

The advantages of TIG-welded wedge wire

In fish screen construction it is tempting to sacrifice strength, flatness, adherence to tolerances, or affordability. At one extreme is resistance-welded wedge wire. It might be the cheapest option, but its weak spot welds lack strength, durability and flatness. At the other extreme is profile bar. It exchanges welding for a mechanical trapping pin that runs perpendicular to the wedge wire. This is the most expensive option for fish screen construction. And if the trapping pin breaks, the whole structure is compromised. Norris Screen TIG-welded strikes a perfect balance between these impractical extremes.

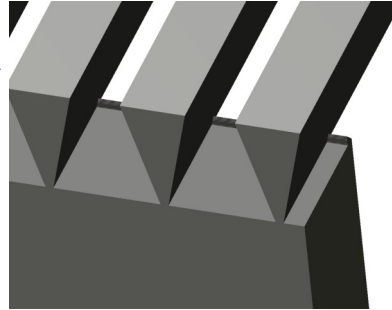
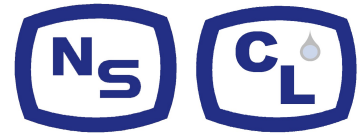


Figure 1: 3D Computer Model of TIG-Welded Wedge Wire



Figure 2: Norris Fish Screen

	Resistance	TIG	Profile Bar
Process	Fusion Welding	Proprietary TIG Welded Process to provide additional strength	Trapping bar inserted into profile wire structure
Flatness	Weld and production process leads to wavy screen	Manufactured for flatness	Manufactured for flatness
Vibratory Loads	Risk of failure	Holds up well	Holds up well
Impact	Weak	Often stronger than the wire itself	Strong — as long as the trapping bar doesn't break
Durability	Structure warps over time	Structure maintains integrity over time.	Structure maintains integrity over time



Strength

Norris TIG-welded wedge wire combines the best in strength, flatness, design, and affordability. The TIG-welded construction has been shown to be stronger under static and dynamic loads than resistance-welded wedge wire. While resistance-welded wedge wire is the typical wedge wire construction, its welds are weak and lead to waviness in the screen.

TIG welding's strength has earned it a reputation as the “Work Horse” of fusion welding.

Flatness

Flatness is extremely important in the construction of fish screens. Screens made with resistance-welded wedge wire are typically made in cylinders and flattened. TIG-welded wedge wire is suitably flat on its own. Profile bar, on the other hand, consists of wedge wire with an inserted mechanical trapping pin. The upside is that profile bar is flat and strong. The downside is that if the trapping pin fails, it weakens the whole structure. Profile bar is also considerably more expensive than TIG-welded wedge wire.

Tolerances

It is important that the screens maintain their shape both for contact with cleaning brushes and the overall structural integrity of the system. TIG-welded wedge wire holds up well under the extreme harmonic vibration conditions found in high water velocity conditions. As for impacts, in most situations the weld is stronger than the wire itself. Over time, resistance-welded screens tend to warp. And again, with profile bar, a broken trapping pin means a compromised screen.

