

Electromagnetic stirrers ensure high quality steel at Uddeholms AB, Sweden



70 ton electric arc furnace, Uddeholms AB

“The best quality of steel can only be achieved with an electromagnetic stirrer in our electric arc furnace”, says Karin Steneholm, process metallurgist at Uddeholms AB, Hagfors, Sweden.

Summary

ABB, at that time ASEA, supplied the first electromagnetic stirrer to Uddeholms AB's previous electric arc furnace (EAF) as early as 1947. Since then ABB's EAF-EMS, electromagnetic stirrer for EAF, has been running continuously until today, contributing to the company's position as the world's leading supplier of tool steels. The current EAF-EMS was first installed at Uddeholms AB, Hagfors in 1961. It ran together with the arc furnace for as long as 50 years until 2011, when it was time for a major revamp at ABB workshop. “The most recent revamp in 2011 will hopefully add another 50 years to the life of the EAF-EMS at Uddeholm”, says Eero Rahkola, production manager of the steel melting shop at Uddeholms AB in Hagfors, Sweden.

Customer

Uddeholms AB is part of the Special Steel Division of the voestalpine Edelmetall GmbH. Located in Hagfors, Sweden, some 350 km northwest of Stockholm, the company was founded in 1668. The production facilities of Uddeholms AB are tailored for the production of high quality tool steel bars. Uddeholms AB is the world's leading supplier of tool materials.

Sweden is the base for all Uddeholm's production, research and development operations. The company produces and delivers Swedish high quality tool steels to more than 100,000 customers in almost 100 countries worldwide. Today Uddeholms AB has 3,000 employees all over the world, 900 of them in the steel mill in Hagfors, Sweden.



1 EAF-EMS for revamp at ABB workshop | 2 Karin Steneholm, process metallurgist, Uddeholms AB

EAF-EMS – Energy efficiency and productivity

Uddeholm is a pioneer in applying ABB's EAF-EMS. Electromagnetic stirring technology is important not only to the acceleration of the metal-slag reactions but also to obtaining a homogeneous bath. Since the first installation, EAF-EMS has always played an important role in keeping Uddeholm a global leader in high quality tool steels. With the bottom mounted EAF-EMS below the 70 ton arc furnace, Uddeholm has made a lot of savings while greatly improving the steel quality.

The main benefits of EAF-EMS with bottom stirring include:

- Fast scrap and ferroalloy melting
- Homogenization of the steel bath
- Lower power consumption
- Lower electrode consumption
- Lower alloy and oxygen consumption
- Fast decarburization
- Increased productivity
- Increased yield
- Improved safety and process stability
- No physical contact with furnaces

Long-term cooperation

Since the first installation of EAF-EMS in 1947, ABB and Uddeholms AB have established a long-term cooperation relationship. The two companies have worked hand in hand in improving the melting process in order to establish Uddeholms AB as a global leader in tool steels. Understanding the benefits of ABB's EMS technology, Uddeholms AB also purchased new electromagnetic stirrers for their ladle furnaces, LF-EMS. The LF-EMS currently used at Hagfors Steel Mill was installed in the 1960s. It has been running well, helping Uddeholms AB produce excellent steels.

EMS technology

In metallurgical processing, the technology employed for stirring and mixing the melt is one of the prerequisites for high quality and productivity. ABB's electromagnetic stirrers and brakes are designed with this in mind. The resulting benefits in terms of constant and profitable production have been demonstrated over and over again. The payback period for the investments is less than one year for many of our customers.

ABB's electromagnetic products boost productivity and quality while lowering energy consumption in continuous casting, smelting and refining of steel and aluminum in particular. With more than 1,700 stirrers and brakes installed worldwide, ABB is continually improving and widening its perspective of the stirring of molten metals.

For more information please contact:

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