

# AL-EMS for small furnaces and ladle stirring

## Technical data for air cooled AL-EMS

### ABB's AL-EMS

For more than 50 years, ABB has been supplying electro-magnetic stirrers, EMS, for aluminum furnaces, arc furnaces, ladle furnaces and continuous casters to customers throughout the world. For aluminum processing, such as the remelting of scrap, alloying, mixing and holding, ABB has developed a complete program of aluminum stirrers, covering a wide range of furnace/ladle sizes up to 200 tons.

### Air cooled stirrer applications

ABB's air cooled electromagnetic stirrers are 3-phase coils specially developed for serving the segment of small furnaces, ladles or other vessels ranging up to approximately 20 metric tons, depending on refractory thickness.

### ABB's scope

- EMS unit, standard model ORZ110, 120, 150
- Cooling fan
- ABB's ACS800 wall-mounted drive unit
- Transformer (For ORZ120 and ORZ150)
- CFD-calculations based on customer furnace design



Technical data	ORZ110	ORZ120	ORZ150
Rated current (A)	85	85	85
Rated voltage (V)	400	600	600
Active power (kW)	3	15	25
Operating frequency (Hz)	1.5	1.5	1.0
Weight (kg)	850	1,500	2,500
Distance – furnace/ladle (mm)	10	10	10
Non-magnetic window minimum (mm)	1,700 x 1,250	1,700 x 1,250	2,500 x 1,300
Air flow (m <sup>3</sup> /hr)	1,200	4,000	6,500
Blower power (kW)	0.5	1.5	2.5

### Electromagnetic stirring by ABB

In metallurgical processing, effective and reliable stirring of the melt is one of the prerequisites for higher productivity and improved process performance. In over 1,500 installations, the steel and aluminum industry has chosen non-contact electromagnetic stirring technology, invented and continuously developed by ABB, to deliver necessary long-term and viable results.

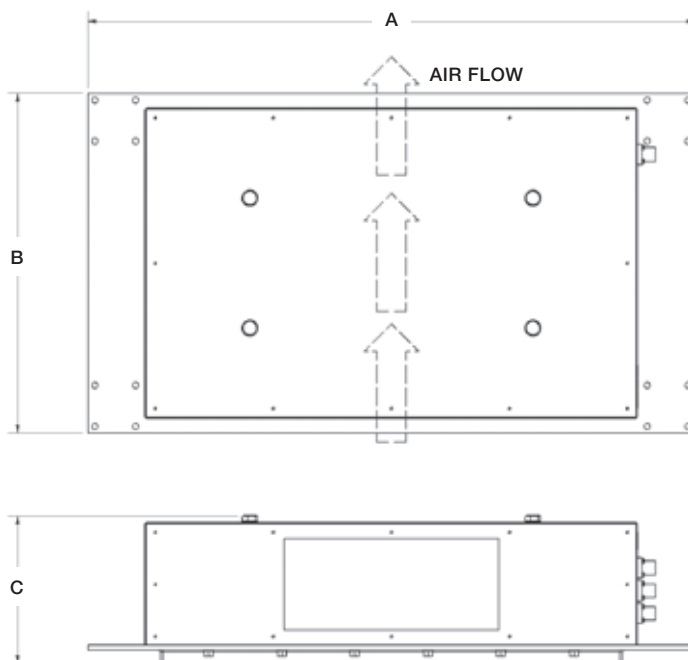
With electromagnetic stirring, EMS, effective stirring can be achieved through the interaction between the magnetic field from the static induction coil placed on the outside of the vessel and the electrically conductive metal bath. EMS effectively reduces temperature differences and eliminates hot-spots of the melt. This and the minimized oxidation of the melt surface greatly improve the heat transfer to the melt for increased productivity. Stirring by EMS also allows for a uniform chemical analysis.

### Leading solutions for challenging objectives

Based on vast process experience and accurate simulation tools, ABB can define the results of implementing EMS. The following results are based on more than 120 installations of EMS at aluminum melting and alloying furnaces:

- up to 25% increased productivity with effective stirring of the entire melt;
- up to 15% fuel savings and simultaneous reduction of fuel-related emissions;
- up to 25% reduction of dross;
- up to 50% cost savings for fork lifts, rakes and manual labor;
- very high availability since the EMS unit has no moving parts and is never in contact with the furnace or the melt;
- CFD-calculations for optimizing stirrer performance and minimizing operational costs;

- safe and easy operation of stirring, typically 1-2 melt rotations /minute, fully variable and reversible;
- no change of design or function of existing or new furnace and no need for any heel;
- rapid implementation with one day start-up and pay back within 12 months;
- turnkey and performance guarantee commitments with financial solutions and a worldwide service organization.



Dimensions (mm)	ORZ110	ORZ120	ORZ150
A	1,695	1,695	2,494
B	948	948	1,094
C	197	412	365

For more information please contact:

#### ABB AB

Metallurgy Products  
 Terminalvägen 24  
 SE-721 59 Västerås, Sweden  
 Phone: +46 21 32 50 00  
 Fax: +46 21 14 83 27  
 E-mail: info.metallurgy@se.abb.com

#### ABB Inc.

JME Division  
 90 Consumers Dr.  
 Whitby, Ontario L1N 7L5, Canada  
 Phone: +1 905 666 22 51  
 Fax: +1 905 666 22 66  
 E-mail: info.metallurgy@se.abb.com

[www.abb.com/metals](http://www.abb.com/metals)