# time(s)

the transfluid® customer magazine

Edition 01.10

Technology

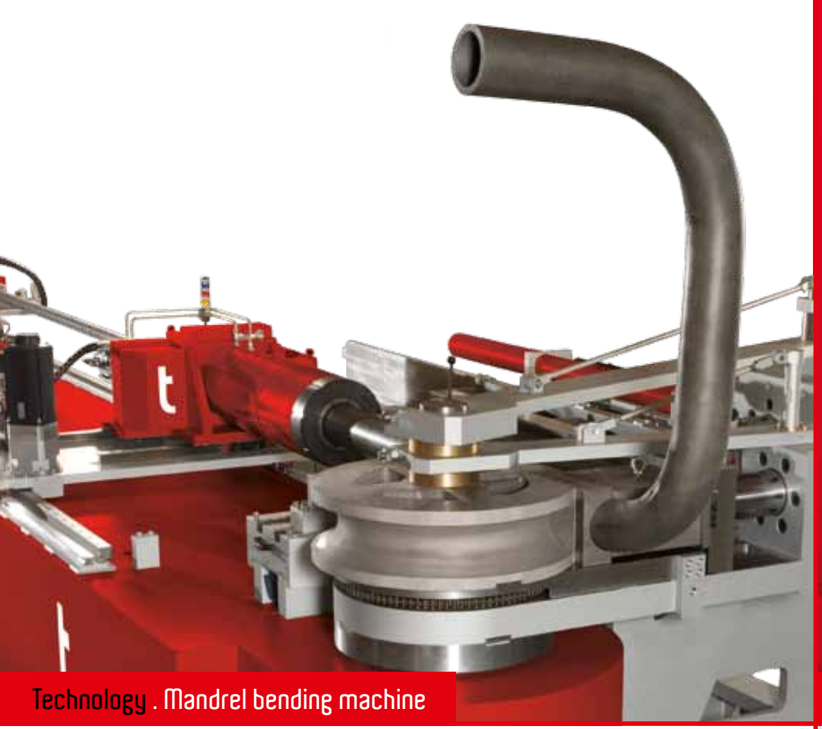
## The mandrel bending machine – it's all about getting the right setup

Field report

## HMS-TUNING – Pure driving pleasure and eye-catching too!

# Systemized success

## More than just the sum of individual parts



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# The Team

**A special thank you to our co-workers for their loyalty, commitment and exceptional performance.**

## 20 years of service

> **Andreas Hardebusch** is always on the move. This service technician has been working for the company in the field and around the globe since March 1,1990.

## 10 years of service

> **Andreas Schmidt**, is our tools specialist and technical engineer for tube end processing machines. He has been working for the company since May 1, 2000.

> **Christoph Aldrian**, is an experienced electrical engineer, who has worked for the company since April 1, 2000. As the head of our service department, he is always ready to listen to our customers.

Andreas Hardebusch, 20 years

Andreas Schmidt, 10 years

Christoph Aldrian, 10 years

# Just in time(s)

## From the editor . Edition 01 . 10

**Dear readers,**

Continuous improvement plays a central role at transfluid® and the same is true for our customer magazine. From now on the magazine will have twelve pages and will also appear in English. In this edition of t time(s), we invite you to join us in reviewing last year and we also bring you an outlook for this year.
We wish you a successful 2010. May you reach all of your goals.

During 2009 we were able to build on the successes of the past. We too felt the impact of the economic conditions but, thanks to our excellent team, we were able to end last year on a positive note. Contrary to the market trend, we succeeded in facing the challenges, reaching our sales target and continuing to establish the transfluid® brand on the market.

Just like all of you, we deal with the small as well as the big things in life, day in day out – with innovations and the tried and tested. But the key to our success is the people around us. These people are you, our customers, and the staff members on the transfluid® team.

The positive start to the new year has encouraged us to continue on our path and now we are looking forward to the interesting challenges that lie ahead.

In 2010 we will focus on expanding our portfolio of technically superior machines and systems concepts. Our approach to this expansion is to be innovative and customer-oriented . We will especially look at non-cutting separation technology as well as pipe cleaning systems in this regard.

This year we will continue to deliver excellent quality to our customers and to stay true to our promise: transfluid® –the solution for pipes. That is what we believe and we want to prove it to you by working in partnership.

