SHIFT THE LIMITS:
Are you ready for a wholly new dimension?

DEVELOPMENT UNFOLDING: Two that have finally got it together

FRONIUS INTERNATIONAL: On track to become a global player

SHIFT THE LIMITS.
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weld+vision is opinion-forming.

The editorial team of the Fronius magazine would dearly love to know: What do you really think of weld+vision? Send us your reactions, suggestions, praise, criticism ... we await them with great interest!

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Dear Readers;

Shift the Limits. What a title! Daring? Not necessarily. Proud? Rather more so, perhaps. Maybe even fairly sure of victory. Although the title on its own does not actually say all that much. Shifting limits is all very well – but what limits, and just who is doing all the shifting? All the more reason to read the cover story, then, where we take a more general look at this topic: What does it take to be able to freely transcend the boundaries? Where is the motive? Do “boundary-busters” have anything in common? Four examples from very different disciplines, will make things a lot clearer. But read on. Because this title “Shift the Limits” also of course refers to the “Schweissen & Schneiden” expo, at which some boundary-breaking new developments from Fronius are going to be unveiled. You’ll be learning a lot about the background to all this, and taking a look beyond the science at the R & D Dept. – and then you can find your own answer to the question of whether this title really is so daring.

3-6 Cover story
What makes boundary-busters stand out.

7-11 Totally R & D
Innovation 2005: DeltaSpot, TransCut 300, TransPocket 2500/3500, CMT (Cold Metal Transfer)

12-13 Brief and to the point
News from Fronius

14-15 Innovations
The impossible made possible: High-strength joining of steel to aluminium

16-17 Case study
CMT at ELB: Exacting requirements call for the very highest quality

18-21 The company
Fronius strengthens its worldwide expertise and service capability

22-23 Travel tip
Changing times in the Ruhr District

My opinion on weld+vision (or e-mail to weld.vision@fronius.com)

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A few words on our cover picture:
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A few words on our cover picture:
Every adventure begins with an idea

WAYS OF SHIFTING THE LIMITS

The motto of Fronius’ expo presence at this year’s “Schweissen & Schneiden” fair in Essen is “Shifting the limits”. Accomplishing things which had always seemed beyond reach. Having the time, independence and leisure to engage in undisturbed thinking is one way of achieving great things. But there are other ways, too. In many fields of endeavour, weld+vision has looked into the matter and picked out some examples.
Recent studies have shown that even in the 21st century, bringing about change – even only in oneself – is a difficult and laborious process: 25% of those who make up their minds to try something new give up after only one week, and 60% end up trying again at a later stage. “False hope syndrome” is the name given to this phenomenon. It’s also interesting to note that even when a new way of doing something does succeed, the process of change will usually begin with a phase in which people deny that there is any need to change at all. This makes you realise how exceptional the conditions must be under which people manage to achieve very special developmental advances – demolishing supposedly immovable boundaries and setting new benchmarks.

One thing seems certain, and that is that radical innovations are always embedded in a cultural context that marks out the preconditions and boundaries of the new. At group and individual level, too, certain types of environment have a more innovation-promoting effect than others. This means that innovation has less to do with clear-cut individual skills such as IQ, or with the utilisation of specific technologies and the amount of research time directly invested, and so on, than it does with an environment in which mistakes are allowed and even expected.

With epoch-making new developments, what often happens is that the time is simply ripe: The way is paved by a great deal of work or action by other people, which builds up to a state of high tension in an area of research, a sporting discipline, an art form or in the field of space travel – and then this tension discharges in one mighty spark of genius. And it is this masterstroke which then becomes lodged in the collective memory of society as a whole.

Nevertheless, often it really is a matter of existing limits being negated by exceptional individuals who succeed in pushing out the bounds of what is conceivable and feasible. We shall now present four such individuals – from very different fields of human endeavour.

*Space travel – the exemplar of ever-new technological achievements.*
Armstrong – the limits of space

On 21st July 1969, he fulfilled one of humanity’s longest-cherished dreams. The unimaginable had come true. A man stepped onto the surface of the moon for the first time – the American astronaut Neil Armstrong.

Armstrong had dreamt big, right from his early years. By the time he was 16, he had already earned his pilot’s licence. He wanted to become a flight engineer, and studied in Lafayette, Louisiana. He flew on combat missions in the Korean War, and afterwards went on to become a test pilot for the American space agency (later to be known as NASA). However, it was his rôle as the commander of Apollo 11, the successful lunar landing mission, that made him a legend. With his oft-quoted “one small step”, he not only transcended all the boundaries of what had hitherto been imaginable but at the same time inspired researchers and pioneers of all disciplines.

Bessemer – the limits of technology

Our next pioneer is an Englishman who lived over a century ago. The revolutionary invention to which he gave his name is still one of the foundation stones of modern civilisation.

In 1855, Sir Henry Bessemer invented the process which first enabled industrial mass-production of steel. Bessemer was a self-made man who had made his first fortune by inventing a special “gold” powder from brass for use in paints.

