

A bearing on energy efficiency?

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ENERGY EFFICIENCY IS NO LONGER A 'NICE-TO-HAVE' BUT A 'MUST HAVE'. AND IT'S NOT ABOUT BEING 'GREEN' AND FLUFFY. IT'S ABOUT CUTTING ENERGY COSTS AND AVOIDING FINES FOR EXCESSIVE EMISSIONS. SO IF THERE ARE ANY AREAS WHERE THERE ARE ENERGY EFFICIENCIES TO BE MADE, YOU CAN'T AFFORD TO IGNORE THEM. AND THOUGH YOU MIGHT NOT HAVE CONSIDERED THEM BEFORE NOW, THE BEARINGS YOU USE CAN HAVE A REAL BEARING ON YOUR ENERGY USE.



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With bearings to be found in literally thousands of applications throughout industry – and dozens in most plants – finding a way to help make them even marginally more energy-efficient can have a major impact. So it is hardly surprising that manufacturers like SKF are looking to find ways to make their bearings more efficient – and the new SKF energy efficient deep groove ball bearings available from ERIKS are an example of the kinds of advances that are possible, and the kind of savings that can be made.

With bearings, the most effective way to reduce energy consumption is by reducing friction. That's why SKF made low-friction performance their goal when they began to develop their latest range of bearings. This means not only looking at the construction of the bearings themselves, but also at the grease used for lubrication.

Fortunately, SKF not only have over 100 years of engineering knowledge, but also unparalleled expertise in the field of tribology (the interaction of surfaces in relative motion) and related sciences.

All this expertise and knowledge has gone into the development of the new SKF Energy Efficient (E2) bearings range – and the results are immediately evident in the kind of performance figures being reported.

For example, the new E2 bearings provide a minimum 30% reduction – and an average 50% reduction – in the bearing's frictional moment compared with an SKF basic design bearing.

At the same time, the new E2 bearings have been shown to run significantly cooler than basic design bearings, at temperatures anything from 5-30°C lower, depending

on operating speed and conditions. Cooler running has a significant effect on the service life of the grease, as well as the potential to prolong the service life of the bearing itself. A reduction of 15°C in the operating temperature has been shown – as a general rule – to increase the service life of the grease by 100%. And when the grease is a new and unique low-friction grease specifically designed for the new E2 bearings, these results are compounded, leading to all-round more efficient, lower-cost performance.

However, it is not simply the lubrication which helps to make SKF E2 bearings so energy-efficient. It is also their optimised internal geometry, and the designed balance between this geometry, the grease and the cage. The cage design – one of the key features of the new bearings – is a fundamental redesign on

existing configurations, which has created a lighter polyamide cage less susceptible to deformation during operation. The new bearings also feature shields on both sides, to protect the friction-reducing features.

As well as using less energy during their operation, SKF E2 bearings have been designed for a longer service life. Compared with comparably-sized, shielded standard SKF bearings in light-to-normal load applications, the new range can last twice as long. This means that the number of bearings required to run an application over its lifetime can be halved – as can their cost. In run-to-failure applications, E2 bearings can even be expected to outlast other components in the application.

And of course, the efficiency comparisons are being made with comparable SKF standard bearings – which have been continually

evolving towards greater efficiency and reliability over the years. Comparisons with bearings from other manufacturers may reveal even greater savings.

The E2 bearings – currently available from ERIKS in the 60, 62 and 63 dimension series, with bore sizes ranging from 5-60mm – have already proved themselves outside the test laboratory, in real-world applications with SKF customers, and the efficiencies demonstrated have been dramatic.

For example, when GlaxoSmithKline Consumer Healthcare Ltd. changed to SKF E2 bearings in a cold water pump motor, they achieved a return on investment in just 17 days. Utilised in 22kW motors running at 2,990rpm, the bearings were able to deliver savings of 0.56kW per hour, which has subsequently resulted in an annual energy saving of **4 583,6 kWh per motor.**

More energy-efficiency developments are expected from SKF in the near future, with solutions for the food and agriculture sectors in the pipeline. The global food line Y-units are a maintenance-free solution eliminating the possibility of lubrication contamination of product, and the agrihub for seeding attachments is designed to deliver no stops, no relubrication, no pollution, high precision in seeding and reduced TCO for OEMS and end users.

So the lesson is, if you need to increase the energy-efficiency of your application, you don't have to think big. Just think bearings.