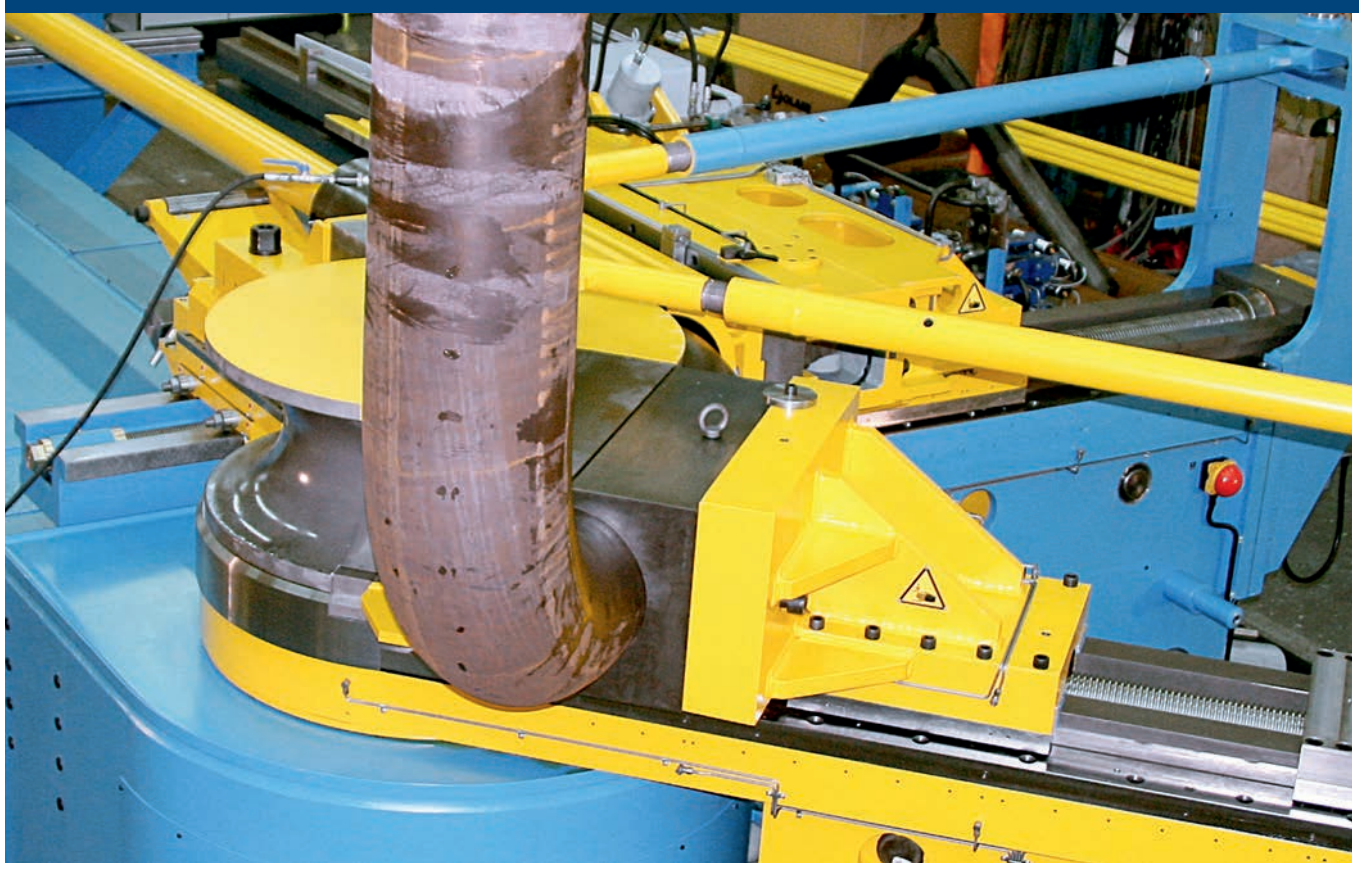
Bending to perfection.