Later he turned to metallurgy and invented a process for manufacturing steel vastly more efficiently and in huge quantities, that is still the basis of most of the processes used today. Bessemer’s autobiography portrays him as just a serious, hardworking man driven by tremendous curiosity coupled with a strong propensity to perfectionism.

Zeilinger – the limits of physics

One of the most famous physicists of the present day is Prof. Anton Zeilinger, whose experiments on quantum teleportation (“beaming”) have caused an international furore. These have brought the quantum computer a step closer, promising to revolutionise information technology as we know it.

He singles out curiosity and independence as the mainspring of his innovation. Zeilinger also sees the key factors behind the success of his even more illustrious predecessor Einstein in this latter’s curiosity, hugely wide-ranging general knowledge and great intellectual independence, coupled with first-rate information. Einstein himself advised young physicists to “become a lighthouse keeper”, meaning that they should strive to have the time and the independence needed for serious thinking.
Limitless – literally so.

“Great ideas need landing gear as well as wings ...”

Neil Armstrong, born 5th August 1930, US test pilot and astronaut. First man to walk on the moon. Later, Armstrong was professor of aerospace engineering at the University of Cincinnati.

“I had an immense advantage over many others dealing with the problem inasmuch as I had no fixed ideas derived from long-established practice to control and bias my mind, and did not suffer from the general belief that whatever is, is right.”

Sir Henry Bessemer, 19th January 1813 – 15th March 1898, English engineer and inventor. Developed the first process for mass-producing steel at low cost. Held 117 patents. Bessemer later received a knighthood and was a member of the Royal Society.

“At the beginning of all research stands curiosity.”

Anton Zeilinger, born 20th May 1945, Professor at the Institute of Experimental Physics of the University of Vienna. Is reckoned to be paving the way for “beaming”. The first scientist to teleport the exact quantum state of a particle A across any distance to a particle B.

“If I go as long as a week without doing a jump, I get all fidgety inside.”

Felix Baumgartner, born 20th April 1969, world record holder in base jumping, an extreme version of parachuting. Baumgartner’s many exploits include jumping from the Petronas Towers in Kuala Lumpur and the Statue of Christ in Rio de Janeiro, and crossing the English Channel in free fall.

Baumgartner – the limits of free fall

Limitations of a quite different nature are transcended by Felix Baumgartner – when he jumps from skyscrapers, mountains, bridges, even aeroplanes. Baumgartner is a base-jumper. The special thing about this extreme form of parachuting is that due to the proximity of the object being jumped from and its low height, a certain residual risk can never be eliminated and the base-jumper is always dicing with death. Spare parachute? Forget it. Baumgartner describes himself as someone with his body under complete control, rational to the core, and needing to challenge himself and win the admiration of his fellow mortals.

Psychologists are unanimous in regarding the jumper’s mental state as an intoxicating “flow-experience” in which the actor is entirely consumed by the action, giving him an incomparably intense sensation of self-affirmation.

Curiosity is what they have in common

Four characters who could not be more different, yet none of them was willing to accept the seemingly immutable limits of what could and could not be done. All four of them inspired by other people, all of them improved upon and imitated by legions of colleagues, admirers and profit hunters alike.

What all of them have in common is unbounded curiosity and the ability to become wholly absorbed in an activity. In the field of consciousness research, the term they use here is “flow” – but they might as well just talk about plain old happiness!

Felix Baumgartner during his flight across the English Channel.
“It’s a really laid-back sort of employer-employee relationship. We get given a lot of freedom to pursue our own ideas.” – “There is this general willingness to stick at something for the long term. And Management also has the courage to attempt projects whose success is by no means assured.” – “We can take any approach we like to finding a solution.” – “Management fully trusts us to get on with the job. And everyone involved is happy to take on the responsibility that goes with it.”

These are just a few of the answers Fronius employees gave us to the question “What’s unique and special about Fronius?”. We could have quoted dozens more examples like these, all of them spontaneous and unscripted. Heinz Hackl, Head of R&D at Fronius and a member of the Management Team, describes several of the make-or-break factors for “radical innovations”, in similar terms:

- Mistakes are not only allowed but even expected.
- Patience is a virtue at Fronius; people understand that you can’t solve problems “to order” for which there is not yet the slightest prospect of a solution.
- The courage to turn things upside down; to quote Keynes rather freely: “The difficulty lies not in new ideas, but in escaping from old ones”.
- Trust is more important than control; this is the only way in which staff can really live out a culture of personal responsibility.
- Staying-power.

Radical innovations. What’s behind them all? Or more to the point, what’s behind Fronius’ limit-shifting highlights at the “Schweissen & Schneiden” expo: CMT, DeltaSpot, TransCut and TransPocket? weld+vision dropped in on the R & D Department to find out ...
Endurance leads to success

Take CMT, for instance, a genuinely radical innovation, where developing this process – unique in the world – for welding steel to aluminium took over 10 years. With very long intervals during which not even the slightest progress was made. Right from the outset, the project was not all that promising; in fact, it seemed almost heretical. The unanimous view of all the metallurgists was: “No way!”.

