A world leader in electromagnetic stirring solutions for the metals industry, ABB has now developed the new Hybrid MEMS stirring system. The Hybrid MEMS offers high stirring performance and low energy consumption. The Hybrid MEMS can give the lowest investment costs, lowest operating costs and lowest installation costs of any current MEMS arrangement.

Hybrid MEMS arrangement
A novel Hybrid MEMS arrangement developed by ABB provides advantages over conventional internal and external MEMS arrangements.

The Hybrid MEMS arrangement (Fig. 1) is comprised of mold housing with MEMS installed within and modular mold assembly. The Modular mold assembly (Fig. 2) consists of the mold, the baffle tube, the top and bottom retaining plates and the connecting rods securing these plates in place. The modular mold assembly is used for fast and convenient replacement of the mold assembly in accordance with the requirements of strand section size change or mold taper variations.

Conventional MEMS arrangements
Features of internal MEMS arrangement (Fig. 3):
- The most energy efficient and metallurgically effective arrangement as the stirrer is positioned within the mold housing in the closest proximity to the melt.
- Up to 50% of energy savings compared with those of external MEMS arrangements.
- Each mold assembly requires its own dedicated MEMS unit.

Features of external MEMS arrangement (Fig. 4):
- Installed on the caster within its own enclosure, which is designed to accommodate all mold sections used on the caster and provides mold changeover using cartridge mold housing assembly.
- Overall re-stranding time is virtually the same as that of Internal and Hybrid arrangements, as in addition to the mold changeover, secondary cooling sprays should also be adjusted.
- Stirrer large inner diameter is needed to accommodate foot rollers.
- Increased power input, often unachievable, in comparison with internal and Hybrid MEMS arrangements resulting in:
  - increased operating costs
  - lower energy efficiency
  - lower stirrer metallurgical effectiveness
  - higher rating of auxiliary equipment such as frequency converters, transformers, cooling water stations, etc.

Advantages of Hybrid MEMS
The Hybrid MEMS provides the following advantages over conventional MEMS arrangements:
- The same high energy efficiency and metallurgical performance as that of internal MEMS arrangement.
- Reduction in the amount of time and labor required for mold tube changeover in comparison with external MEMS arrangements.
- Minimal quantity of mold housings and EMS in comparison with either internal or external MEMS arrangements.
- Option of having pre-assembled mold modules with dedicated taper without increasing the quantity of mold housings and stirrers.