INFOPIPELINE

Edition 1 – 2013

The Schwarze-Robitec magazine with added value for customers and employees



SMALL RADII FOR SHIPBUILDING

CNC 320 HD Tube Bending Machine

There are few other industries in which the consequences of globalisation can be seen as directly as in shipbuilding. As such, for example, the speed, volume and size of container ships are constantly increasing in order to facilitate international transport of growing quantities of goods. At the same time, shipyards are facing increasingly intense global competition. In Europe, the USA, Asia and even Australia, they compete for customers from civilian and military shipping. In view of these developments, the focus is on the production processes in the shipyards: the motto is "greater speed, greater flexibility, greater efficiency". The example of tube bending machines, with which different tubes and pipes have to be processed not only in vast quantities, is an interesting one. Nowadays, the demand for space for the pipes on and below deck is also increasingly becoming a competitive factor. The solution lies in the use of smaller bending radii – a particular technical challenge, which we as a special-purpose machine builder have solved. Innovations such as the CNC 320 HD machine, we help to massively improve productivity in shipbuilding and in the construction of offshore facilities.

Behind the superlatives in shipbuilding lies a production challenge that is almost as great. This becomes particularly apparent in tube machining, as the supply lines on a cruise ship, aircraft carrier, submarine or yacht always form a highly complex network. Very different tube materials are used here for the broadest range of applications and media – from copper through steel and stainless steel to CuNiFe and titanium. Not only do these have to be bent in large quantities to fit precisely; the bending radii of the tubes is also particularly important, as there is generally little space available in the interior of the ship and a great deal of space can be saved with extremely tightly bent pipelines.

"We are intimately acquainted with the different challenges in shipbuilding," Managing Director Bert Zorn confirms. "In recent years, we have developed systems for many shipyards all over the world, ensuring direct competitive advantages."

[...]

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DEAR READER,

The success formula of Schwarze-Robitec is as simple as it is effective: we develop and produce tailor-made tube bending solutions according to the needs of our customers. In the latest issue of InfoPipeline, read how shipyards achieve great advantages with small bending radii and why our new, role form bending technology for the automotive industry is immediately paying off twice over. Moreover, we report on how you can save hard cash with innovative measuring technology. Also, we demonstrate how our own solvency remains at the highest level as a result of investment and consistent risk and cost management.

Have an enjoyable read

Hartmut Stöhr
Managing Director

BENDING, MEASURING AND FURTHER BENDING IN ONE GO

Those who want to accurately bend steel or stainless steel tubes and tube systems must accept long auxiliary processing times for the generally unavoidable measuring and adjusting process. This is because the rebound behaviour of the materials can differ widely – even if the tubes come from a single batch. The production of prototypes and individual items is similarly time and labour-intensive. The SpringMatic optical measuring system provides a remedy here: the new development from Schwarze-Robitec, which is integrated into the bending tool, measures the bent tubes directly whilst tensioned on the bending machine and immediately starts the required further bending process if desired or saves the required correction value for subsequent bends.

[...]

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A RELIABLE PARTNER

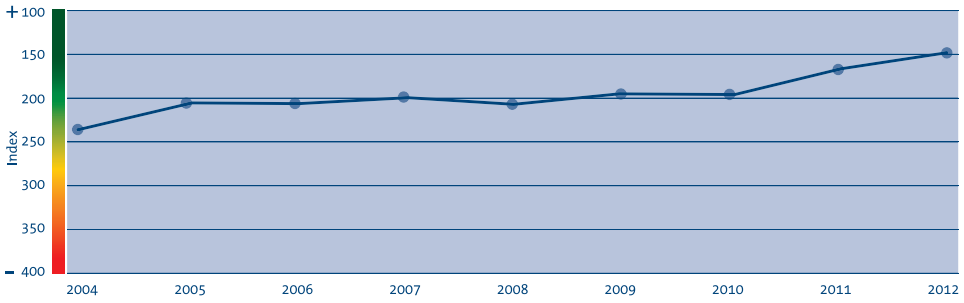
Solvency figures better than ever – risk management at Schwarze-Robitec

Those who make a large investment – for example buying a new tube bending machine – are thinking long-term. This is because such a project is far from completed when the purchase is made. Rather, the plant must produce safely and reliably over a long period.

