

fakt!

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Information and news from Dörries Scharmann Technologie GmbH

Old values brought up to date

Shorten delivery times, minimize costs

"Lucky you, if you still possess an older style, powerful machine tool", says Hans Jeschke, summarizing the advantages of a machine retrofit. As well as being an Engineer, he is the Manager of Service Division of Dörries Scharmann Technologie GmbH (DST) and has clear views on the special benefits of retrofit for customers:

- considerably shorter delivery times in comparison with new machines
- both performance and precision of the retrofit machine are at least equal to those of the original machine
- enhanced performance, travel paths, precision etc.
- technical and economic modernization based on the customer's needs
- major savings compared with the capital investment required for a new machine, with average savings of between 30 and 80%.

But there is no joy without sorrow! What are the disadvantages in the face of such obvious practical advantages? Only what the customer has to find out for himself and make his own decision as to the partner he wants to go with.

The most important factors include know-how in production, design and logistics and certainly a knowledge of old machine tools, makes, designs, technologies and the like.

At DST the definition of competence is a combination of development and design know-how of new machines and decades of experience of retrofit work. Only this combination can be a guarantee that retrofit machines can have the same features and performance as a new machine.

The economic criteria for a retrofit match perfectly the reliability that the customer can expect in the future. If a retrofit machine is to continue to be productive for a further ten or twenty years, a reliable supply of spare parts and servicing will be essential. To ensure this, a reliable partner with an appropriate economic background will be needed.

How can the customer verify these demanding criteria? Nothing is more convincing than success.

Dörries Scharmann can draw on an abundance of resources. As well as having the know-how of its own products, DST has, as the successor of many renowned companies, taken over the latter's documentation, internal documents and on some occasions even the staff. But above all, it is references from satisfied customers that count and we would like to show you three successful retrofit orders in this issue of FAKT 01/2005.



DS

Technologie

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The new value, but with more stringent working conditions

Drilling and milling machine in RAM design

The main benefits for KE Kranbau Eberswalde AG

This fifteen-year old machine tool still retains its former performance and precision, although the capital outlay was only around 40% of the price of a new machine. In addition, no new costs were required for a new foundation or accessory work. Compared with a new machine, the delivery time was more than 6 months less. Dörries Scharmann bore the technical and the economic risks for this order which ran into six figures.

Situation

Kranbau Eberswalde, the inventor of the double-link level luffing principle and technically front runner for slewing cranes, belongs to the company KIROW Leipzig AG, who are, in their own words, a world leader in railway cranes. It was there, in 1989, that the drilling and milling machine with a movable RAM and MSC 165 spindle supplied by the Spanish company SACEM first saw the light of day. Documentation on the machine was fragmented and restricted and was not even available from the manufacturer. Technically, the drilling and milling machine was still in good working order although there were signs of considerable mechanical wear. For this reason, the precision of the machine no longer satisfied the requirements of KE Kranbau Eberswalde AG. Moreover, it was no longer possible to find any spare parts on the market for the electrical system and the operating system was completely obsolete.

Targets

KE Kranbau Eberswalde AG requires the performance levels of the original machine and, at the same time, it needs the potential to work for another ten years without major repairs being necessary. Additional requirements include an up-to-date operating system and a reliable source of electrical spare parts.

Implementation

The experts from Dörries Scharmann were able to draw on considerable experience with portable boring and milling machines, which stood them in good stead in understanding the functioning of the unknown design of the Spanish machine. DST replaced the electrical switching system with its CNC control and replaced the main drive, the other drive systems and also the five axis measuring systems. The main spindle bearing and the aerostatic system were also replaced. DST is familiar with aerostatics because of its own experience with its WOTAN system. In addition, the hydraulic supporting beam suspension compensation system, the aerostatic guides and a rotating angular milling head were thoroughly overhauled. The project also includes full documentation and the training of operators and programmers for the new control system. Commissioning on site was carried out by DST experts.

Technical Data and the principal features

Drilling spindle		165 mm
Inner bore	of drilling spindle	ISO 50
Milling head mounting	on the drilling spindle on the milling or hollow spindle	ISO 50 ISO 60
Cross-section or RAM		350 x 400 mm
Speed of drilling spindle	infinitely variable	2...1,600 rpm
Feed rate for all axes	infinitely variable	3...2,500 mm/min
Rapid traverse	for all axes	10,000 mm/min
Vertical adjustment	of headstock (Y-axis)	4,000 mm
Axial adjustment	of drilling spindle (Z-axis) W of RAM Z	800 mm 1,000 mm
Transverse adjustment	of column (X-axis)	12,000 mm
DC motor output	for drilling spindle	50 kW
Nominal torque of AC motor	Y- and Y-axis W- and Z-axis	57 Nm 44 Nm



Better than new

Single column vertical turning machine

The main benefit for Reifenhäuser

Some 20 years after being first commissioned, the VCW 100 vertical turning machine performs considerably better than it did in its heyday in the 1980s: 33% higher turning diameter, no more manual but now an automatic



^ As well as having "inner values", the VCE 100 is also visually appealing and new-looking.