Like Henry Ford once said:

**Don't find fault, find a remedy.**

Gerd Nöker
Managing Director

# Systematic success

## Cover story . The transfluid®-strategy for unique solutions

**Every vision starts with a mental journey, every success with the execution of a plan. In 1988, the time had come for change and new solutions and thus transfluid® was founded.**

transfluid®'s first priority has from the beginning been to fine-tune tube processing machines to meet the needs of customers and develop and manufacture market-oriented products. In doing so, we ensure that our solutions guarantee maximum added value to the customer.

transfluid®'s powerful designs have always led to superior solutions. We have therefore, since the early days, left the manufacturing of machine parts in the hands of competent suppliers. Choosing the right suppliers is an art in which transfluid® excels and our customers benefit from this. Our suppliers manufacture high-quality machine parts and make them available for timely production. This allows us to manufacture customized machines of exceptional quality.

The competent suppliers with whom we have been working for many years have become reliable partners.

### From a long term competent supplier to a reliable partner

Right from the start, we have followed just one sequence of criteria in choosing suppliers: quality, delivery capacity and price. Today we still select according to these criteria. Over the years we have thus developed long-term partnerships with several suppliers.

"From time to time competitors claim that our parts are being produced in low-wage countries. One can condone these claims, since the competition cannot find any technical arguments for their products and are thus forced to resort to this kind of argument. Maybe they just lack the understanding needed to think of possibilities and stop using old thought structures", says Gerd Nöker, co-founder and Managing Director of transfluid®.

As a matter of fact, 99% of the parts that the company uses are from suppliers situated within a 100 km radius of the Schmallenberg site. Nöker is proud of transfluid®'s loyalty to its reliable suppliers: "We don't change suppliers as soon as we receive cheaper offers. We expect quality and are willing to pay for it. This benefits our customers."

To keep supply relationships running smoothly, internal management- and control mechanisms were put in place. These mechanisms were consistently implemented and optimized. Now the company uses modern software for networking, both internally, and externally with suppliers. In this way we can guarantee optimal management and supervision of machine production to our customers. This concept is unique to transfluid®.

18 engineers and IT-specialists on the transfluid® team are jointly responsible for this success. Each and every one of them is capable of constructing every single machine in the portfolio, including the special machines.

The constructing engineer supervises the machinery until it is delivered. During this time he/she also acts as the product manager in the workshop and gives constructive advice to team leaders. This relatively flat hierarchy has two crucial advantages: short distances make for an equally short reaction time. It was for this reason that the Schmallenberg enterprise moved away from traditional structures long ago. Traditional roles such as chief engineer, Supervisior and foreman no longer exist at transfluid®.

"We didn't know whether it would work, but we had to change something in order to make improvements. We are a team, we work for a brand name and our goal is to deliver solutions." Nöker reckons that transfluid®'s strengths lie in the fact that, "Our employers are our customers."

Less is more. This is especially true for production. After designing the machinery, we first look at purchasing the components. When purchasing, we divide the production of the required parts among various suppliers according to what they are able to achieve and their workload capacities. At this stage transfluid® takes care to ensure that all the parts required for a machine can be supplied. At this point in time, the parts list is therefore already complete. Thanks to this

production flow, the customer receives 100% flawless documentation of the process. Even the smallest part is purchased and therefore has to be designed and sketched.

The purchasing of parts has a key role in the production process. Shortly before production, the purchasing department must order the parts from suppliers that are able to meet the required quality standards. The components are delivered within a narrow timeframe to assembly, in accordance with the just-in-time delivery principle. Here it is important that parts are ordered in the sequence in which they will be needed for production.

### The systematic and strategic solution when it comes to pipes.

Since no supplier delivers complete sets of components, transfluid® makes a logistical tour de force to put the production process in motion. This forms an important part of the company's strategy. No one outside the company knows what the different parts are being used for or who the customer is. Therefore it is impossible for someone to reconstruct a complete unit. The primary principle behind this production process is that all the different divisions: mechanical, electrical, tools and software – are bundled under one roof at transfluid®.

**The core competencies of all divisions are bundled under one roof at transfluid®**

Soon after delivery, all incoming stock undergoes a stringent quality control in the ISO-certified company. Missing or defective parts are immediately detected and claims sent to the supplier concerned. Once all the individual parts are available, assembly begins.

The premium product takes form in an extremely flexible way. Teams, consisting of two to three experts, work together on projects in production. These teams are there for the customer from the moment the very first component arrives until the machines are delivered – indeed they often even set them up and put them into operation. Our employees know our customers and are highly motivated. They always act on the basis that transfluid®'s quality guarantees good partnerships.

