

BEARINGS FOR THE FOOD  
AND BEVERAGE INDUSTRIES



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As one of the world's leading manufacturers of rolling bearings, linear technology components and steering systems, we can be found on almost every continent – with production facilities, sales offices and technology centres - because our customers appreciate short decision-making channels, prompt deliveries and local service.



### The NSK company

NSK commenced operations as the first Japanese manufacturer of rolling bearings back in 1916. Ever since, we have been continuously expanding and improving not only our product portfolio but also our range of services for various industrial sectors. In this context, we develop technologies in the fields of rolling bearings, linear systems, components for the automotive industry and mechatronic systems. Our research and production facilities in Europe, America and Asia are linked together in a global technology network. Here

we concentrate not only on the development of new technologies, but also on the continuous optimisation of quality – at every process stage.

Among other things, our research activities include product design, simulation applications using a variety of analytical systems and the development of different steels and lubricants for rolling bearings.

## Partnership based on trust – and trust based on quality

Total Quality by NSK: The synergies of our global network of NSK Technology Centres. Just one example of how we meet our requirements for high quality.

NSK is one of the leading companies with a long tradition in patent applications for machine parts. In our worldwide research centres, we not only concentrate on the development of new technologies, but also on the continual improvement of

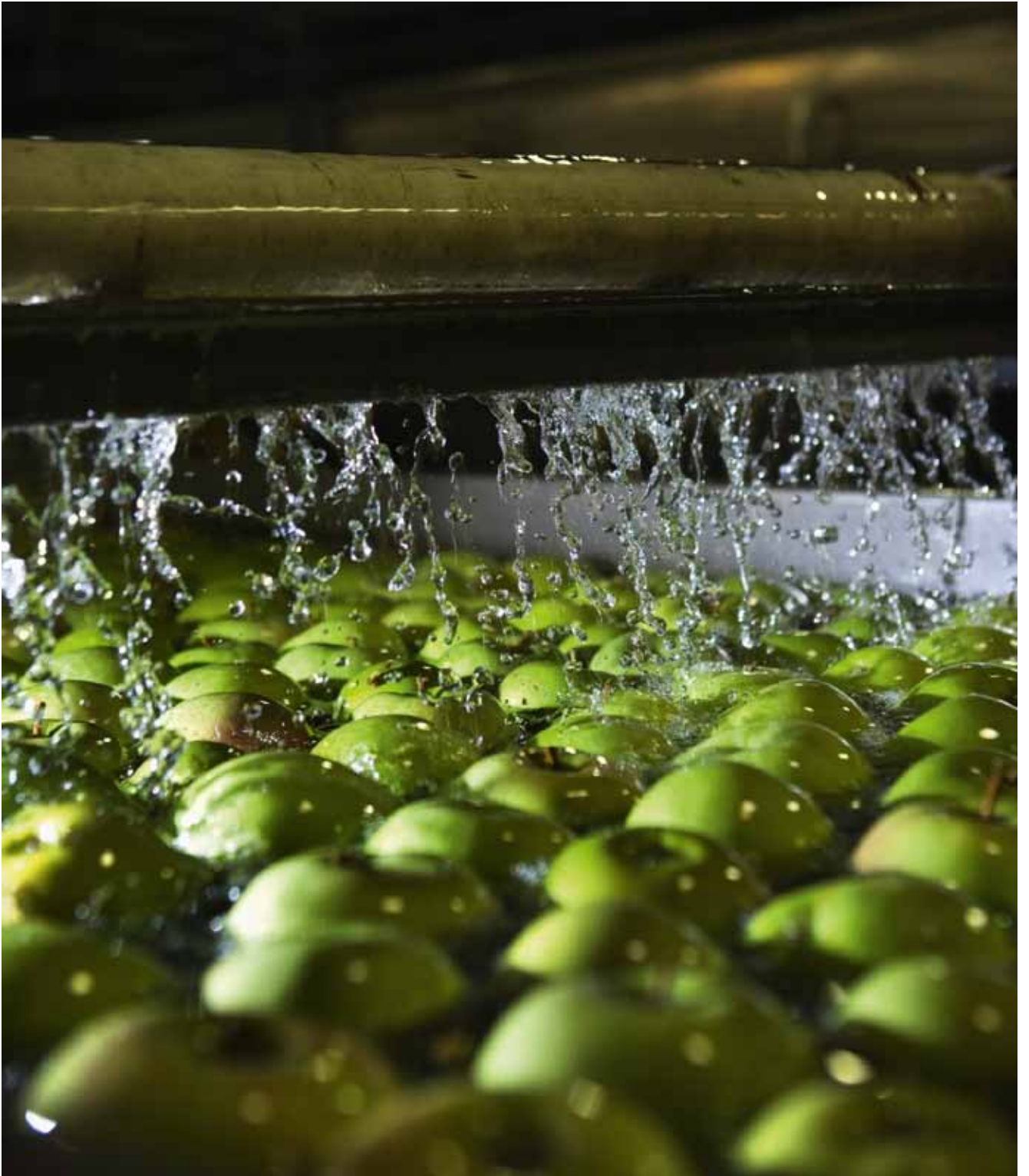
quality based on the integrated technology platform of tribology, material technology, analysis and mechatronics.

