

Masters of Speed

Because Speed = Productivity

SpeedPulse®

SpeedArc®

SpeedUp®

SpeedRoot®

SpeedCold®

Speed-TwinPuls®

Ever since mankind exists, people are striving for improvements.

For this reason, we at Lorch have been searching for genuine speed for years. Believe us: speed is not just speed. Speeding up the welding process is only possible, if the penetration and weld integrity are assured and the whole process is extremely simple to use for everyone. Only when this is the case, can you step ahead and enter the next level of productivity: lean-welding process without time-consuming preparation work and lots of post weld reworking tasks.

Thousands of hours of hard work are worth it:

Lorch made welding fast.

Our MIG-MAG process innovations help to sustain reduction of your manufacturing costs.

They clearly increase your welding speeds, simplify the process considerably and enable higher productivity, which has not been possible until now.

Three Lorch welding units offer you this speed and their quality is included among the best in the world. Inside they carry the speed processes, for speeding up your manufacturing.

We call this Masters of Speed.

LORCH

Lorch SpeedPulse

And speed becomes productivity.

Added value with each meter and each layer of welding seam.



this drop, thus permitting a controlled, almost constant metal flow into the weld pool.

The leading droplet, which is pulsed, is always then followed by a second, controlled metal transition in spray arc form. This “gain” of material clearly shows its effect: more speed. Immediately faster when used for manual welding and outstanding in automation. 30% faster with stainless steel and up to 48% with steel. Always giving superb quality traditionally associated with pulse and remarkably easier to use for the operator.

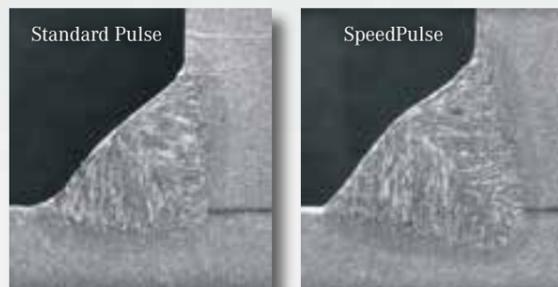
SpeedPulse. Up to 48% faster.

The key to higher speed is to increase the filler wire melt off performance. Until now, one pulse has always been one droplet. However, our process specialists found ways of enlarging

this drop, thus permitting a controlled,

almost constant metal flow into the weld pool.

The leading droplet, which is pulsed, is always then followed by a second, controlled metal transition in spray arc form. This “gain” of material clearly shows its effect: more speed. Immediately faster when used for manual welding and outstanding in automation. 30% faster with stainless steel and up to 48% with steel. Always giving superb quality traditionally associated with pulse and remarkably easier to use for the operator.



Deeper penetration – harder, and less noisy.

Only if the root is captured perfectly, will the weld seam be sound and long lasting. The SpeedPulse of the S proves its ability with high quality weld seam appearance and excellent fusion characteristics, Deeper and stronger, which is also especially ideal for aluminium as you get far less porosity. SpeedPulse is much quieter. Up to 10 dB(a) in fact. Therefore, reducing the strain on your ears by half and optimizing your concentration for producing a really great welding seam.

SpeedPulse. Easier welding and less reworking.

The stability of the arc proves: SpeedPulse makes the handling of the weld pool easier.



A pointed wire end, allowing the arc energy to be focused directly into the weld throughout the entire current range. As in the case with standard MIG-MAG welding filler wire spools no longer need to be changed depending on material thickness to be welded. No unnecessary changes of wire spools. For example you can weld 1.0 mm metal sheets with 1.2 mm filler wire and weld smoothly and without interruption – up to the maximum current range. SpeedPulse also makes the complete process colder. This

is highly visible by the temper colours when welding stainless steel. It is possible to weld the required seam faster and with less distortion. For each day this means that many more meters of weld can be achieved. Without loss of time due to changing of wires and post weld re-work – you’ve got SpeedPulse.

SpeedPulse. Ideal especially for steel. As time is money.

You weld in order to earn money and ... to comply with terms. So why do you not pulse weld with steel? Even with steel, SpeedPulse is clearly better and simpler to master. You also pulse with stainless steel and aluminium. Yes, you’ll agree – this is right, but with steel, pulsing is slower than MIG-MAG. This is not longer true! SpeedPulse is one of the best processes in the high-speed range. More power, more speed advantage. You must try it. With total pulse quality. SpeedPulse also for steel. SpeedPulse for your manufacturing.