Thanks to their strategic and successful overall production concept, the Schmallenberg company has been meeting their customers' requests in a flexible and highly effective manner for many years now. transfluid® are able to produce the entire portfolio of tube processing machines for pipes with a diameter of 273 mm. Vision becomes reality: approximately 40% of all production consists of customized solutions. In some cases these customizations are even tailored to individual manufacturing cells.

Since its foundation, transfluid® has focused on the essentials: its customers and its partners – and over the years this concept has continually been fine-tuned and extended. This led to the development of a unique strategy whereby this engineering company not only offers products but also solutions.

Continuous development is one of the secrets to transfluid®'s success – there is an ancient Chinese proverb which says, "when the wind of change blows, some build walls, others build windmills."



# ticker

## transfluid® live.

We cater to your individual needs and help you realize your visions. At tube 2010 we will be able to offer you personal attention. Come and experience our technology and our unique solutions for tubes. Ask us what you always wanted to know. We will be on site and are looking forward to your visit!

### Tube 2010

- **April 12 to 16, 2010**
- **Messe Düsseldorf**
- **Hall 5 / Stand G34**

Tube® Düsseldorf

## News

- **Due south: Mr Horst Bukalo is a new co-worker in the sales department. He is responsible for sales in southern Germany.**
- **Supporting structure: with immediate effect, Sebastian Blöink, who has a Master's in Engineering is supporting the design team.**
- **Eastern philosophies: the Asia Pacific transfluid® office has moved to larger and more centrally located premises. An additional member of staff has also been recruited for the service department.**
- **Let's innovate: the transfluid® innovation days are back and scheduled for May.**
- **Nostrovia! transfluid® plans on setting up a further office in Russia.**

# Happy Ava

## t notes

**Somewhere in remote Siberia a machine had to be put into operation. That would have been no problem, if it weren't for some geographic "subtleties"!**

Everything was prepared, discussed and thoroughly examined. The flight was booked. It would first take us to Moscow and from there further on into the remoteness.

The Saturday we were to depart drew nearer and by midweek our calmness started to fade and we asked our technical division (not the geographic one): "Where could the Frankfurt-Hahn Airport possibly be located?" - since this was where our journey was due to begin on Saturday afternoon.

We discussed all possible scenarios and studied the flight schedules: "Yes, this has to be it. Frankfurt-Hahn lies in the Hunsrück region." So we consulted the internet and looked up the flight information. No flight to Moscow?! Finally we arrived at the conclusion that, "Maybe they just forgot to enter the information. The flight has to leave from Frankfurt-Hahn, there cannot be another explanation." Together with our geographically adept construction engineers, we decided that come Saturday two nice guys would simply drive to Frankfurt-Hahn and then fly to Moscow.

On our way to the airport we still debated as to what could await us in Moscow. Once we arrived at the airport, we parked our car and carried our luggage inside. On the departure board there was no indication of any flight to Moscow. "How is that possible? Let's ask the friendly lady at the counter. When and where do we have to go to take the flight to Moscow? Her face expressed complete surprise: "Excuse me?" "We want to go to Moscow!" we replied. The surprising answer was quick: "But surely not from here. No one ever flew to Moscow from here and most probably no one ever will." Now it was our faces which registered surprise but then came the awakening: We had to get out of here and head straight to the Frankfurt / Main Airport. Once we arrived there, we again had to park the car and carry the luggage inside the terminal. There we find ourselves waving goodbye to the plane to Moscow, that was taxiing to the runway.

**Despite a one-week delay, our client still received first-class commissioning in good time. Thanks for that!**

# Go full throttle with the right tubing!

## Field report . HMS-TUNING brings you pure driving pleasure and eye-catchers

You hear a powerful noise and a dream on wheels speeds past. People stop to watch and cannot get enough of the car's pure athleticism and extraordinary design, which makes it a real eye-catcher. You take another quick glance at the shiny stainless steel tubing protruding from the rear end and then the car disappears around the next corner.

HMS-TUNING makes the dreams of drivers come true. In Malterdingen, Baden-Württemberg, General Manager Markus Hanloser and his team of 9 specialized employees meet their customers' special needs. The fusion of performance, quality, driving dynamics and design delivers more than just fast cars.

Drivers of noble luxury cars and roadster enthusiasts receive personal and sporty customizations. This is, of course, accompanied by professional advice and excellent service. For all of those who are looking for the ultimate in driving pleasure and pure enjoyment, HMS-TUNING offers the exceptional and the extraordinary. A selected range of products and services, meeting even the most exacting standards, leave almost no wish unfulfilled.