**More about NSK at [www.nskeurope.com](http://www.nskeurope.com) or call us on + 44 1636 605 123**



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Keeping it running  
keeps running costs down

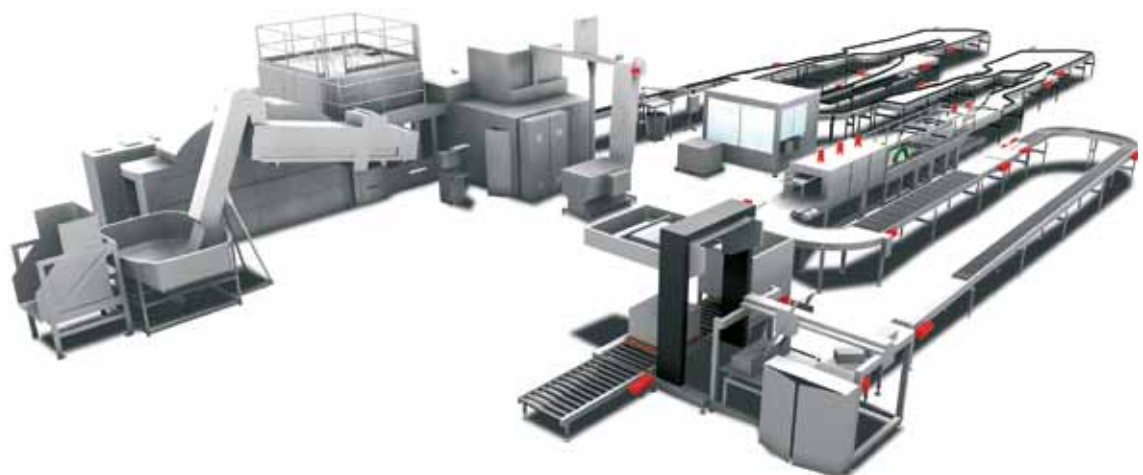




Continuous high speed operation, the most stringent of hygiene standards and operating conditions where heat, cold and damp are the norm; this calls for bearings that you can rely on to take extreme conditions in their stride, as well as making cost-effective production possible. NSK bearings for the food and beverage industries are robust, made of corrosion resistant stainless steel and lubricated for life.

NSK bearings for the food and beverage industries are robust, made of rust-resistant stainless steel and lubricated for life. For trouble-free operation, bearings should be perfectly adapted to the relevant machines and production processes. Apart from the extensive product range specially developed for the food and beverage industries, engineering also plays an outstanding role. This way, we can work together with you to analyse possible weak points in the production process, measure and monitor efficiency and, where necessary, propose alternative products. Experts work ceaselessly in the NSK research laboratories to improve products and lubricants.

