Tundish EMS electromagnetic stirrer
For billet and bloom casting, and metal powder production
Cleaner and better quality steel
Increased productivity and profitability

The result is cleaner, better quality steel, increased productivity and profitability in billet and bloom casting, and metal powder production processes.

Overview
To meet business requirements in billet and bloom casting, and metal powder production, it is important to maximize steel quality. By improving control of steel flow in tundish, increasing temperature homogeneity and stability across outlets, and by stimulating greater inclusion flotation and removal it is possible to produce cleaner, higher quality steel.

Customer need
Tundish design poses certain challenges to controlling flow throughout the entire tundish melt volume and homogenizing and stabilizing temperature across multiple strands. Existing systems such as refractory furniture only go so far to overcome this and are limited in their ability to remove smaller inclusions or inclusion clusters. As a result, new solutions are needed to unlock higher levels of performance.

ABB solution
Tundish EMS allows steelmakers to overcome the limitations of tundish furniture by providing even better control of liquid steel flow throughout the entire tundish melt bath, enhancing temperature and chemical homogeneity and stability across outlets. It also enables the removal of much smaller inclusions as well as inclusion clusters, reduces nozzle clogging and increase the number of casting heats that can be carried out in sequence. The result is cleaner and better-quality steel, as well as more repeatable, uniform and efficient casting conditions.

How it works
Tundish EMS is placed on the outside of the tundish. It uses non-contact electromagnetic stirring technology to generate an electromagnetic field that creates a global stirring force that increases inclusion collision, aggregation and removal and eliminate dead zones to deliver rapid homogenization of temperature and chemical composition throughout the entire tundish melt bath. In addition, a low melt surface speed is maintained to promote a calm slag layer and avoid slag entrainment.

Enables steelmakers to go beyond the limited capabilities of tundish furniture systems and do more to control steel flow, homogenize and stabilize temperature, and remove inclusions in tundish.
**Features**

- Provides accurate, homogenous and stable control of steel temperature in tundish.
- Delivers global stirring throughout the entire tundish melt volume.
- Stirring direction and intensity are adjustable.
- Non-contact electromagnetic stirring technology with long lifespan and almost no maintenance.
- Installation configurations are available for various tundish types and capacities.

“The ABB Tundish EMS electromagnetic stirrer has already been successfully implemented on a billet caster at Zenith Steel, China.”

**Benefits**

- Increased non-metallic inclusion removal and overall steel cleanliness.
- Improved productivity by increasing number of sequence casting heats due to reduced nozzle clogging.
- Enhanced quality with better temperature homogenization and stability throughout the entire tundish melt bath and across multiple strands.
- Reduced cost by lowering consumption of refractory materials and other tundish furniture such as dam/weir/baffle materials.
- Increased energy-efficiency by reducing superheat at tundish, avoiding casting delays and premature solidification.
- Better overall process repeatability and reliability.

**Tundish EMS installation system**