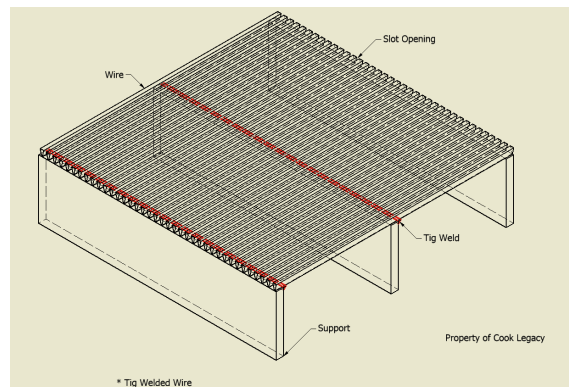


Figure 3: TIG-Welded Wedge Wire

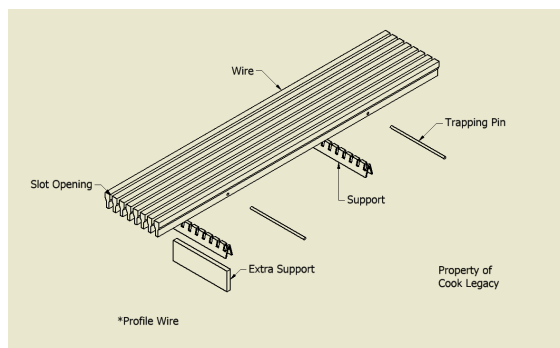


Figure 4: Profile Bar

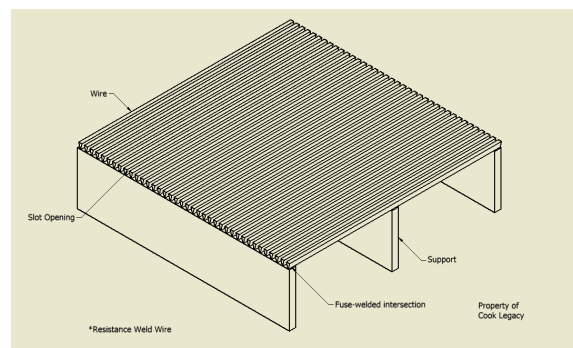
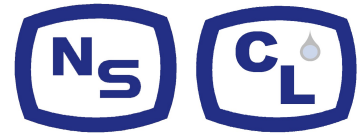


Figure 5: Resistance-Welded Wedge Wire



The TIG-Welding Process

The TIG-welding process is similar to other methods of arc welding. However, TIG-welding allows for a precise and concentrated weld area whereby the base metal is welded to the wires through a molten metal pool. In most situations, the weld is actually stronger than the stainless steel wire used for construction.

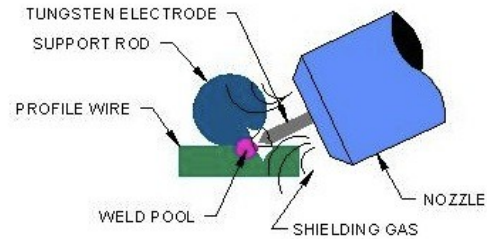


Figure 6: TIG-Welding Process

Evidence

Our experience and history proves that TIG-welded wedge wire screens are sufficiently strong for fish screen applications. Profile bar's marginal pick up in flatness and strength when compared to resistance welds might matter (as discussed earlier, resistance welds don't do well under vibratory or impact loads), but the TIG weld has sufficient strength and flatness for Fish Screen applications.

Experience

Norris wedge wire is TIG-welded by certified welders. Norris Screen is a wholly owned subsidiary of the Elgin Equipment Group, whose 33-year history as a manufacturer of quality goods and financial and institutional strength ensures a high-quality, timely job.

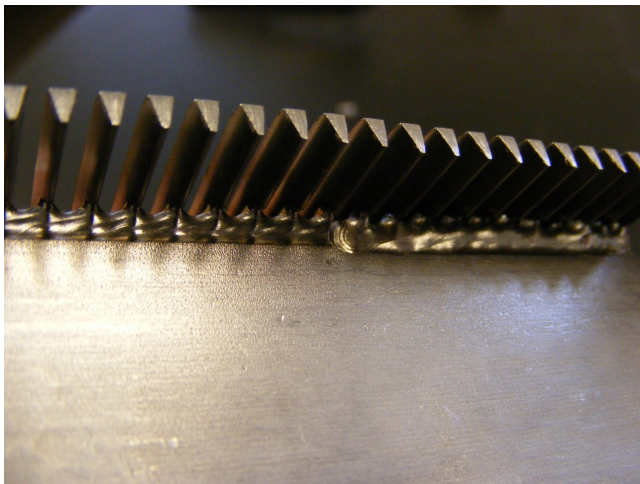


Figure 7: TIG-Welded Wedge Wire

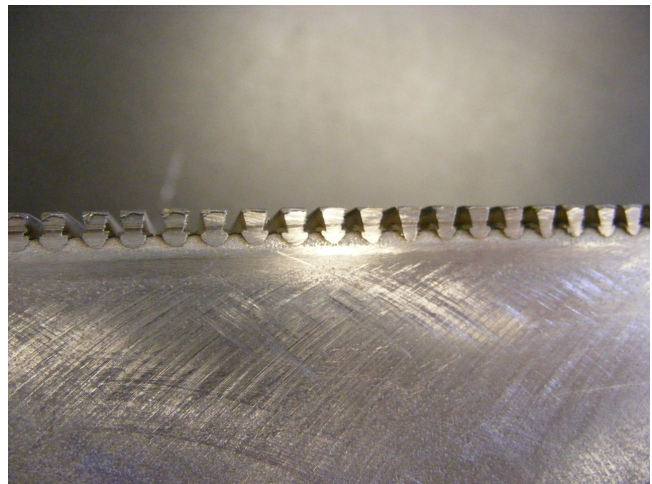


Figure 8: Resistance-Welded Wedge Wire