

EcoStar – A new cost-saving, long-life roller for ideal strand support

# Slabs Never Had It So Good!

The EcoStar roller is a recent development by Siemens VAI in continuous casting for ideal strand support and reduced roller investment and life-cycle costs. Design solutions are also offered for dry roller cooling, ideal for the casting of crack-sensitive steel grades or ultra-thick slabs.



Designed to perfection

**E**ach roller unit typically consist of three or more roller bodies and the associated bearings blocks mounted on rigid prefabricated roller stubs. The design of the intermediate support structures represents an optimum of load-carrying capacity and roller-body spacing. Particularly high-strength and ductile rollers are produced in a special manufacturing process. The roller bodies are overlay welded, which increases their wear resistance. Thermal protection is provided by means of internal cooling through the center bore and bearing housings. The bearing internals are sealed against water and dirt. The driven and non-driven rollers are, in principle, of identical design. They differ from each other only by the shaft with coupling flange.

### Modular and flexible

The patented EcoStar rollers are highly modular, which reduces costs. This also allows individual adaptations for nearly any application in the strand-guide system, also for competitor-supplied machines. By applying a shrink-fit technique, the roller bodies and the axle stubs are seamlessly joined together, which prevents backlash. Depending on requirements, steel producers can choose from a wide selection of bearings, including spherical, toroidal, self-aligning cylindrical (three-ring type) and Eich spring roller bearings.

### When external roller cooling is not necessary

Peripheral cooling of the roller bodies is also offered to enable “dry casting” in all sections of the caster where secondary cooling of the slab is no longer required. The internal water circuit requires no elastomeric seals and welds for sealing. This contributes further to a reliable and most sturdy design. Dry roller-cooling solutions are particularly ideal when casting crack-sensitive steel grades or ultra-thick slabs requiring super-soft cooling conditions.

### Easy maintenance

Following the completion of the first roller campaign, the surface of the EcoStar roller can be skimmed without dismantling the unit. After a functionality check, it is then reinstalled in the caster. After the second roller campaign, the roller is then refurbished. Components that are in good condition are reused and worn parts are replaced by OEM (original equipment manufacturer) components. Following reassembly, the virtually new roller can be used for the next campaigns. Considerable maintenance-cost savings result from the high reusability of all components.

### Benefits

- Robust and highly reliable rollers as proven under the harshest of casting conditions



Assembly of an EcoStar roller

- Low roller deformation – and therefore minimum strand bulging – thanks to the intermediately supported roller design
- Internal cooling for longer bearing lifetime and increased safety in case of external cooling failure
- Dry-casting design solutions also available
- Reduced life-cycle costs due to “skimable” roller surface and high reusability of all components
- Short delivery times with prefabricated, standardized components

### EcoStar installations

To date, EcoStar rollers have been installed at Acciaieria Arvedi (Cremona, Italy), voestalpine Stahl (Linz, Austria), Essar Steel Algoma (Sault Ste. Marie, Canada), Rautaruukki Oyj (Raahe, Finland), NLMK (Lipetz, Russia), North American Stainless (East Ghent, Kentucky, U.S.) and ThyssenKrupp Steel AG (Duisburg-Beeckerwerth, Germany).

With the proven EcoStar roller design, the strand is ideally supported along its width, preventing or minimizing strand bulging for the production of highest-quality slabs. ■

#### Authors

Johann Pöpl, Heinrich Thöne, Franz Wimmer

#### Contact

casting.metals@siemens.com