Machine tools

Machining centre manufacturer

SK and HSK tool design spindle units

Super-precision bearings made from NitroMax steel



Hermle machining centre C series

NitroMax steel extends bearing service life in high-speed applications

The challenge

Hermle AG, a major manufacturer of machining centres in Germany, was looking for a better solution for machining centre spindle applications that would extend bearing service life as well as achieve higher performance, higher precision, higher speeds and lower operating temperatures. And in this way, provide added value to their customers.

The solution

SKF provided the solution: ready-to-mount, relubrication-free SKF-SNFA sealed super-precision hybrid bearings made from NitroMax steel. The combined properties of NitroMax steel rings and ceramic (bearing grade silicon nitride) rolling elements enable these bearings to reduce friction and run faster, cooler, longer.

Furthermore, the non-contact seals virtually eliminate the problem of premature bearing failures resulting from the ingress of contaminants into the bearing.

Reduce cost of ownership

Since the introduction of SKF-SNFA super-precision bearings made from NitroMax steel, Hermle AG is satisfied with the extended bearing service life and thermal stability of the bearings in their customers' high-speed applications.

The enhanced performance of the bearings means that bearing maintenance cycles are extended and machine uptime is increased. The end result: bearings made from NitroMax steel significantly reduce the cost of ownership.

NitroMax – the super-tough high-nitrogen steel

NitroMax is a new generation stainless steel with superior corrosion resistance, enhanced fatigue strength and a high degree of impact toughness. Bearings made from this ultra-clean steel, with a high nitrogen content, can last at least three times longer than bearings made from conventional bearing steel, depending on the lubrication conditions.

With a high degree of hardness and toughness, a high modulus of elasticity, and very good wear resistance, among other favourable properties, the benefits are numerous.

SKF-SNFA super-precision bearings made from NitroMax steel are particularly suitable for very demanding applications such as high-speed machining centres and milling machines, where the requirements in terms of speed, rigidity and bearing service life are very high.

Hermle machining centre C series with bearings made from NitroMax steel

Operating data

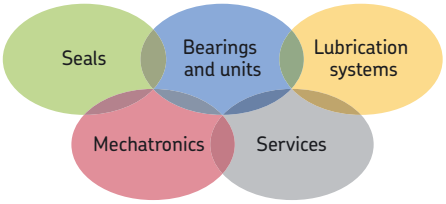
Bearings	SV7014 ..B SV71914 ..B
Cutting speed [r/min]	10 000 to 18 000
Power [kW]	15 to 32
Operating temperature [°C]	42 to 46

Customer advantages

- Longer bearing service life
- Increased machine uptime
- Lower operating temperatures
- Higher operational speeds
- Improved quality of workpieces

SKF-SNFA super-precision bearings made from NitroMax steel in the SV70 .. B and SV719 .. B series





The Power of Knowledge Engineering

Drawing on five areas of competence and application-specific expertise amassed over more than 100 years, SKF brings innovative solutions to OEMs and production facilities in every major industry worldwide. These five competence areas include bearings and units, seals, lubrication systems, mechatronics (combining mechanics and electronics into intelligent systems), and a wide range of services, from 3-D computer modelling to advanced condition monitoring and reliability and asset management systems. A global presence provides SKF customers uniform quality standards and worldwide product availability.

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™ NitroMax is a trademark of the SKF Group.

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