Technical Data

Turning diameter	at 530 mm turning height	1,600 mm	
	at 1,080 mm turning height	1,500 mm	
Table diameter		1,000 mm	
Crossrail stroke		800 mm	
RAM stroke		1,000 mm	
Horizontal travel	X-axis	± 950 mm	
RAM cross-section		240 x 240 mm	
Tool stations	turning	22	
	milling	78	
Tool mounting	turning	Dörries 240.2	
	milling	SK 50	
Speed	table	2 stages	5...800 rpm
	milling	2 stages	14.3...3,000 rpm
Power	table		75 kW
	milling		30 kW

tool fitting system for the intermediary dish from the rack storage and almost four times as many tool positions. Incorporating a delivery station in the inner part of the machine, meant that mounting the universal angular milling head could be done automatically. All these features result in shorter set-up times and obviously a much higher productivity. Further improvements to the Dörries Scharmann retrofit mean that this machine is now as good as new.

Situation

Since 1986, the Dörries VCE 100 has been machining components for sheet extruders, textile machinery, extrusion machines and the corresponding tools. Intensive use at Reifenhäuser, the Troisdorf-based extrusion specialist, not unexpectedly left its mark: drive units, guides, tool changers and other moving parts were worn and in some cases greatly damaged.

Targets

On the one hand, the idea was that the machine should become as good as new again. On the other, the it was required to satisfy customers' more stringent requirements in terms of component size and economical working. Dörries Scharmann came up with a formula that raised the bar even higher. The magazines for the turning and milling tools would be manufactured to requirement and thereby of differing sizes and in all cases automated. Furthermore, the machine was to be housed in a fully enclosed safety area. In addition, an extra extractor system was added to prevent coolant spray from penetrating the production hall.

Implementation

The customer was particularly impressed by the tool changing concept. Whereas there were previously 12 tool places each for the turning and the milling tools, there are now 22 and 78 respectively. Full automation of the tool changer plays a major part in significantly reducing set-up times. Before the retrofit, the maximum turning diameter was 1,200 mm. Now it is 1,500 mm at a turning height of 1,080 mm and as much as 1,600 mm diameter at a turning height of 530 mm. Practically, all the drive components were replaced in the mechanical part. Furthermore, the lubrication, cooling and chip disposal systems are also all new. The major problem of pollution from cooling lubricants now finally lies in the past, as the VCE 100 is completely enclosed, with the result that the vapours and the chips are being extracted as soon as they are produced. In terms of hardware and software, the electrical equipment was newly designed by Dörries Scharmann and includes, in particular, a CNC Sinumerik 840 D control system, a PLC-S7 with process data highway, a new switchboard unit and digitally controlled motors for all axes and the table and milling head. It goes without saying that the control panel with the hand-held control element is as new as the wiring and the trailing cable lines. The cost of retrofitting the older machine is extremely economical, especially in view of the increased value. The capital outlay for a new machine would be around 60% more. The retrofit improved performance and increased functional capacity. It also included comprehensive documentation of the work that had been done and full training for operators and programmers, who are now better qualified.



Wohlenberg turning machine 12708

Improved performance at lower costs

^ A reborn Wohlenberg machine now produces larger reactor components for the chemical industry at its old location in Deggendorf.

The main benefit for MAN DWE

Only 40% of the cost of a new machine! That was all that DWE, part of the MAN group, had to pay. And the result is a considerable gain in performance in the 1985 vintage machine. The machine has grown in length with a 2 metre extension of the machine bed and it has also acquired a modern CNC-control and dynamic feed drives.

Situation

Almost 20 years of working, mainly in the machining of reactor components for the chemical industry, had taken its toll on the Wohlenberg 12708 lathe. The main problems were geometry and precision. Larger, but above all longer work-pieces were increasingly frequently in demand. The old control system failed repeatedly and obtaining spare parts became more and more of a problem. As in previous years MAN DWE had already had satisfactory experience of Dörries Scharmann in the retrofit and modernization of large-dimension used machine tools, they were happy to place their trust in DST again and ask them to retrofit the old machine.

Targets

The target was to restore the principal features of mechanical precision and reliability of the original machine. In addition, it was planned to replace the outdated control system by a modern CNC system and the machine bed was stretched by a further two metres.

Realisierung

The work of converting the machine into a new turning machine was fell entirely to Dörries Scharmann in Mönchengladbach. This included lengthening the toothed racks and other parts to extend the length of the machine bed and also the mechanical overhaul of the geometry and the guides. Both the X- and the Z-axes were equipped with new digitally controlled servo-motors and measuring systems and the table was fitted with an incremental rotation indicator. The retrofit of the electrical equipment included a new Heidenhain Manual plus 4110 CNC path control system with an integrated motor control and reversers, which makes the machine ideal for machining individual work-pieces and small production runs. About

ten weeks after the retrofit was completed, installation and commissioning took place in Deggendorf. The customer has now accepted the turning machine on the basis of DIN 8607 for swing diameters in the range 800 - 1,600 mm and the precision is that of a new machine. After a much shorter period and a considerably lower capital outlay than would have been necessary for a new machine, the customer now has an even larger machine which is as good as new.

Technical Data

Max. width	5,000 mm
Max. height	610 mm
Table diameter	1,200 mm
Revolving tool places	8
Drilling rod store places	1
Main drive output	64 kW
Max. speed	710 rpm

Additional references by brand name

Dörries Scharmann

Berthiez

Dörries

Droop + Rein

Froriep

Jungenthal

Köllmann

Scharmann

Schiess

Wanderer

Wotan

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