Lorch SpeedArc

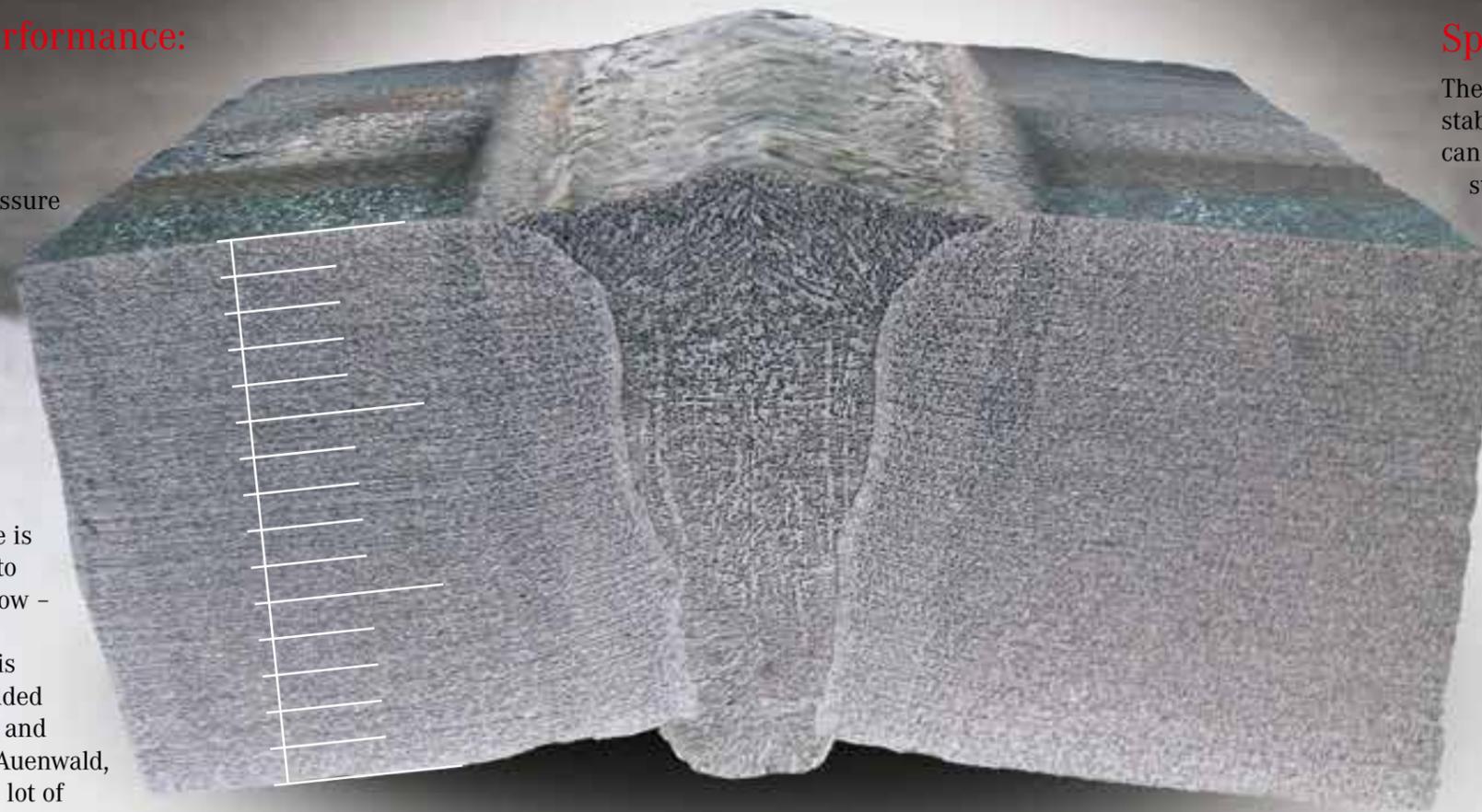
And welding becomes a lean process.
Up to 15 mm steel can be done in just one pass.

**For maximum MIG-MAG performance:
Up to 30% faster.**

SpeedArc is considerably more focused. It has a much higher energy density and, consequently, generates a greater arc pressure that flows into the weld pool. The result is impressive as it makes MIG-MAG welding up to 30% faster.

