



Stoody® 160FC Hardfacing Wire Doubles Service Life of Recycling Press Screw

- High tungsten carbide content increases fine particle abrasion resistance.
- Stoody, an ESAB brand, offers full line of nickel-based tungsten carbide consumables designed for extreme abrasion resistance.

Situation

Paper tears easily, but the severity of a paper cut reveals just how tough and abrasive this material is. Now imagine the wear on the steel and stainless steel screws that churn paper into pulp as part of the recycling process.

Paper recycling is becoming a big business as the Green movement grows, but margins are razor slim. As a result, paper recycling facilities are looking to extend the time between maintenance shutdowns for as long as possible. Such was the case with an Italian paper recycling press manufacturer that contacted ESAB in 2019.

Complication

Even good paper sorting facilities are less than perfect. Non-paper products, from paper clips to staples to flash drives and CDs, get mixed in with the paper, creating even more abrasive service conditions. Further, high compressive loads create additional mechanical stress.

Solution

Stoody 160FC, in this case, is a GMAW wire in 1.6 mm diameter that consists of 40% tungsten carbide particles in a nickel alloy matrix (NiSiB). Its microstructure delivers significant abrasion resistance, as well as superior toughness and corrosion resistance.



Results

Compared to the recycling press operator's previous hardfacing wire, which required the screw to be brought out of service for resurfacing after six months, Stoody 160FC extended screw service life beyond one year — a more than 100% improvement.

BENEFIT #1

Service Life Doubled

Where the customer's previous hardfacing wire relied on its chromium carbide (Cr 27% - C 5%) content, Stoody 160FC (1.6 mm) offers a content of 40% tungsten carbide. Due to its high tungsten carbide content and enhanced formulation, Stoody 160FC is an ideal hardfacing overlay with a microstructure that also delivers toughness and resistance to corrosion, as well as fine particle erosion in slurry type applications.

Available in formulations for GMAW (75% Ar / 25% CO₂) and the open arc welding process, Stoody 160FC can be applied at a much lower voltage and heat input. This results in reduced interpass temperatures and levels of distortion in the component, as well as improved finer carbides retention. It also provides improved weldability through enhanced wetting, tie-in and arc stability.



Before - Worn Screw



Hardfacing Build-up with Stoody 160FC

Stoody 160FC Typical Deposit Characteristics

Abrasion Resistance:	Excellent
Nickel Matrix Hardness:	HRC 38 – 45
Tungsten Carbide Hardness:	2200-2400 HV
Deposit Layers:	2 Maximum

BENEFIT #2

Family of NiWC Alloys

The Stoody 160FC comes in diameters of 1.6, 2.0, 2.4 and 2.8 mm. The latter is an open arc wire. The tungsten carbide content increases with the diameter up to 55%. Stoody 160FC was developed in conjunction with Stoody 155FC, a gas shielded (GMAW) build-up and buffer layer alloy that is ideal for thick build-up deposits up to four layers. This more ductile alloy is perfect for use as an underlay for a hardfacing overlay alloy for extreme wear resistance and has a maximum hardness of 35-45 HRC.

Stoody's premium nickel-based tungsten carbide consumables also include Stoody 160FS. This newer wire consumable for the GMAW process incorporates spherical tungsten carbides that deliver better performance in friction applications and improved wear performance compared to standard nickel-based tungsten carbide alloys. It has maximum hardness of 40-45 HRC.

BENEFIT #3

Superior Application Knowledge

Founded in 1921, Stoody invented the hardfacing process. Its premium nickel-based tungsten carbide consumables are developed for and utilised in some of the harshest industrial applications. Recognized for durability and performance in the face of extreme abrasion, impact and other wear conditions, Stoody MMA (Stick) electrodes, cored wires (FCAW) and powders are used to restore damaged components and to overlay parts to extend serviceable life.

Stoody understands that the hardness of the hardfacing bead is not the major factor providing wear resistance; the percentage of carbide and the type of carbide structure in the matrix determine how well a hardfacing overlay will resist wear. Tungsten carbide and nickel composite hardfacing alloys like Stoody 160FC have excellent abrasion resistance, good corrosion resistance and higher service temperatures.

Because the recycling press operator also has companies that serve other processing industries, ESAB is well-positioned to meet any new customer requirements.

ESAB also offers a full portfolio of filler metals and equipment for Repair & Maintenance applications. Contact your ESAB sales representative to learn more, or visit [esab.com/repairandmaintenance](https://www.esab.com/repairandmaintenance)



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