Consequently, for companies selecting the appropriate machine supplier, it is not only the product quality that matters. Comprehensive service for spare parts supply, maintenance and servicing of the plant must also be guaranteed by the manufacturer over many years. “Brilliant technology alone is now no longer enough,” Schwarze-Robitec Managing Director Hartmut Stöhr confirms. “A company supplying high quality industrial machines must also have a solid position in financial terms. Otherwise, a purchase can quickly become a cost trap and at worst even threaten the existence of the user. This happens for example if replacement parts are suddenly no longer available due to manufacturer insolvency and the customer’s production stops.”

Risk and Cost Management

The financial stability of companies is evaluated by credit agencies such as Creditreform, which analyse factors such as innovation strength, debt-equity ratio and capital structure. The solvency of Schwarze-Robitec is also regularly checked on this basis and was recently awarded the top grade of “Excellent” or “Triple A” by Creditreform and all the international credit insurers on the basis of its very good financial figures. “Schwarze-Robitec operates consistent risk and cost management. The outstanding rating confirms that we are on track,” Hartmut Stöhr explains. “We want to ensure that we can still be here as a reliable partner for our business partners, service providers and staff in 20 or 30 years’ time.”



Schwarze-Robitec has again improved its solvency rating and now stands at AAA

View of the excavation pit

The foundation is laid

INVESTMENT IN THE FUTURE

Milling and drilling in XL format

Greater power. Greater flexibility. Greater dynamism. With the investment in a new, state-of-the-art machining centre for milling and drilling, we are expanding our production capacities and accelerating the production of large and complex components.

Schwarze-Robitec stands for the development and production of top quality, customised tube bending solutions. To maintain this high standard and to ensure continuous improvement, we are currently integrating the new Powerspeed 6 machining centre from SHW Werkzeugmaschinen GmbH.

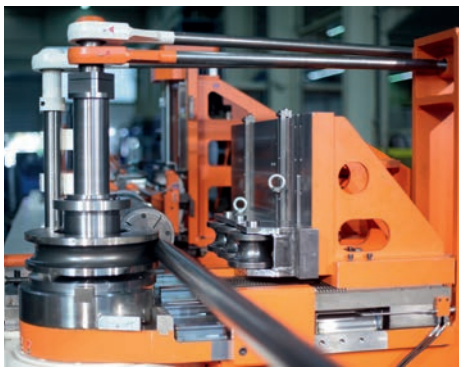
This large milling and drilling plant offers a large number of different machining positions from five different sides and therefore allows maximum efficiency and flexibility in the production of complex components, large bend formers and machine bodies weighing several tonnes. “With this investment, we are not only strengthening our competitiveness but also returning value added into the company,” Managing Director Bert Zorn reports. “This is also how we see quality and location assurance designed for the long term.”

BENDING LARGE RADII ACCURATELY

CNC 100 E TB MR VA role form bending

We have developed our role form bending concept further for all-electric tube bending machines. This technology allows the precise creation of large bending radii and variable radius paths on tubes and profiles. A high level of repeat accuracy is achieved even with new, higher-strength materials. At the same time, the system supports the combination of role form and mandrel bending in one clamping operation and is therefore suitable for users from the automotive and agricultural machinery industries as well as stair lift and furniture manufacturers.