The special wishes and requirements of customers, as well as enthusiasm for the out of the ordinary constantly drive the HMS-TUNING team to new lengths in terms of quality. And, quality is extremely crucial when it comes to exhaust systems. Therefore all exhaust systems are exclusively manufactured from premium stainless steel, using a transfluid® tube bending machine. This machine is designed to bend pipes with a maximum external pipe diameter of 90 mm. Thin-walled pipes are bent at bending radii of 1.25xD with outstanding results.

The integrated forming unit uses the Expander-procedure to offer optimal solutions for the flaring, reducing or test cutting of slots.

Additionally, the exhaust pipe ends can be cut off, rolled in oval, angular, straight or curled to special shapes according to customers' requests. The real eye-catchers are created here!.

HMS-TUNING
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www.hms-tuning.de, info@hms-tuning.de

# Know-how (part 1)

## Technology . The setup and adjustment of a mandrel bending machine

In this two-part feature transfluid® introduces you to the vast number of options available with a mandrel bending machine. In this introductory first part, we focus on the basics, from the setup to the adjustment.


### The right adjustment

The more extreme the customers' requests are, the better the adjustment has to be. There is no doubt about that. We must keep one thing in mind: if requirements increase and the customers' wishes become more exclusive, the machine operators' need to adapt their knowledge. The bending of thin-walled material, tight radii or challenging materials, for example, requires more know-how than bending thick-walled material and big bending radii.

In transfluid®'s workshops the operators of mandrel bending machines are prepared for different demands and are equipped with the essential technical knowledge – to ensure the right setup.

First of all, however, let us focus on the adjustment:

### The machine

> has to be stable and accurate
> has a booster for tight radii
> operates in fully electrical mode at radii smaller than 1xd in order to effect a simple synchronization of the axles

### The tools

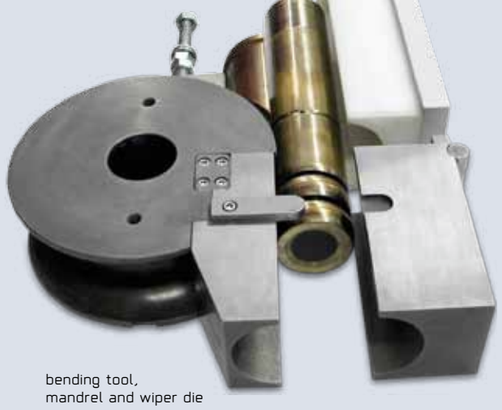
> must be made to precision and lock internally
> must have long-lasting material clamping (contoured clamping surfaces)
> no mechanical adjustments should be necessary during set up, if the tools have failsafe running functions for mandrel and wiper die (due to coating and alternative materials in tools)

### The lubricant

> the amount of lubricant needs to be adjustable
> needs to suit the material
> be eco-friendly and be easily removable for the customer

cut-open view of bend

mandrel and wiper die



bending tool,
mandrel and wiper die

Pressure die

## The bending process

The bending of pipes and profiles is one of the most commonly used reshaping methods. All bent components show characteristic stress-strain behavior with:

- > tensile stress in the outer bend at the position of the wiper die
- > compressive stress on the inner side where the material thickens
- > a largely tension- and stress-free area between the first two areas, the so-called neutral zone

The amount of wall-thinning is primarily dependent on the bending method and the bending radius. With a greater bending radius, there is less stretching on the outer bend and less thinning occurs. When using a mandrel, the amount of wall-thinning on the outer bend is higher than during non-mandrel bending.

Whether mandrel or non-mandrel bending is applied, the thickening of the inner wall is insignificant. During non-mandrel bending, the bend flattens if physical ratios are not taken into consideration (diameter : radius : wall-strength).

The use of a mandrel increases friction thus the bending moment required. For thin-walled pipes with a large ratio of diameter to wall thickness (d:t > 16), wrinkles start forming on the inner surfaces of pipes. With the use of a suitable mandrel and a wiper die, the wrinkle formation can be prevented or reduced.


## The right setup

### Bend die

It is important to mount the bending roll on the machine so that it lies level on the bending arm (tool plate). The clearance at the connection between the tool and the machine must be absolutely free from backlash. The feather key connection also has to be free of clearance.

### Clamp die

The clamp die must be set to exactly the same height as the clamping range of the bending roll. With interlocked clamping elements, it is important to ensure that the interlocking system fits correctly.

