

# Purus: a wire that cleans up after itself

ESAB has released a next-generation range of ultra-clean 70S-6 GMAW welding wires that promise to keep welders welding and robots running. Called Purus, the range includes G3Si1 and G4Si1 solid wires, either copper-coated or copper-free with AST (advanced surface technology).

**A**fter extensive end-user interviews, which highlighted significant interest in reducing the cost of post-weld operations while producing excellent weld consistency, ESAB is introducing Purus, a family of revolutionary GMAW wires to fulfil these requirements. "Post-weld cleaning costs money," says ESAB SA's Chris Eibl. "Fabricators need spatter-free welds that have very few silica islands so that grinding and weld-cleaning operations can be eliminated," he adds.

Silica islands on welds have to be removed prior to painting. They can also cause arc ignition problems, a particular problem with robotic welding. "Our ESAB Purus wires have been found to produce very small slag islands by customers in the automotive industry and 50% less arc ignition problems by customers in general industry. Also, a standard spatter test proved that Purus 42 gives 30% less spatter compared traditional 70S-6 welding wires.

Good wetting is also being reported, which overcomes problems where weld toe angles need to be controlled on fatigue exposed components. "A customer in the mobile machinery industry is reporting that our Purus wires flow nicely to give a smooth transition at the weld toes," Eibl tells *African Fusion*. "The enhanced weld pool characteristics associated with Purus also give the ad-

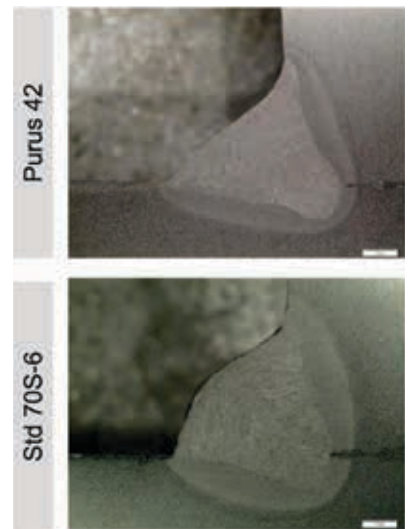
ditional benefit of improved weld bead surface appearance and a smoother bead," he says.

How is this being achieved? At its starting point is much tighter control of the main alloying elements of the wire composition compared to standard AWS classifications. Comparing Purus 42 to a standard 70S-6 wire, for example, Purus limits the carbon content to between 0.07 and 0.10 %, compared to between 0.06 and up to 0.15% for the standard 70S-6 classification. Silicon in Purus is limited to a maximum of 0.90%, compared to 1.15% for S6 equivalents. "In addition, we are monitoring and controlling another 14 elements of the Purus specification to optimise its performance characteristic," Eibl notes.

"Purus' unique formula controls the quantity, size and distribution of silica islands, resulting in fewer in number that are easier to remove. Moreover tighter specifications result in a more consistent output from welding operations from day to day and batch to batch. In the end it is all about helping our customers to deliver higher quality welds and increased productivity," he says.

The Purus family includes AWS G3Si1 and G4Si1 solid wires for welding carbon manganese steels. They are ideally suited to robotic applications at medium to high deposition rates. Copper-coated and non-copper coated versions with ESAB's AST surface characteristics are available, depending on customer choice, and all the products are available in 15 and 18 kg wire spools and in ESAB's well-proven 250 and 500 kg Marathon Pacs, which enhance productivity and reduce downtime for automatic or robotic welding applications.

Eibl says that the new Purus family of revolutionary solid wires helps customers to deliver higher quality welds with increased productivity. "Advantages include: less post-



*A comparison of two fillet welds performed with Purus 42 and a standard 70S-6 GMAW wire with 1,2 mm wire: 29.5 V, 10 m/min wire feed speed and 330 A. As well as producing much less spatter, the Purus wire results in very small and very few silica islands.*

weld cleaning, grinding and rework; less spatter and better process stability; a more stable arc; the guarantee of more consistent performance between batches; excellent feedability and bead cleanliness; excellent bead shape; good wetting; and impressive penetration.

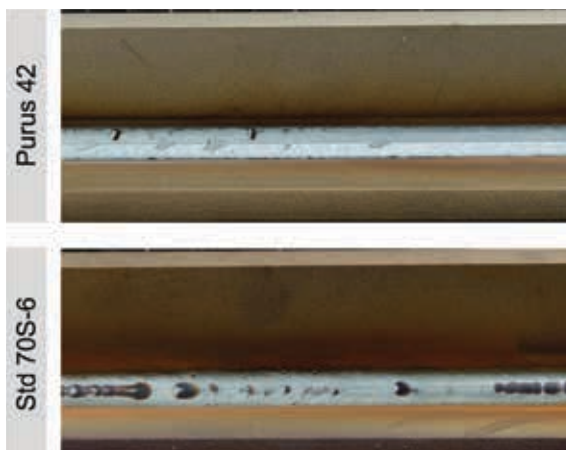
"All this leads to maximised uptime; longer tip and liner life; less equipment maintenance; and ultimately, much lower welding costs per metre and lower total production costs," he notes.

"And, like every ESAB product, Purus is backed by our commitment to superior customer service and support. We are ready to quickly answer any questions, address problems and help with maintenance and upgrading of machines, which are backed with the most comprehensive warranty in the business.

"With ESAB Purus, you can be sure that you are using a filler metal and welding process that meets the modern welding needs of today and the future," Eibl concludes. ■

	Purus 42		70S-6	
	Min	Max	Min	Max
<b>C</b>	0,07	0,10	0,06	0,15
<b>Mn</b>	1,40	1,50	1,40	1,85
<b>Si</b>	0,80	0,90	0,80	1,15

*In the manufacture of Purus wires, ESAB has tightened the control limits of the main alloying elements as well as those of another 14 alloying elements to achieve consistent optimal performance.*



*The Purus wire gives a smooth transition at the weld toes along with a flatter and smoother weld bead appearance.*