The requirements for role form bent tubes and profiles are growing: increasingly complex bending paths and the reshaping of new, higher-strength materials demand improved bending machines and software concepts. The current renaissance in hydroforming is also reinforcing this trend. In order to equip the tube and profile processing industries in the best way possible for these and future market requirements, we have improved the role form bending concept for our all-electric tube bending machines. The result: the manufacture of large bending radii of size 6xD is considerably more precise with this technology. “At the same time, the production process is accelerated by up to five times, or even ten times in individual cases,” Plant Manager Jürgen Korte explains. “This is because the revised concept allows very high bending speeds and the setup times previously required are appreciably reduced due to the increased precision.”



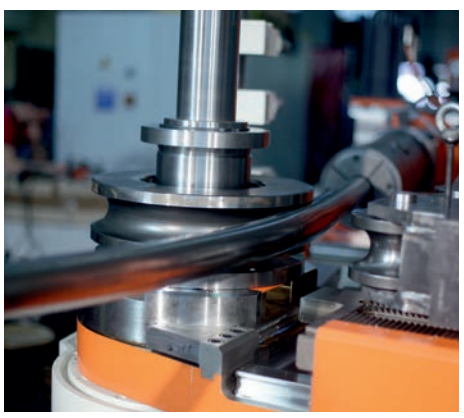
CNC 100 E TB MR VA role form bending machine

Improved production processes

In the role form process, the bending radii are created not with fixed tools but rather by means of independently mounted rollers. The desired bending radius is defined by the feed angle of a reshaping roller. As such, very large radii and complex radius paths can be created with bending radii of varying sizes. The technology is used in all of the all-electric bending machines in the CNC 40 E TB MR to CNC 160 E TB MR series. Using very robust bending heads, even high-strength materials can be manipulated into the desired shape with no problem by means of the role form process.

Application in the automotive industry

“We have recently delivered an all-electric tube bending machine with this new technology to Mexico, to one of the world’s largest automotive suppliers,” Korte reports. The machine, which has been expanded to be fully automatic – including loading unit for machine feed, measuring system and handling robot for onward transport of the bent parts – ensures fully automated and therefore very fast and economic bending processes. Overall, Schwarze-Robitec has had many years of extensive experience in the area of role form bending and continues to work on optimisations.



Production of large bending radii

Reshaping roller

SMALL RADII FOR SHIPBUILDING

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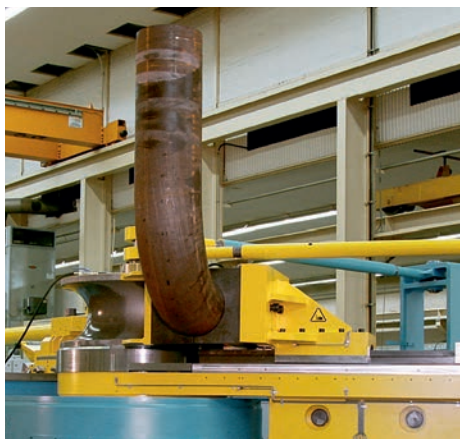
[...] The focus here is generally on CNC cold bending machines, which are designed and constructed in various sizes (from CNC 60 HD to CNC 420 HD) – depending on the requirements of our customers. Schwarze-Robitec constructs these systems in single and multiple-groove design. Multiple-groove machines have multiple bending tools with which pipes of different nominal diameters can be bent on one machine with no conversion work. "There is therefore naturally a huge increase in productivity, as setup times are minimised," Zorn explains.

