

to be continued



ROLLON'S INDUCTION HARDENING:

Rather than creating a case-hardened surface, induction hardening creates a zone around the raceway with effective depths of 1.2 mm, successfully encompassing the maximum point of stress located beneath the rail's surface. As a result of this process, an induction hardened rail can operate under heavy loads with no damage to the raceways over the course of its lifetime. In properly sized linear bearings, typical life ratings range from thousands to hundreds of thousands of kilometers of travel.

In this form of heat treatment, the metal first undergoes induction heating, a non-contact process that uses an electric current to create heat in the surface layer of a conductive material. The surface layer is then quenched, causing it to undergo a martensitic transformation and become harder than the base metal. Compared to other conventional heat treatments, induction hardening offers several advantages, including fast heating rates, low energy consumption and cost savings. It also refines the structure and mechanical properties of the treated parts. Because the subsurface stresses on a loaded raceway can hit 500,000 psi, both rail hardness and hardness depth are critical values to measure during the induction hardening process. Measured on a "C" scale, Rollon's bearings hardness varies from 58 to 62 HRC. A rail's hardness depth will vary, as will the rail's overall size, based on the requirements of your application. Small models, such as Rollon's size 18 Compact Rail, integrate a hardness depth of 2 mm. By contrast, large rails, such as Rollon's size 63 Compact Rail, feature a hardness depth of 1.2 mm.

BOX: Lubricating the hardened rail

A lack of effective lubrication on the surface of your

linear bearing can reduce its lifespan by a factor of 10. Although lubrication is something you can't avoid, you can choose bearings that have minimal lubrication needs by design, such as those with well-sealed rolling elements. Rollon's Compact Rails, for example, integrate sealed rolling elements that require only a small amount of external lubrication every 2 millions cycles, depending on the application. The need to add lubrication in Compact Rail linear guides is therefore very limited.

FOCUS: Railway applications

Telescopic guides and linear rails are used in many parts of trains. When a train is running, the balls and bearings in the doors and battery boxes, for example, are subject to hours of constant vibration while remaining in the static position. For these reasons, a bearing with insufficient hardness levels can easily become damaged or crack. In an industry where passenger safety is paramount, only induction hardened rails can stand up to the ongoing vibration trains experience. By avoiding the need to shut down an entire train for repairs, these sturdy components also help railcar manufacturers avoid troublesome and costly downtime.

For more information
Rollon India Pvt. Ltd.
1st floor, Regus Com Business Centre
26/1 Hosur road, Bommarahalli
Bangalore 560068, INDIA
Tel: +91 80 67027066
Fax: +91 80 67027004
E-mail: info@rollonindia.in
Web: www.rollonindia.in

