

Tailor-Made Protectivity™

SOLUTIONS FOR THE SUGAR INDUSTRY



TAILOR-MADE PROTECTIVITY™

UTP Maintenance ensures an optimum combination of protection and productivity with innovative and tailor-made solutions. Everything revolves around the customer and their individual requirements. That is expressed in the central performance promise: Tailor-Made Protectivity™.

We offer you

a wide range of long-life filler metals that help you increase productivity and optimize maintenance, repair, wear and surface protection. Rely on:

- » Tailored products to the exact needs of the industry
- » Consistently high product quality
- » Worldwide distribution and a global service network
- » Individual technical support by application specialists and welding engineers
- » Decades of experience and application know-how

CUSTOMIZED PRODUCTS OF SUPERIOR QUALITY

We continuously adapt our product portfolio of about 600 products to customer and industry specifications, while ensuring that we meet the highest quality specifications.

From its in-house production facilities, UTP Maintenance delivers innovative, tailor-made welding filler metals for: unalloyed and fine-grained structural steel, low-grade alloyed steels, stainless and heat-resistant steels, nickel-based alloys, cast iron, copper and copper alloys, manganese steels, tool steels, and cobalt steels.

The product portfolio comprises:

- » Stick electrodes
- » Solid wires and rods
- » Flux cored wires
- » Submerged arc wires and fluxes
- » Submerged arc strips and fluxes
- » Spraying- and PTA-powders

SOLUTIONS AT EVERY POINT ON THE GLOBE

UTP Maintenance provides products and services through the global branches of voestalpine Böhler Welding and its dealer network in more than 150 countries throughout the world. A team of welding engineers stands at the customer's side, providing advice and support in all matters related to the challenges of welding technology.

SPECIALIZED CONSUMABLES DESIGNED TO OPTIMIZE PRODUCTIVITY AND PROTECTION

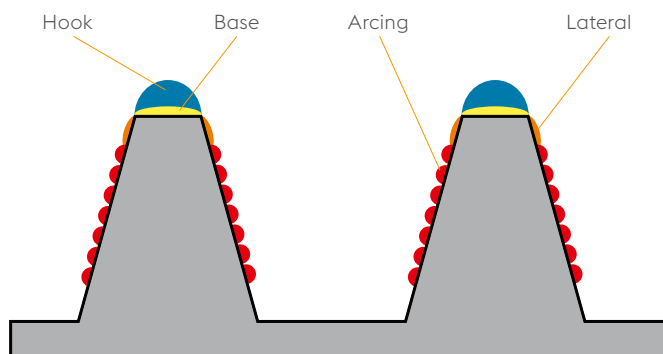
Sugar cane is acidic with a pH of around 5 and carries up to 5 % soil which is harvested with the cane. As a result, the mill rolls are exposed to a combination of abrasive and corrosive wear and require hardfacing to repair them periodically. The hardfacing alloy must provide good wear characteristics and add to the good grip on the sugar cane and bagasse (the fibrous by-product) provided by a special roller profile.

The repair of crusher rolls can take the form of a complete overhaul in a repair workshop – often performed off season or on a stock of spare rollers – or on rolls in operation in the actual crushing of sugar cane in mills. In the latter case, arcing is a commonly applied technique to increase the grip of the rollers on the bagasse, consisting of the deposition of a great number of droplets onto the flanges of the teeth. The arcing operation with stick electrodes requires welders to be near rotating rollers – a work situation which is potentially dangerous and therefore increasingly subjected to restrictive labour laws.

A full overhaul involves a four-step rebuilding procedure, for which voestalpine Böhler Welding has developed a set of three dedicated hard surfacing cored wires and procedures for mechanized welding, as described in the table below. In step 1, the laterals, are deposited to strengthen and protect the sides of the teeth against abrasion, using UTP AF DUR 600-MP in diameter 1.2 mm.

This cored wire gives a very hard weld metal. The same wire, in diameter 1.6 mm, is used in step 2 to seal the top of the teeth and provide a firm underground for the next step. In step 3 the hook is deposited with UTP AF Ledurit 60 diameter 1.6 mm giving a weld metal with resistance to very high

Operation Modus "Hook"







abrasion. This part of the teeth catches the sugar cane and bagasse and largely determines the output of a sugar mill in terms of tonnage of sugar cane processed or juice and bagasse produced.

Step 4 involves the arcing with UTP AF Vanadium 500 diameter 2.8 mm. This special, large diameter cored wire operates in the spray arc mode at relatively low currents depositing a high amount of weld metal droplets of exact size. It is used with a relatively long stick-out length and produces a very powerful arc, which also enables the welding of the rolls in the presence of large quantities of juice and bagasse, while in operation during the harvesting season.

The use of UTP cored wires makes the whole repair procedure much more efficient. Deposition rates and duty cycles are much higher than in procedures with stick electrode welding. When compared to mechanized welding with solid wires, repair times can be also significantly shorter.