**Even 15 mm in just
one layer become possible.**

SpeedArc is MIG-MAG-Max. But not only its speed makes it more productive. There is also the fact that components which had to be welded in several passes before, can now - due to the Lorch SpeedArc - be joined in one single pass, up to 15 mm thick. This is productivity that pays off; this is value added welding. How the whole process works is and remains a secret of our engineers here in Auenwald, but you can be sure that it can save you a lot of money and help to get a lot of your delivery dates under control.



SpeedArc. Ideal for narrow gaps.

The highly concentrated, stable arc of the SpeedArc can also be used with long stick out for welding into narrow joints.

Even this degree
of narrowness
is possible



SpeedArc saves material.

Large weld prep angles are now a thing of the past. 60° is no longer necessary, 40° is already sufficient for SpeedArc.



SpeedArc higher quality.



With SpeedArc, penetration into the parent material is visibly better compared to ordinary MIG-MAG units.

Lorch SpeedUp

Vertical-up welders become turbo welders.
Vertical-up welding has never been so easy or fast

Vertical-up welding?

Was difficult in the past.

The perfect vertical-up welding seam was an “award”. The necessary triangle or Christmas tree movement of the hand was a technique only mastered by experts. The material must not be too cold; the root must be good and was only achieved with great care. With a certain reverence, these men were called Christmas tree welders, because there was no other possibility to weld vertically upwards successfully. However, this technique was almost as slow as the tree itself growing, and deadline pressure often was an own goal. So it was logical that some of our engineers searched for a simplification. They have found it. The honour is now ours.

SpeedUp – the “simple” vertical welding process has been invented.

The trick is the combination of two processes or better two arcing phases. The first one: the “hot” phase with high-energy insertion is for optimum melting of the material. Due to the perfect arc regulation you proceed from this phase without any transition and therefore virtually spatter-free into the other one: the “cold” phase, with reduced energy insertion for an exactly dimensioned weld seam. This phase also ensures good penetration and exact “a”-measurement dimensions. It sounds simple and it really is. Because even semi-skilled welders master the SpeedUp process in a very short time. With excellent root penetration, they also now weld vertically up in an easy and skilful manner.



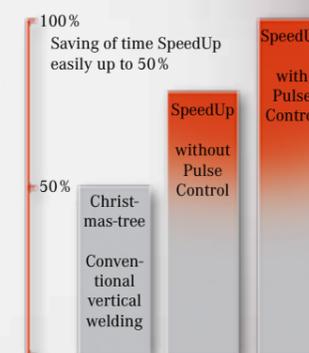
Classical vertical-up welding
(Christmas tree/triangle method)

The ingeniously easy SpeedUp

SpeedUp speeds up.

If you hammer a oversize hole in a wall just in order to lay a thin cable, you will need a lot of time to plaster it up again. This was also the case for vertical welding. Until now! SpeedUp by Lorch works in a much more precise way: Like a small, exact hole in the wall which is then re-plastered fast as the wind, the “a”-measurement is applied as precisely as possible on metal sheets of up to 12 mm.

The concentrated SpeedUp arc is practically twice as fast with steel and stainless steel and is made possible by the precision and the high-end control technique of the Lorch units. For Lorch P Series, SpeedUp is approx. 60 – 80 % faster, an enormous progress for everyone welding a vertical seam. And for those using a Lorch S-SpeedPulse are up to 100% faster. SpeedUp with PulseControl.



MIG-MAG vertical welding also with aluminium? And round the corner?

You think that this is not possible with a conventional MIG-MAG unit? You're right. But the Lorch P Series is MIG-MAG Max, it really works with it. The welded seam is almost as perfect – as it is with TIG – also with steel and stainless steel. In addition, the Powermaster remote control torch and the Tiptronic memory for your welding jobs. Just a keypress from horizontal weld to the vertical position and back again. No more time-consuming running between the unit and the workpiece. This is productivity. SpeedUp your work.

Lorch SpeedRoot

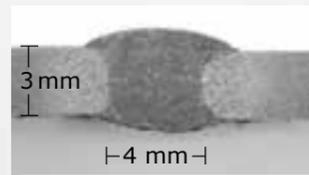
It also works with MIG-MAG for the root.
Top gap bridging and optimum weld pool control.

MIG instead of TIG for root welds.