Even so, at Fronius they were willing to give it a try. Not with an entire team to begin with, but with just one person. Bit by bit. That was back in 1991. After long periods without success, in 1999 an enquiry came from a German automobile manufacturer about joining microcomponents. In the course of this work, an idea came about that was very helpful for CMT. And then there came other enquiries from customers: “Could you make a cold arc for us?”. But how does one get a cold arc? Some more lean periods followed. Management still believed in its employees. A green light. And then, one day, the developers hit upon oscillating wire motions.

From that point on, everything happened in quick-fire succession. And the first time they got CMT to work happened to be on Klaus Fronius’ birthday. They went and fetched him. And he was overwhelmed. There and then, he invited the entire team to his home for a meal. Chatting and spending time together welds not only steel and aluminium together, but also – and most importantly of all – people. For Fronius, this is nothing new!

A typical feature of all Fronius developments is the way in which we work together with selected partners. Once a project has reached a certain stage, it is important to test potential applications. When exploring virgin territory, the developers also work with external research institutions to pursue basic research. This is what happened with TransCut.

Totally R & D
Have confidence in yourself. We have confidence in you.

At Fronius, a family enterprise – which is a highly significant factor when it comes to R & D (long-term thinking, freed from the fixation on short-term dividend payouts) – a markedly trust-based culture holds sway. As does the insistence that innovations should solve actual latent problems. “When we do something, it must be both new and helpful.”

Like with the resistance spot-welding technology DeltaSpot, for example, where Fronius is moving into a completely new sphere of business with new client segments. This was not a copycat attempt to get something that others have already got. No, far from it – it was all about finding real solutions to real problems. This type of thinking, that is not driven by purely business motives, only functions if your work is fun, if you are encouraged to “go for it”, and if people place confidence in you.

So much on the background to R & D at Fronius, then. But what do the latest innovations thought up here actually look like in detail? Just what is it that makes CMT, DeltaSpot, TransCut and TransPocket so revolutionary? High time for us to take a closer look at the technical aspects on the next few pages.

The fruit of allowing “plenty of scope for unconventional thinking” is series-production-ready new technologies such as DeltaSpot, TransCut and CMT.
**Shift the Limits: 4 new Fronius product highlights**

**DELTASPOT BREAKS THROUGH BOUNDARIES**

Spooling process tapes instead of electrode wear-and-tear. This is what characterises this radically new system of robot welding tongs for resistance spot-welding. The process tapes of the DeltaSpot resistance spot-welding method protect the electrodes and the materials to be joined, prevent spatter, and generally lay down new quality standards.

The process stands out for its 100% reproducible weld-spots. The process window is significantly wider than in conventional resistance spot-welding. DeltaSpot spot-welds steel and galvanised steel sheets with complete process-reliability. It also makes light work of bimetal joins between galvanised steel sheets and aluminium, and even of aluminium-to-aluminium ones. This is made possible by extra thermal input through the process tape. After every weld-spot, the process tape moves on to its next position, so that it always welds a new contact surface every time. Endless spot-welding with consistently high quality, one shift after another, is now a reality.

Each weld-spot leaves behind a “fingerprint” on the process tape. This enables inferences to be made with regard to its quality, greatly facilitating quality management and documentation.

**TRANSPOCKET 2500/3500:**

**WELDS CEL ELECTRODES OF UP TO 5 MM**

The fully digitised TransPocket 2500 and 3500 welding units are ruggedly designed yet still lightweight and handy. This makes them ideal for both field and shop use. The TransPocket 2500/3500 machines are designed to work with any type of electrode – whether rutile, basic or CEL up to 5 mm in diameter. And with CEL electrodes in the vertical-down position, of course, professionals are quick to tell the difference. For all of these electrodes, then, the ideal ignition settings are already stored. The resonance concept ensures that the arc is extremely stable at all times, no matter how long the mains supply leads are. And even if the mains voltage fluctuates, there is still plenty of power in reserve whenever it’s needed. The result: Superlative welding properties coupled with maximum process reliability, at all times.

**www**
www.fronius.com/new/deltaspot

The rugged yet handy TransPocket 2500/3500 units weld rutile, basic and CEL electrodes of up to 5 mm in diameter. Resonant intelligence ensures a stable arc and superlative welding properties – even when long mains supply leads are used.
**TRANSCUT 300 – CREATIVE SOLUTION**
**USING FLUID INSTEAD OF GAS**

Fluid, not gas, is the starting medium for the new plasma cutting process from Fronius. Having to have a compressed-air supply is now a thing of the past. The result is a compact unit that is ideal for on-site and field use: The TransCut 300. The advantage of this new system is unlimited portability, as well as greatly reduced emissions of noxious substances. What is more, the plasma cutting system has very low noise emission levels, which makes life a lot more pleasant for the operator.