Moreover, users benefit from our continuous development of the bending technology. In the case of the CNC 320 HD, for example, this allows extremely small bending radii (1.5 x tube diameter) – even for large tubes with very thin walls and diameters up to 323.9 millimetres. Similarly tight radii for such large pipes can otherwise be achieved only with much slower and more laborious

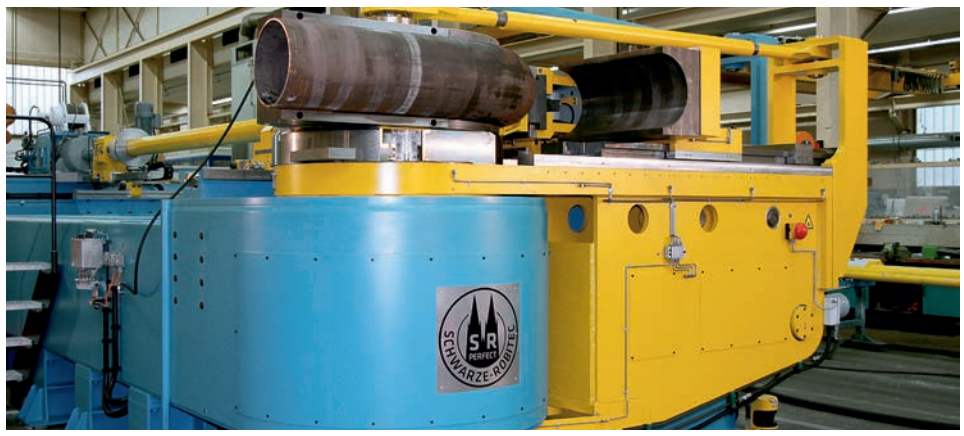
warm bending processes or welding bends. The advantage for the user: the small bending radii massively optimise the tube paths in confined spatial conditions.

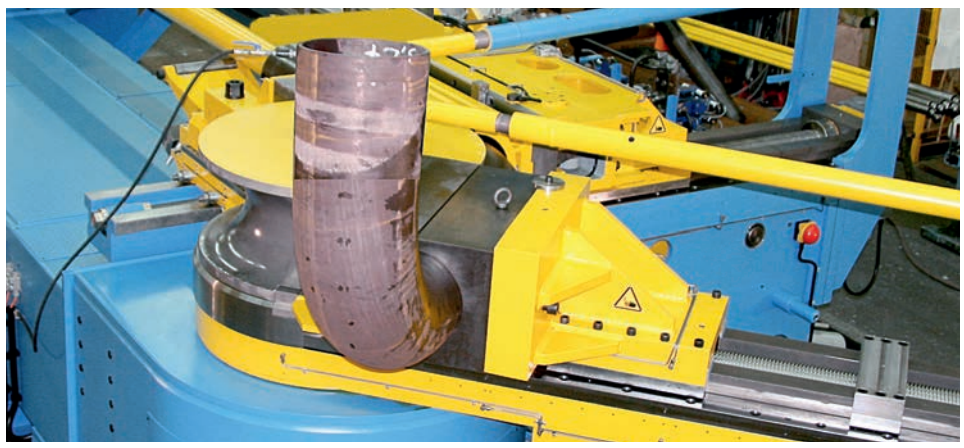
Also for offshore and plant construction

Nonetheless, this machinery construction technology is of interest not only for shipbuilding. We also see new market opportunities in the worldwide growth of mineral oil and natural gas production from the sea. "The construction of offshore plants holds similar challenges. Large quantities of tube and pipe are installed in the smallest spaces. Our CNC cold bending machines are designed both for this and for all other applications in pipe construction," Zorn concludes.



