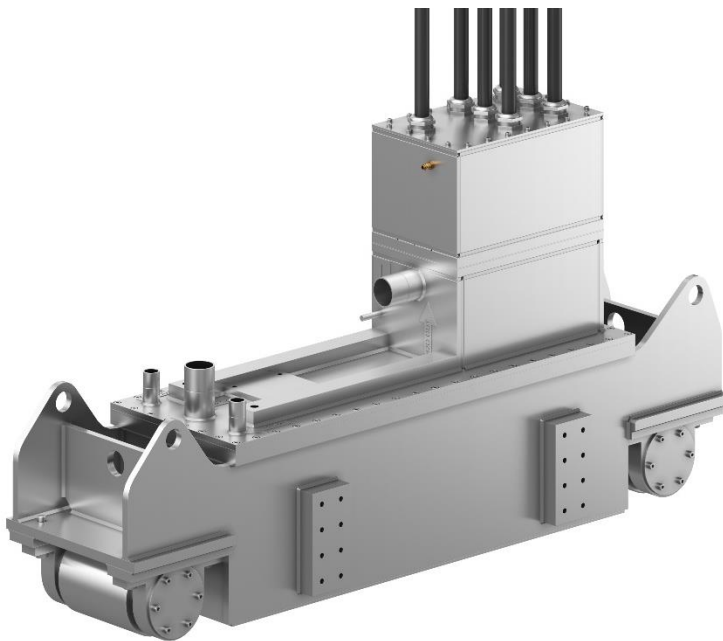

FL-EMS – FINAL LINEAR ELECTROMAGNETIC STIRRER

The increasing high quality steel demand is pushing steel plants to enhance the quality of the “as cast” product, and the central soundness is a key point for several steel grade families.

Final liner stirrers had been developed to ensure a low segregation index, to reduce porosity issues and to avoid mini-ingotism phenomena.



FINAL LINEAR STIRRING BENEFITS

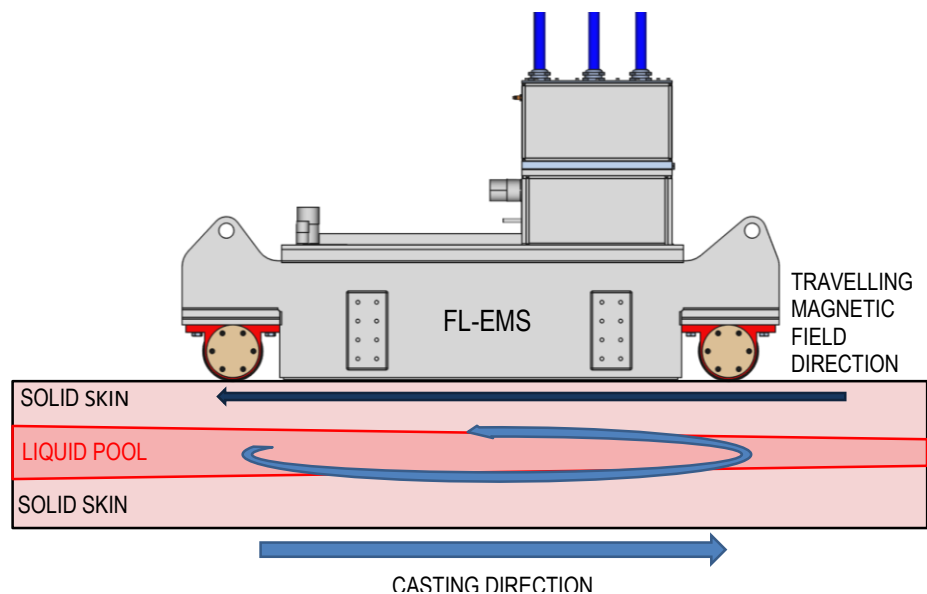
Final linear stirrers are particularly intended for steel grades which present strong porosity problems, such as high carbon steel grades and martensitic stainless steels. Main benefits given by the stirrer installation:

- central segregation reduction;
- central porosity reduction;
- mini-ingotism phenomena suppression;

WORKING PRINCIPLE

Linear electromagnetic stirrers generate a travelling magnetic fields that induces a longitudinal upstream flow in the billet/bloom liquid core. This flow has two main effects: it avoids the formation of solidification bridges and mix the segregated liquid.

The stirrers are able to operate on very small liquid pools, below 40 mm.

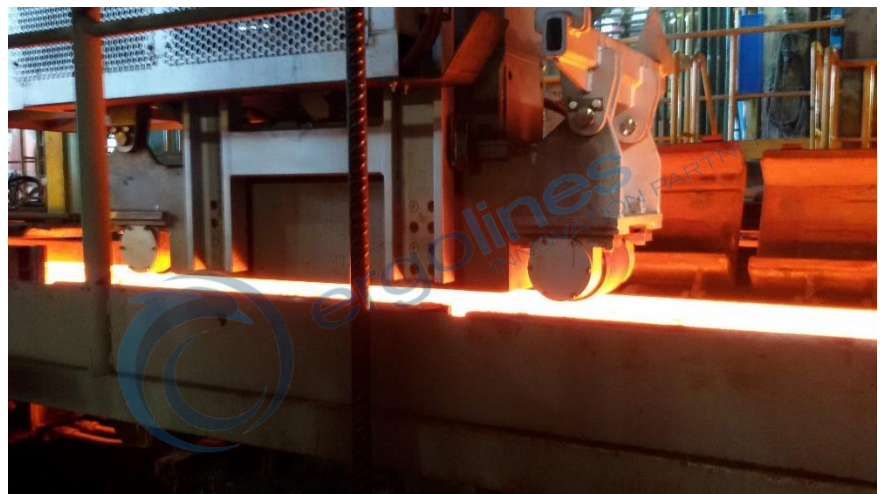


STIRRER DESIGN AND INSTALLATION

Final linear stirrers are designed and optimized for each plant by means of electromagnetic and fluid-dynamic simulations. Thanks to these sophisticated and up to date techniques a new generation of high magnetic pressure linear stirrers has been developed.