The TransCut 300 ushers in a whole change of direction in the field of cutting-technology: It is the smallest and – weighing less than 14 kg – the lightest plasma cutting system in its class. The cutting system is generator-compatible, needs only a 230 V mains connection and cuts steel, aluminium and chromium-nickel up to a thickness of 12 mm. The cut surfaces are oxide-free, so there is no need for the subsequent machining that would otherwise be required. Because the process prevents nitrogen pick-up on the cut surfaces, there is much less risk of pore formation during subsequent welding work. Last but not least, the higher cutting speed makes for greater efficiency.

**TransCut is used in:**
- constructing air-conditioning and ventilation systems
- motor vehicle repair workshops / autobody construction
- industrial plant and pipeline construction
- corrective maintenance and repair work
- construction of boilers and vessels
- site-erection contractors

**CMT DEFINES NEW METALLURGICAL BOUNDARIES**

Thermal joining of steel to aluminium was long reckoned to be an impossibility. Until now, that is, for the CMT Process completely redefines metallurgical boundaries. This new, “cold” MIG/MAG weld process is an easy-to-use process for joining steel to aluminium. CMT also performs convincingly in spatter-free brazing of coated sheets and for welding ultra-light-gauge joints. This is made possible by the wire motions, which are directly incorporated into the process-control. The digital process-control detects the short circuit, then helps to detach the droplet by retracting the wire. The wire moves forward, and as soon as the short circuit happens, it is pulled back again. Up to 70 times a second. The metal transfer takes place at near-zero current, and without spattering.

You’ll find an in-depth technical article on CMT and the new areas of application on Pages 14/15.

**www**
www.fronius.com/new/cmt
News

System location now under construction

On 7th July, Fronius embarked on a new chapter in the company’s history: The ground-breaking ceremony for the new system location at Sattledt took place. On a 100,000 m² site near a major motorway interchange in Sattledt, Austria, Fronius is building what will be the Group’s biggest production and logistics plant, for more than 600 staff. Currently dispersed between several different plants, most of Fronius’ component manufacturing operations will be centralised in Sattledt. From 2007, Fronius will be producing all its battery-charging and welding systems and all its solar inverters at the new system location, and forwarding them from here to its international clients.

Siting the new plant in Sattledt ensures that production expertise will remain in regional proximity to Research & Development and Sales. This means that newly developed products can be moved into series production more rapidly. Fronius’ new system location at Sattledt will enable it to offer its international customers even tighter delivery times. The structure shell is scheduled for completion by early 2006.

Solar Electronics Division takes its first steps on the Asian market

The Fronius Solar Electronics Division is already the European N° 2, with a market share of around 25 %, while in the USA its market share has also been steadily on the rise – ever since a US branch was set up two years ago. And its worldwide reputation has been growing even faster still. Many Asian firms’ interest in the Fronius inverter, a quality product with an over ten-year pedigree, is growing and growing. Now Fronius is intent on continuing its European and American successes on the Asian market as well. Just recently, in fact, some new contacts were made at the Green Energy Expo in Korea.

New battery charger for software-flashing all vehicles

The Battery Charging Systems Division has caused a stir with a new charger whose features and ease of handling are unique anywhere in the world: The Acctiva Professional Flash. “Flashing” is a term for uploading software updates. When it comes to troubleshooting any of the latest generation of vehicles, it may be necessary to update or even replace the car’s software. This procedure can take up to eight hours and consume as much as 1000 W of electricity. If the power supply breaks down, very serious damage may result. Acctiva Professional Flash is a compact, high-performing yet gentle-action charging unit to support this “flashing” operation. This new product was developed to the specifications of two German automobile manufacturers.

www

If you’re interested, you can see for yourself how building work at the new site in Sattledt is progressing:

www.fronius.com/future
Around 10 km outside Bulawayo, Zimbabwe, there is an abandoned mine that is now used as a dump for all manner of refuse. It is also home to some 3000 people who eke out a living from the refuse and whatever they can make from it. Many of them have fallen ill, mainly with Aids and tuberculosis. There is no school there. Fronius wanted to do something to alleviate this suffering and donated the net proceeds of an auction of works by Fronius artists. This auction was organised as part of a Christmas event at the Pettenbach plant. The missionary nun Bertholde of Schlierbach, who works in Zimbabwe, expressed her thanks in a heartfelt personal letter. She was able to use the money to buy maize meal and food for these poorest of the poor.

Staying on track to become Worldwide Number 1 means not only advancing Fronius’ innovational strength and technological leadership, but – equally importantly – also providing a consistently high standard of customer care throughout the world. This means being on hand to provide the customer with everything it needs to keep its production and other workflows running smoothly: Like solving problems, answering questions, troubleshooting and supplying spare parts. Promptly. With contact persons who not only speak the same language but also share the same culture. In France there are now two sales and service teams: Not just in Metz but now also in Crissey as well. Switzerland’s first sales team has recently been set up in Berne. Fronius’ international sales and service concept is being expanded still further – other key elements include: Building up a network of process experts in every country HQ, communicating via worldwide “Schweissercafes” and having the same initial and in-service training for all employees and representatives the world over.

