

METALLURGY PRODUCTS

## ArcSave®

A new generation of electromagnetic stirring for electric arc furnace operation



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- Productivity +5-7%
- Total energy consumption -3-5%
- Power-on time -5-7%
- Iron yield +0.3-1%
- Lower alloy, lime, electrode and refractory consumption

# ArcSave®

Put less in. And get more out of your process.

ArcSave® customizes stirring force to your specific process needs in order to optimize metallurgical performance for your EAF operation. The result is a full range of benefits that will help you to improve productivity and lower your costs without compromising on quality.



For more than 75 years ABB Metallurgy have been committed to the development of electromagnetic products that improve steel quality and productivity for your business. Our first delivery was to Uddeholms AB in Sweden back in 1947. And since then we have installed more than 160 units worldwide. To meet the demand for solutions that save even more time, money and materials we have introduced ArcSave®: an even stronger electromagnetic stirrer (EMS) for electric arc furnace operation (EAF).

**Technology tailored to your needs – guaranteed**  
ArcSave creates a stirring force in the molten steel, giving a homogenous temperature and chemical composition in the entire bath. We customize this stirring force to your specific business and process needs. You will get the most out of your EAF operation with a tailored solution that controls stirring intensity, duration and direction for process steps such as scrap heating, homogenization, melting of alloys, decarburization, de-slagging and tapping. Whether you work with stainless or carbon steel, you can benefit from significant savings with ArcSave. And with our performance warranty you can be sure that we make promises we can keep.

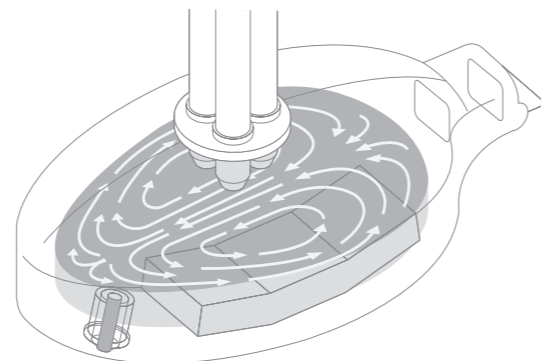
### Installation features

We have designed a stirrer that will work hard to generate savings for your business. With stirring that costs less than 2 kilowatt-hour/ton and saves you time, money and materials, you will want a product that you can use as much as possible. Our stirrer windings, carrying the electric current which generates a magnetic field for stirring force, are fully insulated and cooled from the inside. As a result you can expect perfect cooling, a long lifespan and very low maintenance. Moreover, we have kept the end user in mind with our fully automated and integrated control system.

### Installation system

ArcSave is placed under the furnace, normally on the rocker, and there is no physical contact with the furnace bottom. Since the bottom needs to be non-magnetic, a stainless steel window is usually fitted prior to installation. Additionally, a normal refractory lining can be used with ArcSave. The stirring profile, which controls stirring duration, direction and intensity, can be conveniently integrated into the furnace control system.

- Electromagnetic stirrer
- Frequency converter
- Transformer
- Water station
- Control panel



ArcSave® installed under an arc furnace, usually on a platform

### Process benefits

#### Higher steel yield

EMS plays a very important role in modern EAFs, as they generally operate far from ideal conditions. ArcSave pushes the carbon-oxygen reaction closer to its equilibrium. This, together with the reduction of scrap inside the dumped slag, increases the liquid steel yield, giving a significant scrap and conversion cost saving. Lower iron oxide and steel content in the slag will significantly increase scrap yield.

#### Increased productivity

The higher scrap melting rate and shorter tap-to-tap time, combined with the higher iron yield, will help to improve your productivity by 5-7 percent.

#### Safer tapping saving you time

Safety and reliability are always important for EAF operation. A more homogenous temperature in the entire melt, including eccentric bottom tap-hole (EBT), gives a higher free opening frequency. This reduces tapping delays and gives you a smoother, more reliable EAF operation.

### Energy efficiency

ArcSave reduces electrode current swings. This, combined with a reduced melt surface superheat, improved heat transfer from arc to melt, increased scrap-melting and decarburization rate will all contribute to lowering your total energy consumption by 3-5 percent.

#### Delayed vortex formation and less carryover slag

The flow pattern induced by ArcSave in the melt bath delays EBT vortex formation. As a result you'll benefit from a substantial reduction in carryover slag in the tap ladle.

#### Lower oxygen in the tap steel gives lower ferroalloy consumption

Tap oxygen in the steel is reduced by more than 110 ppm (parts per million). Lower oxygen levels in the steel, lower carryover slag in the tap ladle, and lower iron oxide in the carryover slag, contribute to a significant reduction in the amount of ferroalloys needed for your steel de-oxidation and ladle refining process.



#### Your challenge

Achieve a safer and more reliable process, increase productivity and lower costs.



#### Our solution

Technology tailor-made to your process needs so that you get the most out of your EAF operation and save time, money and materials.



#### Features

- Performance warranty that guarantees results
- Very low stirring cost
- Very low maintenance required
- Fully integrated & automated control system



#### Your benefits

- Productivity +5-7%
- Total energy consumption -3-5%
- Power-on time -5-7%
- Iron yield +0.3-1%
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ArcSave® is an ABB registered trademark