FL-EMS are installed at final solidification stage, close to the straightening unit. Depending on the caster radius, stirrers can be installed along the strand or after the withdraw unit.

Moreover, the stirrer can be associated to a moving system and an on-line solidification algorithm to ensure the best performance.

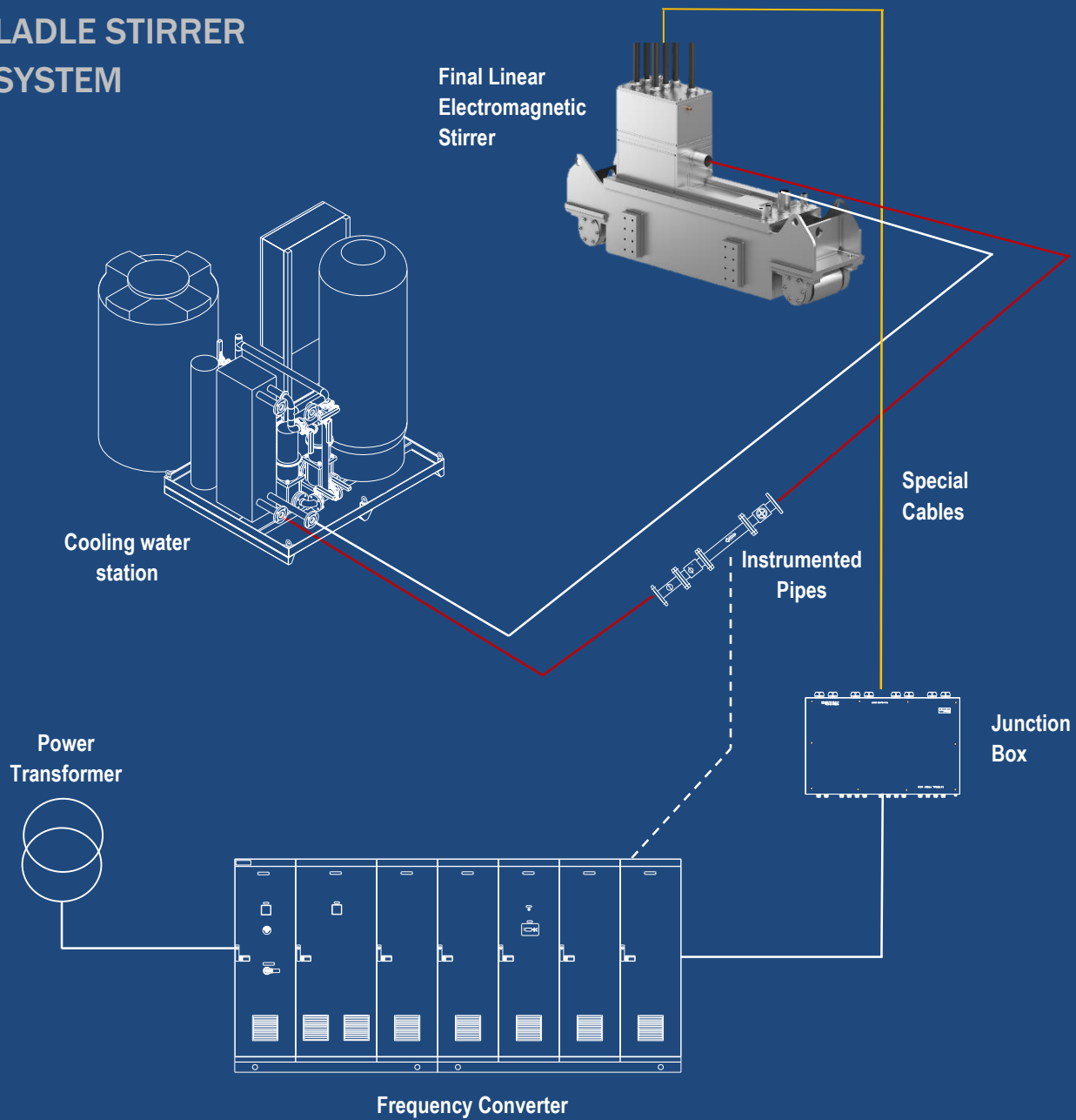


FINAL LINEAR STIRRER FEATURES

STIRRER MAIN FEATURES

- Alternating stirring function available;
 - Cooled body against heat radiation from billet
 - Anti-collision rolls;
 - Removable stirrer cover to facilitate the maintenance operations;
 - Patented power supply system to ensure the maximum performance;
-

TYPICAL ERGOLINES LADLE STIRRER SYSTEM



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