Already a noted system supplier, Fronius is working to make itself even more of a “one-stop shop”. Alongside welding accessories such as spatter release spray, gas pressure regulators and anti-spatter paste, there is now a brand-new welding helmet from Fronius: The Vizor 1000.

No matter which version you opt for, the Standard or the Professional, this new welding helmet from Fronius stands for super-safe working and the utmost in comfort and convenience for the wearer. The auto-darkening feature gives you optimum visibility before, during and after welding. Yet more big advantages boasted by the new Fronius welding helmet: High-level thermal and radiation shielding thanks to the use of high-grade materials and a special paintwork finish, also giving permanent protection from UV / IR radiation. The helmet’s rounded contours ensure optimum head, chest and side protection.
Modern materials-joining technology has to fulfil constantly escalating requirements. One of these is to exploit the characteristics of the individual materials to the full by aiming at constructions made from a combination of different materials. Until now, it has only been possible to effect joints such as these mechanically or as adhesive-bonded joints, or at best by trying to use both processes simultaneously. Thermal joining of non-identical metals is a much more interesting proposition altogether, however.

This is a challenge for materials-joining technology to rise to, particularly when it comes to joints between steel and aluminium. Aluminium materials score above all for their low specific weight and their optimum processing and usage properties, which is why more and more use is being made of them. Nevertheless, there are many areas where there is no conceivable substitute for steel – a fact that is underlined by today’s trend towards high-strength and super-high-strength steels.

In the past, bimetal joins have only been possible by means of mechanical joining processes. Thermal joints used only to be accomplished with great technical difficulty, and did not go beyond the experimental stage. When steel is heat-intensively joined to aluminium, the joining zone attains great hardness and extremely low toughness. This is why all heat-intensive joining processes try to introduce as little heat into the seam as possible.

The solution: Cold metal transfer with CMT

Fronius’ answer to the demand for minimised thermal input is CMT, a modified MIG process with controlled, almost current-free metal transfer in the dip-transfer arc. CMT stands for Cold Metal Transfer. The aluminium filler metal and base metal both fuse, creating a melt which wets the galvanised steel material.

Unlike in a conventional pulsed arc, the droplet is not shed by a current impulse. Rather, it is a defined rearward motion of the welding wire which brings about controlled droplet detachment. This rearward motion, coupled with a simultaneous lowering of the welding amperage, starts as soon as the power source detects a short circuit. After this, the welding wire runs forward again and the cycle begins all over again, at high frequency and with extreme precision. Both of which are fundamental preconditions for absolutely controlled metal transfer.

The main credit for ensuring this goes to the highly dynamic wire-drive, located directly on the welding torch. A wire buffer provides the necessary “decoupling” between this and the main wire-drive.
In order to optimally fulfil the requirements for arc-joining steel to aluminium, Fronius has developed a modified MIG process: The CMT process. The decisive factor here is the highly dynamic wire motions which are integrated in the process-control. Up to 70 times a second, an exactly controlled oscillating motion is superimposed over the forward-moving wirespeed. The result is high-precision droplet detachment and a uniform, spatter-free weld-seam. A pleasant side-effect of this is lower heat input, with all the attendant mechanical and metallurgical benefits.

As well as for joining steel to aluminium, CMT opens up perspectives for many other highly interesting possible applications. Among these is e.g. the possibility to make more or less spatter-free MIG-brazed joints of electrolytically galvanised or hot-dip galvanised sheets. Thin-sheet welding (0.3 mm – 0.8 mm) of aluminium sheets is also possible without difficulty. CMT welds special steels and magnesium equally convincingly.

The CMT Process is an easy-to-use process for joining steel to aluminium. Besides this, the process stands out for its more than satisfactory mechanical and technological properties. Interest is focused here not only on the joining of steel to aluminium, but on a fascinating spectrum of further applications.
Ideally, only with CMT from now on

AUTOMOTIVE-SECTOR SPECIALIST WELDS SUCCESSFULLY WITH INNOVATIVE NEW WELDING PROCESS

Helmut Haspl is absolutely certain that for his company, ELB-Form, the CMT Process represents the very best welding technology there is. The experience of two months' practical trials gave the plant manager of this “car engine-compartment pipework” specialist all the basis he needed to take his decision upon.

The company is now using the innovative CMT process to weld six critical components made of CrNi steels or aluminium. Five of these have at least two things in common – the challenge of relatively large and widely fluctuating root widths, and the requirement to ensure the greatest possible freedom from spatter. The sixth weldment presents a further challenge – that of keeping thermal input down to an absolute minimum during welding. “Despite the different root widths, we can now weld the two 0.4 mm thin sheets of the bellows sleeve to the 2 mm thick plate of the tube with perfect results. There’s now absolutely no need at all for any of the rewelding that we used to have to do, and all the other manual operations have been reduced by a factor of three. In short: The quality and the efficiency are just right, and our client is very satisfied”, says Management Team member Helmut Haspl.
“Mission accomplished” in record time