Previously the main requirement of root welding, was joining both edges of the material perfectly and as free from pores as possible, therefore there was previously a simple practical formula: root = TIG. That was just as simple as it was slow. Thus not surprising that electrode holders or MIG-MAG torches are used again for subsequent intermediate and final passes. However, why not already use a faster process for the root? The counter argument was clear: The root weld needs to be perfectly shaped. The high-quality required for the root weld on the interior of pipes, very often made the use of other processes not possible. Not possible? The Lorch process specialists were not satisfied with this. Their response: SpeedRoot. A MIG-MAG process which combines a weld quality similar to TIG with the speed benefits associated with the MIG-MAG process.

Stay cool is the motto.

When MIG-MAG was thought of for root welding, the short arc was previously thought to be the way to go, but with as little energy as possible. Unfortunately, the current and voltage increase so quickly during the short circuiting in the process that the material is transferred almost explosively. The weld pool falls through or the weld is pressed through the gap too heavily and irregularly. However, if the energy is simply reduced, there is quickly the danger that the weld is no longer sufficiently formed and the edges captured. SpeedRoot applies here particularly: high-end control technology ensures a "cold" material transfer with an intended energy reduced short circuit resolution afterwards. The clear target: not a grain of energy too much. Only exactly the level of current and voltage that guarantees the high speed process stability and ensures a perfect, slightly rounded weld appearance. For maximum gap tolerance and gap bridging.



Optimum, slightly rounded weld appearance, without fusion defects.

3 mm, G3Si1,
4 mm gap
with M21

What is mainly crucial for root welding is what is otherwise not seen.

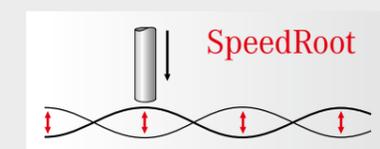


The perfect wave.

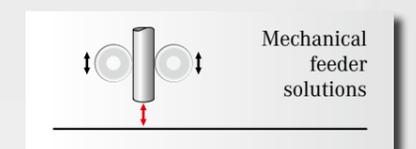
The process timing of the Lorch SpeedRoot is the decisive factor. The highlight: SpeedRoot, depending on the welding position, also uses the wave movements of the weld pool to support the droplet transfer and to significantly reduce the energy input. The effect produced in doing so is in principle comparable with the effect which occurs during active forward and reverse of the wire for reversing feeder systems. As SpeedRoot functions are purely controlled by the processor and does not need any expensive additional hardware or complex and heavy torch solutions, significant application and cost benefits emerge.



High speed video:
SpeedRoot in horizontal position



Process with targeted exploitation
of the weld pool oscillation



Process with reversing
wire feeder

Ingeniously simple.

Easy operation and perfect handling are the key to maximum productivity. Whoever has bridged a 4 mm gap on 3 mm sheets using SpeedRoot without weaving and has produced an optimum weld appearance in doing so will no longer want to weld differently. If you think that does not work, simply try it out. At best, also straightaway with an 8 mm gap because the optimum weld pool control provided by the SpeedRoot also lets you perform the weaving movements easily and effortlessly. And, in addition to the simplicity of the welding process, the fact you can do this approximately three times faster than TIG welding provides a quantum leap. Root welding has never been so productive.

Lorch SpeedCold

Lorch's "cold" process. Perfectly controlled energy input.
For low-spatter and highly productive thin sheet metal welding.

Steel and stainless steel – weld thin sheet metal about 40% faster.

The daunting challenge you face when trying to optimise thin sheet metal welding is arc control. Reducing the energy input is fast and easy, but the application of such a "cold" procedure will definitely show: you will end up with numerous places of sticky spatter and reduced arc stability. This will make it necessary for you to spend a great deal of time on rework. We can understand that this is not your definition of productivity. It is not ours, either. This is why Lorch's engineers and welders were not satisfied to quickly launch a half-baked process that reduces energy input by somewhat. Instead, they focused on optimising their designs time and again until they finally reached their objective: developing a thin sheet metal process that fully satisfies the requirements of our customers. This design makes it possible for you to sustainably increase your productivity across a wide range of applications – with speed gains of up to 40% and in a quality that wins over even the most hands-on welder.

