 2 m, making the machine an ideal complement to the ECOSPEED. Michael Schedler, head of Marketing at DST, is confident that the new 5-axis machine will prove successful in the market place.

"The machine is offered at a very competitive price. Coupled with its extremely high performance we are sure that no one planning to invest in additional high speed 5-axis machining capacity, or entering into a modernization programme, can make a decision without taking the ECOSPEED F into consideration". When asked about sales targets for ECOSPEED F, George Finlayson, Director for Aircraft products at DST, just refers to the projected future for the Aircraft industry. "All the major and most respected market analysts agree on one point. Over the next 18 years, 19,000 wide body commercial Aircraft will be delivered. On top of this 5,000 smaller regional jets will be required over the next 10 years. The market over the long term is secure. ECOSPEED and ECOSPEED F will provide the best possible, cost effective and efficient high performance machining solution for many years to come".

Configuration

- ◆ Stationary column, moveable table group
- ◆ Horizontal motor spindle, vertical component
- ◆ 5-axis machining capability by Sprint Z3-head
- ◆ Rotatable load / unload station with 2 pallets horizontal loading – vertical machining
- ◆ Stand alone machine extendable to FMS



Advantages

- ◆ Dramatic productivity increase
- ◆ Highest chip removal rate
- ◆ Extreme high accuracy
- ◆ Highest acceleration / deceleration in all axis
- ◆ Eliminate fettling, polishing, deburing
- ◆ Improved chip management (free chip flow)
- ◆ Advantageous price / performance ratio

ECOSPEED F

X-axis drives with master slave concept

Electronically pre-loaded X-axis drive

- ◆ Double pinion, electronically pre-loaded by 2 drives

Advantages

- ◆ Backlash elimination
- ◆ High stiffness
- ◆ High positioning accuracy
- ◆ Easy maintenance by reduced number of elements

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