In September 2004 the Fronius team of Werner Peraus, Fritz Steinhuber and Günter Spiegel informed its client Helmut Haspl about the forthcoming première of the CMT process at the EuroBLECH 2004 expo. The applications and advantages of CMT (Cold Metal Transfer) could have been tailor-made with this Austrian company in mind. It shapes its components mainly from very thin-walled CrNi sections of steel or aluminium tubing. In their welding operations, then, they can benefit directly from the main advantages of this innovative new GMA process: Extremely high gap bridgeability, more or less complete freedom from spatter, and minimal thermal input (hence the “cold” in CMT). Fronius were asked to prove the suitability of the process on what is currently ELB-Form’s most challenging weldment, a heat-exchanger tube with length-compensating bellows. This they soon did, with test welds in the Fronius Technology centre in Wels. By as early as December 2004, the Fronius technicians put a TransPuls Synergic 4000 CMT welding system into service at ELB-Form’s plant in Vandans in Western Austria. Not even eight weeks had passed since the presentation of the new GMA process at the EuroBLECH expo. Thus it was that series production was able to start up in Vandans within such a very short space of time.

Perspectives: CMT and innovative products

Alongside the innovative and partly patented HyFo (hydroforming) process, welding ranks as the core competence of Elb-Form. It is the combination of these capabilities, and their high level, which account for the headlong technical progress – and business growth – achieved by these “engine-compartment pipework experts”. But the development does not stop here. The production range already includes visible exterior motor vehicle components and structural members. A typical example is the rollbar, which doubles as a spoiler for open-top convertibles. This is an aluminium component consisting of a curved tube with a flat cross-section and welded-on cross-braces made of aluminium flats. Stringent requirements are made here in respect of strength and appearance. “Welding is our core competence and we shall continue to develop it, focusing here on the advantages of the innovative CMT process. I hope that we shall have changed over all our robot welding stations to CMT by the end of this year. In this way, we can offer our customers top quality and consolidate our lead still further”, says Management Team member Helmut Haspl, summing up the approach taken by this innovative automobile industry vendor.

The rise of a joint venture

In 1997 Erne Fittings GmbH and Illwerke Beteiligungsgesellschaft m.b.H. established a joint venture called ELB-Form GmbH (www.form-automotive.at). The firm took its name from the Erne Liquid Bulge (ELB) process. Together with this advanced high-pressure cold forming process, welding was the core competence of this young company right from its earliest days. Started as a workshop enterprise with only a handful of staff, by 2004 it had grown to some 200 employees generating annual revenues of over 20 m euros.

CMT-welded joint on the rollbar: Metallurgically and in terms of appearance, the shaped extruded tube (wall thickness 2 mm) and the cross-brace (made of 4 mm aluminium sheet) are flawlessly joined.
The medium-range future of Fronius as seen from the perspective of an experienced, seasoned sales manager from the Welding Technology Division – reason enough for weld+vision to ask for an interview with sales chief Wolfgang Lattner, who has been with the company for 29 years now.

A few brief explanations to begin with: Fronius stands for innovation, technical progress and high quality. It is important to associate the brandname of Fronius not only with the products but with the sales and service processes as well. This is why Fronius has designed new distribution structures and organisational processes to be implemented worldwide over the next four years. These will ensure that every Fronius customer and partner receives the same high standard of customer care throughout the world. This sort of system is absolutely essential in international direct marketing. For Fronius, it marks a major step along the way to becoming “Worldwide No. 1”.

w+v: Mr Lattner, where do you see the potential for Fronius in future? And where do you see the risks?

WL: In Europe, our home market so to speak, Fronius is very much present. However, quite some time ago we started taking steps to gain market share outside Europe as well. In the past few years, two Fronius subsidiaries have been set up in the USA and Brazil, for instance. Both of these branches are operating very successfully and have won recognition on their respective markets. I see a tremendous opportunity for Fronius in this internationalisation process. Growth also comes with risks, of course. Firstly, because the new posts that become necessary can often not be filled straight away, which in turn puts a great deal of extra pressure on existing staff. Secondly, we do not want to risk diluting or losing the Fronius culture and style of communication. Fronius now employs over 1500 people. This is just one of the factors reflecting how our company is growing.

w+v: What sort of direction do you see our customers’ requirements developing in? And how will Fronius be responding?

WL: Our customers are demanding even more support and flexibility to back up their production operations around the clock at any point on the globe. Multinational concerns have worldwide production networks. If – as is already the case – we work with customers in several European countries these customers would not understand why it should not be possible for this partnership to work in just the same way in Asia or Latin America. Of course, this presents Fronius with a challenge which we are making great efforts to address. By implementing the distribution and service structures that I mentioned earlier, Fronius will ensure uniformly excellent “on the spot” expertise throughout the world, in the customer’s own language. Having employees who are outstanding in both technical, social and personal terms will be a crucial factor behind the success of Fronius’ sales & distribution strategy.
w+v: You mentioned Fronius’ internationally active customers. What has Fronius got to offer global players like these?