### Pressure die

The pressure die has to be set to exactly the same height as the bend die and the clamp die. The axial distance between the clamp die and the pressure die should also be kept at a minimum. The following pressure die must be set in such a way that a precise axial line is formed within the tool: at the mandrel in front as well as the back area. The required bending radius can be achieved by changing the length of the pressure die. Additionally, the radial setting of the pressure die must be set in such a way that it presses only slightly against the pipe. Under no circumstances may the upper and lower flanks of the sliding piece connect with the flanks of the bend die.

### Wiper die

Another important component of a bending tool is the wiper die. A wiper die is used when wrinkles are formed on the inner bend due to a tight bending radius or low wall strength. The tip of the wiper die is very thin and slightly elastic. It takes on precisely the radius of the bend die. The wiper die should be positioned axially parallel to the pressure die and the pipe. The wiper die can be slightly tilted (max. 1°), so that it does not connect too tightly at the rear area of the pipe. During the first installation, the tip of the wiper die at the axial front must not under any circumstance be at the middle of- or in front of the bend die. The right position is directly behind the tangent of the bend die.

The safest way to set the wiper die is to slide a pipe over the inner mandrel (look at next heading: bending mandrel) and then start the tightening process. During this setup, the clamp die should remain in the rear position. The wiper die should then manually be shifted to the front, up to the gap between the bend die and the pipe. The wiper die is then fixed in this position.

The wiper die needs to have good emergency running properties with the pipe material. Aluminum-bronze alloy wiper dies are used for bending stainless steel, steel, iconel, titanium and other exotic materials. Steel wiper dies are used for bending copper, aluminium and other non-ferrous metals. Wear can be reduced by sufficiently lubricating the die.

**The material of the mandrel is basically the same as that of the wiper die**

### Mandrel

The area where the conical or round piece of the mandrel tip becomes cylindrical should be set exactly in the middle, on the tangent of the bend die. With this basic setup, the pipe bending process can be started. Depending on the result, the mandrel and wiper die might need some final adjustments.

The mandrel should be properly lubricated with the correct mandrel lubrication setting of the machine. The right mandrel must be chosen according to the radius, type of material and wall thickness. You can choose either plug mandrels or ball mandrels. You can determine what apparatus you need (mandrel, wiper and die) from the table below.

For medium-sized pipes, you can assume that on average the mandrel tip is approx. 0.8 mm less than the inner tube radius. The extending end-link should again be around 0.5 mm smaller.

The next edition of (t)times will bring you part two of the transfluid® feature on the mandrel bending machine in which you can learn interesting details about tool shapes and materials. Gripping reading - be sure not to miss it!

| Bending radius | Straight clamp DBD distance between bends | Ovality | Wall thinning |
|---|---|---|---|
| 3 x pipe ø | 2 x pipe diameter | < 3% | 3–4% |
| 2,5 x pipe ø | 2 x pipe diameter | < 3% | 5–7% |
| 2 x pipe ø | 2 x pipe diameter | < 3% | up to 10% |
| 1,5 x pipe ø | 2,5 x pipe diameter | < 4% | 18–20% |
| 1 x pipe ø | 2,5 x pipe diameter | < 5% | 27–30% |
| 0,7 x pipe ø | approx. 3 x pipe diameter | < 7% | 30–35% |

# Hej Sverige!

## time(s) check . Solid partnership up North

**The Scandinavian market, especially Sweden, is both interesting and important to transfluid®.**

In recent years, we have succeeded in placing many high-technology machines in Sweden. The local success of transfluid® in Sweden is ensured by DIN MASKIN. Since the middle of last year, we have been working in partnership with this highly efficient distributor. DIN MASKIN is based in Värnamo, central Sweden, in the beautiful area of Småland, which is also the industrial heart of the country.

DIN MASKIN not only focuses on tube processing technology, but also operates in the metalworking industry and more particularly the sheet metal forming sector. Our dynamic distribution partner takes a customer-oriented approach, develops possible solutions and delivers and installs the essential plants. This is, of course, accompanied by an experienced service department that guarantees local customer support at all times.

Our partner's company philosophy is clearly defined: "We sell market leading products that give our customers technical edge. Our goal is to supply our customers with top-quality, high-performance products!" We are therefore interested in developing a long-term partnership with DIN MASKIN to the benefit of our customers. This is in line with our way of thinking and our vision.

We are proud to be working with such a partner!

### DIN MASKIN

Founded: 1993
Employees: 41

Agent for:
- transfluid®
- Prima Finn-Power
- Safan
- Starmatik
- Dimeco
- Omera
- InspecVision
- Fladder

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