I-seam, CrNi t=1.5 mm, root gap = 1.2 mm



SpeedCold: Wire feed 6.0 m/min,
Welding speed 62.3 cm/min



Short arc: Wire feed 4.3 m/min,
Welding speed 42.4 cm/min

A speed gain
of up to 40%



Standard short arc welding

Corner seam, PG,
S235 t=3.0 mm
Wire feed 4.0 m/min,
rapidly advancing weld pool
that is about to drop off

SpeedCold

Corner seam, PG,
S235 t=3.0 mm
Wire feed 4.0 m/min, welded
completely and securely.
Welding speed 35 cm/min

MIG-MAG perfection starts at 0.5 mm sheets.

The conventional MIG-MAG short arc process already exposes its limits when welding 1 mm steel and stainless steel sheets. SpeedCold goes for beyond that. It allows you to weld sheets as thin as 0.5 mm in a reliable fashion and with next to no spattering. And, even if spattering occurs, it is normally not necessary at all to grab your linishing tools. The spatter left behind during SpeedCold welding is generally "cold" enough not to stick to the workpiece surface. A swipe of the glove is all it takes to remove it.



I-seam, CrNi t= 0.5 mm, no root gap
SpeedCold: Wire feed 2.0 m/min,
Welding speed 53.8 cm/min

Perfect for butt, lap and corner weld seams.

Superior thin sheet metal welding is measured by the quality of the butt, lap and corner weld seams you create. This type of application is exactly the purpose for which Lorch developed SpeedCold. SpeedCold controls every sequence of the process with such accuracy that any changes in the arc are regulated within a matter of milliseconds. This results in an extremely stable arc and exceptional weld pool control. As it offers outstanding seam shaping and gap bridging properties, SpeedCold allows the welder for instance in case of material distortion to react in an optimal way.

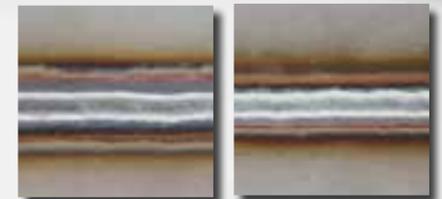


I-seam, CrNi t = 0.8 mm, root gap = 0.8 mm
SpeedCold: Wire feed 2.8 m/min,
Welding speed 60.0 cm/min

Temper colours reveal the difference.

The heat that is introduced into the workpiece is a decisive factor for the extent of preliminary work and rework necessary to achieve a satisfactory welding result. Lower heat input means less distortion. Fewer tack welds are necessary and preliminary work and rework necessary to mould the material into the desired shape are cut down. Every joule you save puts more money in your pocket. Since SpeedCold in each millisecond puts only so much energy into the process, the heat input is reduced by 25% when compared to conventional MIG-MAG welding, an important factor in particular for CrNi welding. As CrNi has a lower heat conductivity and tends to deform more easily, the reduced heat input applied by SpeedCold offers substantial practical benefits. You also will experience minimised alloying element melting loss and, consequently, longer lasting corrosion protection even when welding galvanised metal sheets.

I-seam, CrNi t = 1.5 mm, root gap = 1.2 mm

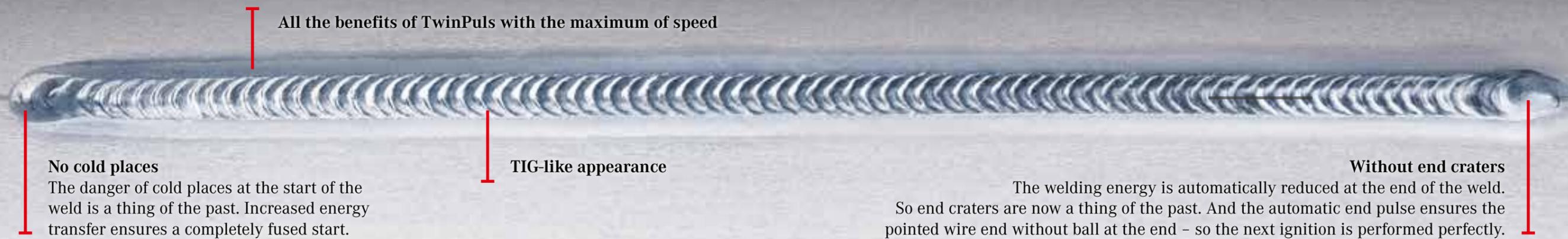


Short arc:
Wire feed 4.3 m/min,
welding speed
42.4 cm/min

SpeedCold:
Wire feed 6.0 m/min,
welding speed
62.3 cm/min

Lorch Speed-TwinPuls

The inventor of TwinPuls now presents Speed-TwinPuls.
That means the best MIG-MAG welds at the maximum speed.