WL: For us, global players are not only big internationally active concerns such as Benteler or Volkswagen/Audi. There are now also many medium-sized companies who have “gone multinational”. The Austrian truck-trailer and bodywork manufacturer Schwarzmüller, for instance, has 14 branches across Europe. The first thing we can offer these multinational and international partners is identical terms and conditions worldwide; secondly, the same “on the spot” expertise in terms of identically high-quality support and training etc., and thirdly, equipment configuration, including drawing up and transferring the data in collaboration with the client. The idea is that every customer, wherever it is, should find the same level of expertise locally as it would in the distribution and service centre in Wels – provided by the national or regional Fronius team.

w+v: What may customers and partners of Fronius expect at the “Schweissen & Schneiden” expo in September?

WL: At this trade-fair Fronius will be presenting genuinely new processes and systems that will also have a lasting influence on our customers’ constructions and products. One result of this will be intensified collaboration with our customers; another will be sustained long-term dependability for all involved.

w+v: Our theme for “Schweissen & Schneiden” is “Shift the Limits”. Fronius is “shifting the limits” not only with regard to long-established welding applications, but also in terms of moving into new areas of application. How do you see the move into fields like resistance spot-welding or plasma cutting?

WL: These processes mean that we have broadened our range of offerings to establish ourselves as a wider-ranging supplier for our partners. These new processes testify yet again to Fronius’ position as a world technological leader.

w+v: Mr Lattner, thankyou very much for talking to us.

The expectations made of a global player

Manfred Miede
Head of Technical Purchasing at DURA Automotive Body & Glass Systems

“As a global player, what we expect from Fronius (on top of continuous onward development in the joining-technology and welding field) is for it to carry out welding trials – also in our local manufacturing facilities. Something else that’s just as important to us is fast, on-time service – all over the world.

Eckhard Schmidt
Head of Quality Management at Benteler Automobiltechnik’s Talle plant

“What we expect from a global player is that we can get hold of it fast, any time, anywhere. What counts for us here is the technical capability of our contact persons, and – equally importantly – their mastery of the local language. Any company’s claim to be a global player must be underpinned by technological and innovational leadership, covering everything from planning to service.”
A longing for curiosity

FRONIUS ON TRACK TO BE “WORLDWIDE N° 1”

With its welding technology, battery charging systems and solar electronics Divisions, Fronius is determined to rise to the challenges on the world market. This is easy enough to articulate and define as an aim, but it entails huge potential to bring about change. For a family-owned enterprise like Fronius, this step may well be the most significant in the company’s entire history. Here too, “shifting the limits” is the name of the game. Obviously, this is something that takes a lot of preparation. And this has been underway for many years now. At all levels. In the following article, Klaus Fronius talks about what sort of qualifications employees are going to need to keep abreast of these developments. The keyword here: Self-motivated lifelong learning.
On the worldwide market, quite different rules apply from on the European market, and quite different demands are made. The challenges are tougher, but they can be met if you know the rules of the game, accept them and are prepared for them.

Intercultural thinking

For Klaus Fronius, intercultural thinking is the fundamental precondition for international success. And by no means only at management level.

Intercultural thinking is much more than just knowing about other cultures. “It also means being willing to learn several languages.” Extensive learning and wide-ranging knowledge – including an awareness of what is good for business – are just one side of the coin.

A longing for the new

The other side of the coin is an unprompted, self-motivated longing for knowledge, for education, for lifelong learning. Taking delight in finding something new, in making a new discovery. Curiosity. Regardless of any monetary incentive. This hankering for learning is what drives us ahead, makes us receptive to new ideas and is often the reason for personal – and thus also entrepreneurial – success. It’s all about this longing to focus one’s thoughts and ideas on customer solutions and products that don’t even exist yet – not even on the world market.

As Klaus Fronius sees it, it’s all too easy just to improve or copy something. The same goes for buildings, organisations and processes – in fact, for everything we in the company do. Including our dealings with customers. Narrow-mindedness is a sure way to remain mediocre; you have to want to think outside the box.

It’s all about “internationalising” the whole company. And successful internationalisation is closely associated with the corporate culture. Klaus Fronius reckons that the conditions here are good, for “at Fronius, all sorts of things are possible”. This takes us to the most important factor of all: Our people. Each of us should act independently, daring to try out new things, but also shouldering responsibility.

Several years ago, for example, Fronius developed a distribution and service concept to assure a consistently high quality of customer care the world over. These modules are already being implemented. More will follow. Step by step, and in exact detail.

Creating awareness

What rôle does Klaus Fronius see Management, and indeed every manager, playing in this? Creating awareness, and supporting and encouraging each individual wherever possible. It’s all about getting the right mixture. And if we can do that, then we can be sure of qualifying for the “welding technology Olympics”, and more besides ...
Once upon a time …

THE RUHLAND – A REGION OUTGROWING ITS BOUNDARIES

So you think you know the Ruhr District? That sprawling grey region of coal mines and belching smokestacks? Then you’d better think again, as any Ruhrland local will be quick to tell you. For all those grim images are a thing of the past. Of the not-too-distant past, admittedly. Today, this region is busily turning itself into one of the most interesting corners of Germany. Doing so in part by focusing on its former industrial sites, most of them abandoned, and it is precisely this which gives the region its special appeal. What is more, this year Essen will be the hub of the world welding community, who will be converging on the city for the “Schweissen & Schneiden 2005” expo to be held there from 12th to 17th September.