SUGAR CANE MILL REPAIR OF ROLLERS

Sugar mill application and function			Consumables & typical welding parameters		
Step 1	Lateral		UTP AF DUR 600-MP	Ø 1.2 mm	
	<ul style="list-style-type: none"> » Strengthen and protect the sides of the teeth » Providing a wider underground for step nr. 2 – the base weld 		Position Current (A) Voltage (V) Stickout length (mm) Travel speed (cm/min) Weaving width (mm) Number of torches	Vertical-down 150-170 25-28 18 36 12-20 1 or 2	
Step 2	Base		UTP AF DUR 600-MP	Ø 1.6 mm	
	<ul style="list-style-type: none"> » Sealing top of teeth » Preparing underground for hook weld 		Position Current (A) Voltage (V) Stickout length (mm) Travel speed (cm/min) Weaving width (mm) Number of torches	Downhand 160-220 25-28 20 64 0 1	
Step 3	Hook		UTP AF LEDURIT 60	Ø 1.6 mm	
	<ul style="list-style-type: none"> » Protection of top of teeth » Providing firm grip on bagasse » Higher crushing efficiency 		Position Current (A) Voltage (V) Stickout length (mm) Travel speed (cm/min) Weaving width (mm) Number of torches	Downhand 150-180 25-28 20 54 0 1	
Step 4	Arcing		UTP AF VANADIUM 500	Ø 2.8 mm	
	<ul style="list-style-type: none"> » Providing further improved grip on bagasse » Protection of teeth profile » Enabling repair while crushing 		Position Current (A) Voltage (V) Stickout length (mm) Travel speed (rounds/min) Weaving width (mm) Number of torches	Vertical down 250-350 28-36 40-60 4-6 0 1 or 2	

	Consumable product data						Consumable description
	Classification		DIN 8555: MF 6-GF-60				Metal-cored wire for the hardfacing of components subjected to a combination of compression, friction and impact. The weld metal is machinable by grinding. Alternative SMAW/MMA: UTP 670
	Polarity		DC+				
	Shielding gas		Ar/CO ₂ : M21, M22 / CO ₂ : C1				
	Weld hardness		55-60 HRC				
	Typical chemical composition all weld metal (%)						
	C	Si	Mn	Cr	Ni	Mo	
	0.6	0.6	0.8	7.0		1.0	
							Alternative SMAW/MMA: UTP 670
	Classification		DIN 8555: MF 6-GF-60/ MF 10-GF-60-GR				Metal-cored wire for the hardfacing of components subjected to high abrasion combined with moderate impact and compression. High chromium and carbon alloying gives a structure rich in chromium-carbides. Alternatives SMAW/MMA: UTP 7100, UTP Ledurit 68, UTP 713
	Polarity		DC+				
	Shielding gas		self-shielded				
	Weld hardness		57-62 HRC				
	Typical chemical composition all weld metal (%)						
	C	Si	Mn	Cr	Ni	Mo	
	4.4	0.3	0.3	27.0			
	Classification		–				Metal-cored wire specially developed for the arcing of sugar cane mill rolls. With a diameter of 2.8 mm, it operates in the spray arc mode at relatively low currents providing weld metal droplets of exact size. The powerful arc enables welding of the rolls submerged in sugar cane juice and in the presence bagasse, while in operation during the harvesting season. A high amount of chromium-vanadium carbides in the micro structure gives the arcing surface an excellent resistance against abrasion. An alternative cored wire for increased droplet size is UTP AF Vanadium SG. Alternative SMAW/MMA: UTP Vanadium 500, UTP Vanadium SG
	Polarity		DC+ or AC				
	Shielding gas		self-shielded				
	Weld hardness		60-66 HRC				
	Typical chemical composition all weld metal (%)						
	C	Si	Mn	Cr	V		
	2.0	1.8	1.2	7.0	0.5		



JOIN! voestalpine Böhler Welding

With over 100 years of experience, voestalpine Böhler Welding is the global top address for the daily challenges in the areas of joint welding, repair, hardfacing and cladding as well as brazing. Customer proximity is guaranteed by more than 43 subsidiaries in 25 countries, with the support of 2,300 employees, and through more than 2,000 distribution partners worldwide. With individual consultation by our application technicians and welding engineers, we make sure that our customers master the most demanding welding challenges. voestalpine Böhler Welding offers three specialized and dedicated brands to cater our customers' and partners' requirements.



Lasting Connections – As a pioneer in innovative welding consumables, Böhler Welding offers a unique product portfolio for joint welding worldwide. More than 2000 products are adapted continuously to the current industry specifications and customer requirements, certified by well-respected institutes and thus approved for the most demanding welding applications. As a reliable partner for customers, "lasting connections" are the brand's philosophy in terms of both welding and people.



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In-Depth Know-How – As a leading brand of soldering and brazing consumables, Fontargen Brazing offers proven solutions based on 50 years of industrial experience, tried and tested processes and methods. This In-Depth Know-How has made Fontargen Brazing an internationally preferred partner for every soldering and brazing task.

The Management System of voestalpine Böhler Welding Group GmbH, Peter-Mueller-Strasse 14-14a, 40469 Duesseldorf, Germany has been approved by Lloyd's Register Quality Assurance to: ISO 9001:2015, ISO 14001:2015, OHSAS 18001:2007, applicable to: Development, Manufacturing and Supply of Welding and Brazing Consumables. More information: www.voestalpine.com/welding



