



Press Information

Growing trend to energy efficient compressors is reflected in demand for Sandvik advanced strip steel

The drive to reduce energy usage has resulted in many refrigerator and air conditioning manufacturers, including LG, sourcing alternative high efficiency, low energy materials.

“At Sandvik we are already seeing that over 30% of compressor manufacturers are choosing to use Sandvik Hiflex[®] in their advanced, energy efficient compressor models,” explained Stefan Jonsson, Senior Application Specialist (compressor steel segment) at Sandvik.

This is being reflected in a growing demand for advanced strip steel for the manufacture of compressor valves. The material is allowing the development and production of next generation, energy efficient compressors. It is also facilitating increased operational frequency resulting in smaller, more reliable compressors for refrigeration applications and air conditioning.

“When steel with these improved properties is chosen for all new platforms by several compressor manufacturers then that says a lot about our material being in line with the trends we are currently seeing. Even if this is just the tip of the market it will make a significant difference in reducing energy usage, especially as the trend is continuing to gain momentum,” added Stefan Jonsson.

Nowhere is this more apparent than in the highly advanced linear inverter compressors developed by LG and used across its range of high efficiency, low energy refrigerators and freezers. It was the material’s ability to meet LG’s requirement of increased strength with improved damping and extended reliability that made the material an obvious choice. Now, LG specifies the Sandvik material across its entire range of products.

A core component in compressors for refrigerators and air conditioning, compressor valves determine the refrigerant flow. Their efficient operation dictates the operational efficiency, reliability and overall energy consumption of a compressor, be it installed in a fridge, freezer or air conditioning unit.

Many countries worldwide have introduced legislation aimed at reducing energy consumption. In China this impacted on a major refrigerator compressor manufacturer who had to redesign its compressors in order to comply with energy targets. Strategic to this was sourcing the right compressor valve material. In doing so the manufacturer's research and development team looked for a material with high fatigue strength combined with high performance. Following trials with Sandvik Hiflex[®] the company now specifies it exclusively for the manufacture of its new range of compressors introduced in 2011 and extensively used in energy-smart refrigerators. Collectively, it is estimated that they are helping to reduce the country's electric bill by around 25 TWh per year.

This marked the start of the trend as many manufacturers looked to develop their own low energy, high efficiency compressors in order to satisfy the increasing environmental demands of the market.

Ongoing research and development is central to Sandvik's industry-leading materials. The introduction of Sandvik Hiflex[®] is the culmination of an extensive program of optimized material processing and metallurgy to obtain increased tensile strength and toughness, higher impact and bending fatigue strength and improved damping characteristics.

"True to say there is no comparable material available for compressor valves. Sandvik Hiflex[®] allows smaller, thinner yet tougher valves to be produced capable of operating at much higher frequencies and temperatures," explains Stefan Jonsson.

"It is quite interesting as the valve is such a relatively small part of the compressor, both in size and value, when compared to the total cost of the compressor. However, the value it gives to the compressor in operational and reliability terms is considerable.

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