For some years now, the Ruhr has been making a successful job of responding in creative and innovative ways to the structural transformation that has swept the region. Hardly any other region of Central Europe has undergone such wrenching changes in the past couple of decades. Most of the collieries have had to close, and the days of the fire-spewing blast furnaces are just about gone for good.

The main focus has been on regional development programmes in technology, retailing and services, and on finding new uses for derelict industrial sites and structures. Large areas of this onetime hive of heavy industry have been restored to parkland or given over to other uses. Seeing it all means following a 400 km long “Industrial Culture Route” by land and water.

From coking plants and steelworks to industrial museums and leisure parks

When visiting the Ruhr District, it’s worth taking the opportunity of strolling across former mines and looking at shutdown edifices that testify to a bygone era. weld+vision has several tips on places to look at along the “Industrial Culture Route”:

- Essen: Zollverein Coking Plant, now a contemporary art venue. Shut down in 1993 and now a UNESCO World Heritage Site, this former coking plant has been almost completely preserved. In winter there is a long ice-rink here, and in summer a free works swimming pool. In the “Palace of Projects” there is a permanent exhibition of 60 designs for improving the world.
- Essen: Right next door to the coking plant is the former Zollverein Colliery. Erected around the year 1928 in Bauhaus style, the pithead buildings were known as “the most handsome colliery in the world”. Today they are a listed monument, and a vibrant cultural centre.
- Duisburg: “Landscape Park North”, a former ironworks. Most of the buildings have been preserved: The gas-holder now “holds” a diving centre, and an old blast furnace has been turned into a viewing tower. Other attractions: climbing gym, open-air cinema, theatre.
- Mülheim: Interactive Aquarius Water Museum, housed in a former water-tower. 25 stations on 14 levels.
- Oberhausen: Rhineland Industrial Museum in the old Altenberg zinc smelting works – a hands-on look at heavy industry.
- Oberhausen: Gas-holder. This exceptionally impressive cathedral of industrial culture is one of the most interesting exhibition spaces in the entire region.
- Duisburg: “Garden of Memories”, created by an Israeli sculptor who made artistic use of all the warehouses and company buildings that had been cleared for demolition. A collage of ruins, accentuated at night by installations created by lighting artists.
Dear Readers;

Shift the Limits. What a title! Daring? Not necessarily. Proud? Rather more so, perhaps. Maybe even fairly sure of victory. Although the title on its own does not actually say all that much. Shifting limits is all very well – but what limits, and just who is doing all the shifting? All the more reason to read the cover story, then, where we take a more general look at this topic: What does it take to be able to transcend a boundary in the first place? What is the motive? Do “boundary-busters” have anything in common? Four examples, taken from very different disciplines, will make things a bit clearer. But read on. Because this title “Shift the Limits” also refers to the “Schweissen & Schneiden” expo, at which some boundary-breaking new developments from Fronius are going to be unveiled. You’ll be learning a bit about the background to this, and taking a peak beyond the scenes at the R & D Dept. – and then you can find your own answer to the question of whether this title really is so daring.

3-6 Cover story
What is a boundary-buster stand out.

7-11 Totally R & D
Innovation 2005: DeltaSpot, TransCut 300, TransPocket 2000/3200, CMT (Cold Metal Transfer)

12-13 Brief and to the point
News from Fronius

14-15 Innovations
The impossible made possible: High-strength joining of steel to aluminium

16-17 Case study
Company at SLB: Exacting requirements call for the very highest quality

18-21 Innovations
Fronius strengthens its worldwide expertise and service capability

22-23 Travel tip
Changing times in the Ruhr District

The Ruhr District
Nicknamed the “Kohlenpott” or “coal scuttle”. A conurbation between the Rivers Emscher and Ruhr, stretching all the way from Duisburg via Essen and Bottrop to Dortmund, Recklinghausen and Witten. 5.3 million inhabitants, 4425 km2, over 250 km of navigable waterways. Europe’s biggest industrial region.

www 
Ruhr District tourist information
http://www.messe-industriekultur.de/
rundumrout/rtg.htm
Zollverein Coking Plant, Essen
www.zollverein.de
Gas holder, Oberhausen
http://www.gasometer.de/eng/index.asp
Landscape Park North, Duisburg
http://www.landschaftspark.de/en/home
Aquarius Water Museum, Mülheim/Ruhr
http://www.messe-industriekultur.de/
pressevent/rtg_4_e.htm

3-6 A few words on our cover picture:
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3 Editorial

354x298 3-6 Cover story
354x285 7-11 Totally R & D
354x272 12-13 Brief and to the point
354x260 14-15 Innovations
354x246 16-17 Case study
354x220 18-15 Innovations
354x220 354x155 22-23 Travel tip

23 Travel tip
SHIFT THE LIMITS:
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