Tube bending process

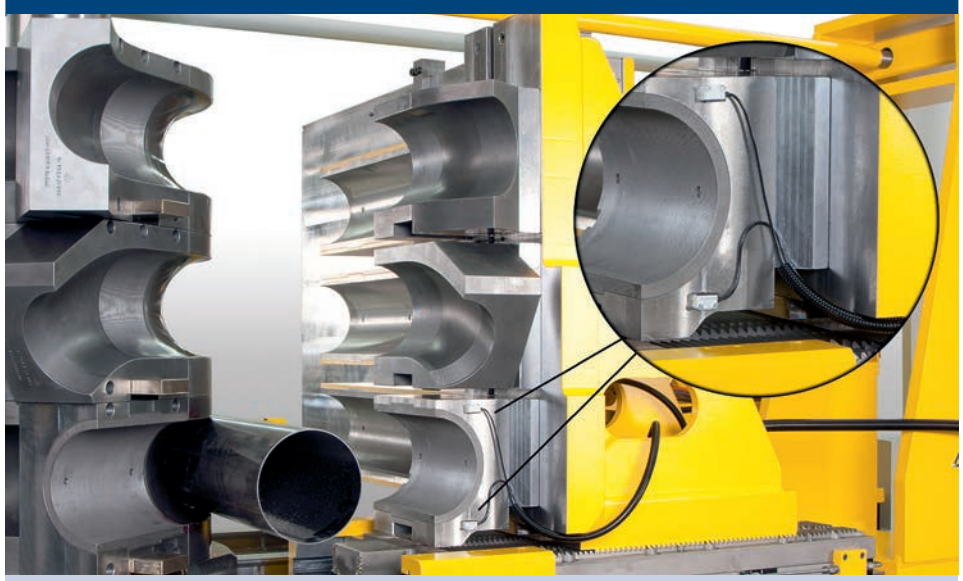




Tightly bent pipes save a great deal of space in the interiors of ships

CNC 160 E TB MR

SPRINGMATIC: FACTS, TECHNICAL SPECIFICATIONS, ADVANTAGES



Facts about CNC 160 E TB MR:

- All-electric, CNC-controlled tube cold bending machine
- Additional CNC axis in the bending head
- Up to 13 CNC axes overall

Technical specifications:

Max. tube diameter:	160 x 3.5 mm
Min. tube diameter:	44 mm
MR bending radius min/max:	50/400 + 100 mm
Tube length:	4,000 mm
Bending direction:	Right

SpringMatic advantages over conventional market solutions:

- Bend, measure and bend again in one go – with no conversion
- Direct recording of the rebound value – subsequent bending takes place immediately
- Can be integrated into almost any bending tool

BENDING, MEASURING AND FURTHER BENDING IN ONE GO

Continued from page 1

[...] Instead of removing the tube after the bending process, checking it on an external measuring system then retensioning it for subsequent bending, tube processing companies can bend, measure and adjust in a single stage with the aid of the SpringMatic measuring system. Immediately after the bending of a tube, the new optical measuring technology, which is being integrated directly into our bending tools, records the rebound value, from which the CNC control of the tube bending machine calculates the required subsequent bending angle. Subsequent bending is carried out immediately afterwards – either fully automatically if desired or after clearance by the machine operator.

Shortened Production Times

"This integrated form of dimensional stability check and tube post-processing takes only a few seconds per work piece on average. This is contrasted with around three to five minutes required for measuring and adjusting in the conventional way," Plant Manager Jürgen Korte reports.

High Flexibility

When developing the measuring system, we placed particular emphasis on a very broad range of applications: SpringMatic reliably checks both thick and thin-walled tubes in the broadest range of materials and diameters. The system can be integrated into almost any bending tool and combined with almost all tube bending machines from Schwarze-Robitec.

Material Saving

"The measuring accuracy from SpringMatic is naturally equivalent to the accuracy of conventional external systems," Managing Director Bert Zorn adds. "Furthermore, users not only save up to nine tenths of the auxiliary processing times previously required; in individual item and prototype production, they additionally benefit from a noticeable material saving as almost every component is now also a useable bulk component. These advantages have an effect particularly in tube production for the automotive, machine and plant engineering, and shipbuilding industries."



NORTH AMERICA – USA, CANADA, MEXICO

New sales representative in North America

CHANGEOVER

Trilogy Machinery, Inc. is the new sales representative of Schwarze-Robitec in North America. The company, which has many years of experience in the bending machine trade, is taking over the sales area of SWR, LLC. with immediate effect. Responsibility for the servicing and maintenance of the machines remains unchanged with Tony Granelli from TOGR, Inc.