All the benefits of TwinPuls with the maximum of speed

No cold places

The danger of cold places at the start of the weld is a thing of the past. Increased energy transfer ensures a completely fused start.

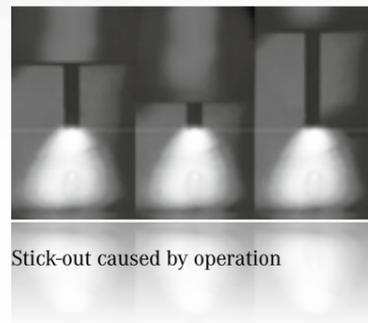
TIG-like appearance

Without end craters

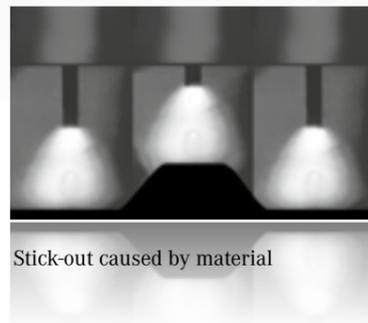
The welding energy is automatically reduced at the end of the weld. So end craters are now a thing of the past. And the automatic end pulse ensures the pointed wire end without ball at the end – so the next ignition is performed perfectly.

Good, but that's not quick enough for us.

With the invention of TwinPuls, the Lorch process technicians have delivered complete performance. TwinPuls controls specifically and separates the heating and cooling phase. The associated low heat input minimises the delay. Welding in difficult positions is also simpler and more reliable. The weld is absolutely convincing – almost like TIG.



Stick-out caused by operation



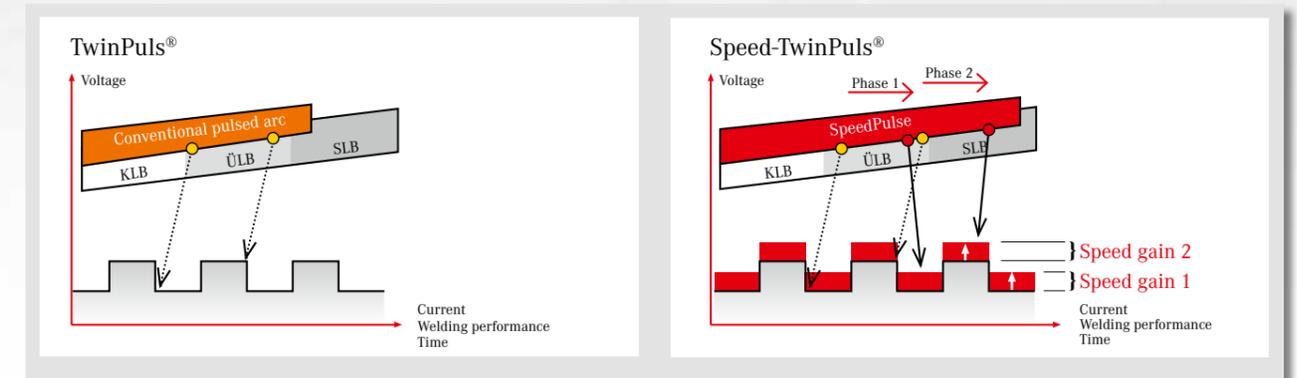
Stick-out caused by material

More speed, but hardly any spatter.

The arc length is a deciding factor for the welding result. Digital arc length control maintains the arc length constantly at all times, and thus ensures an optimum weld quality if there are deviations in the workpiece. And also with the Speed-TwinPuls, deviations are recognised and compensated in fractions of a second. Various stick-outs and changes in seam position can therefore be managed better. Simply, that means more security for your weld.

And also with the Speed-TwinPuls, deviations are recognised and compensated in fractions of a second. Various stick-outs and changes in seam position can therefore be managed better. Simply, that means more security for your weld.

As good as ever – “just” quicker.



True enough, TwinPuls is ideal for processing aluminium, and in practice is also of great benefit in processing CrNi materials. But now we have upped the ante, and that's with a big increase in productivity. Thanks to the combination of TwinPuls with the SpeedPulse process patented by Lorch, you now increase the welding performance from TwinPulsing. The result is called Speed-TwinPuls. **So you'll be welding 20 to 30% faster.**