"With Trilogy, we have gained the optimum partner for our North American customers," Schwarze-Robitec Managing Director Bert Zorn reports. "Agency founder Allan Flamholz has been working in the area of bending machines for many years and knows the latest market requirements exactly. With his trained team, he offers the best possible advice for our entire range of products and solutions." In addition to customer advice and customer care, the new remit of Trilogy Machinery covers the complete sale including import of machines and tools. During the transition phase, to guarantee a streamlined switch, the team from Trilogy will be supported by our partners Charles Russell Jr. and Tony Granelli, who have many years of experience. Servicing for our machines – including spare parts supply and machine maintenance – will continue to be provided by Tony Granelli and Chris Dorgan in the future. This tried and tested team is known to our customers under the name TOGR, Inc. "Our thanks to Managing Directors Tony Granelli and Charles Russell Jr. from SWR, LLC. for the excellent co-operation for over 30 years," Schwarze-Robitec Managing Director Hartmut Stöhr says.

NORTH AMERICA CONTACT

Trilogy Machinery, Inc.
4601 Richlynn Drive
Belcamp, MD 21107
USA

P +1 410 272 3600
E sales@trilogymachinery.com
W www.trilogymachinery.com

SCHWARZE-ROBITEC PERSONALLY

GREW UP IN THE COMPANY

Jacqueline Szymanek

Jacqueline Szymanek was 16 years young when she started her training at Schwarze-Robitec and discovered her passion for facts and figures. As a trained office administrator, she is responsible both for the bookkeeping and for all personnel matters. This 30-year-old keeps track of the organisation from A to Z and from doctor's visits to time recording. Ms Szymanek told our editorial team that personnel management is anything but boring..

Ms Szymanek, you have worked at Schwarze-Robitec for nearly 14 years. How did that happen?
Back then, my father worked for Schwarze-Robitec as a fitter. After finishing school, I then chose to train in business management here in the company. During this time, I went through all the departments including buying, service and production and therefore learned about our tube bending machines. As a result, I have been a familiar face to my colleagues for many years.

What are your duties in payroll accounting?
My duties include wage and travel expense accounting. I track sick notes and look after the correspondence in application processes. Beyond the administration of our time recording system, I am the bridge to cost accounting, which is also one of my jobs. This is where the hours are entered against the orders. So that the facts and figures in the company add up, we essentially work on the principle of dual/treble control. In addition, I help financial accounting by entering and settling invoices and I am the first point of contact for my colleagues on all personnel matters.

What do you like about working at Schwarze-Robitec?
The working atmosphere and the team are great. There is always something new to learn. Because I have a wide range of duties, my work is very varied. No one day is similar to another. I am glad I chose Schwarze-Robitec back then and I still really enjoy working here.

NEWS +++ NEWS +++ NEWS +++ NEWS

- **Career start with the bending specialist**
  Schwarze-Robitec takes its social responsibility very seriously and is again training young people in 2013. This year, the focus is on: apprenticeship occupations in machining and mechatronics.
- **Production expanded**
  For the efficient processing of components, we recently brought into operation a new CNC lathe. The machine stands out for its precision, economy and short setup times and it offers an extremely broad range of dimensions.
- **New telephone numbers**
  The hot wire to your contact changed in February. We have had to reallocate the last digits of all staff telephone numbers. For any questions about this, please contact our reception on +49 (0)221 890080.

IMPRESSUM

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Schwarze-Robitec GmbH
Olpener Str. 460–474
51109 Köln

P +49 (221) 89 00 8-0
F +49 (221) 89 00 8-9920
E sales@schwarze-robitec.com
E infopipeline@schwarze-robitec.com
W www.schwarze-robitec.com

Layout, Typesetting:
Schwarze-Robitec GmbH
E marketing@schwarze-robitec.com

Editing:
additiv pr GmbH & Co. KG
E info@additiv-pr.de
W www.additiv-pr.de