How can rolling bearings guarantee outstanding performance despite having to put up with high temperatures, water and chemicals? How is foodstuffs contamination prevented safely and reliably? Through which measures can maintenance-free operation be achieved? We will be pleased to give you the correct answers to all these questions. Because, in everything we do, every single day, we strive for Total Quality.



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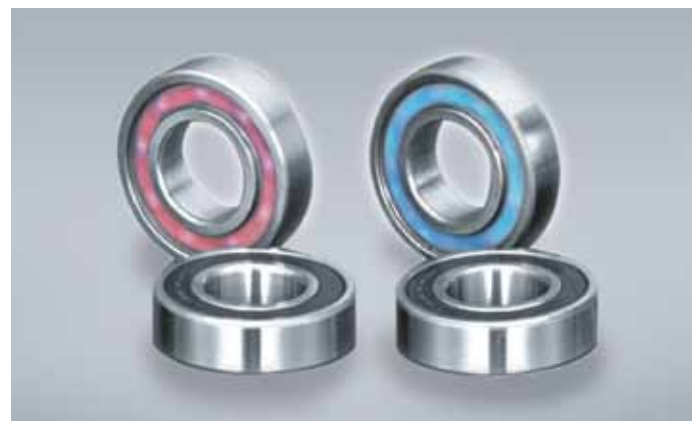
# Explicit requests demand precise solutions

Apart from long operating runs, hygiene, health and safety are the key factors in the food and beverage industries. This means that sealing discs on the belt drive bearings and sheaves must not distort during high pressure cleaning. Bearings and their cages must be corrosion-resistant and lubricants should not leak.

As one of the biggest rolling bearing manufacturers worldwide, NSK has a wide range of rolling bearings specifically for the food and beverage industry, whose construction features include, amongst others, rust-proof materials, sealed construction with lifelong lubrication, and foodstuffs-compatible lubricants.

### The difference is in the lubrication

NSK's patented Molded-Oil™ grease is specifically developed for situations requiring high levels of hygiene, such as in the food and beverage industries. As such, the Molded-Oil™ lubricant is transported by a substance that releases the lubricant gradually. This way, the required amount of lubrication is provided to the bearing over a long period of time. At the same time, the risk of oil leakages is minimised making the bearings outstandingly smooth running. Optionally, lubricants with USDA H1 certification can be used.





**Thanks to Molded-Oil™ technology, a confectionery manufacturer saves more than 157,000€ a year.**

A confectionery manufacturer was struggling with equipment breakdowns and production losses in the region of 307,000€ a year. The reason for the failures lay with water making its way into the rolling bearings of one of the pumping systems, leading to a buildup of sugar crystals in the plant. Thanks to the implementation of our profitability programme AIP (Asset Improvement Programme) the problem was analysed and quickly established.

Reasons for the success of our AIP programme are an on-site situational analysis, the establishment of problem-solving measures, project planning, an effectiveness check, conclusion analysis, and after-sales services.

Our engineers recommended the use of NSK Molded-Oil™ bearings for the pumping system. These were trialled over an 18 month period and, due to their success, all the plant's other original bearings were replaced with NSK Molded-Oil™ units.

Not only that, but the client undertook an AIP training programme with regard to care maintenance.

The results are indeed impressive: thanks to the NSK profitability programme, the confectionery manufacturer not only saves 157,000€ a year where rolling bearing costs and maintenance are concerned, but also enjoys increased production capacity thanks to the reliability of the NSK Molded-Oil™ bearings.

# Innovative products for increased productivity



## **Aqua-Bearings™ SPACEA™**

NSK Aqua-Bearings™ use a special fluororesin for the inner and outer rings, as well as for the cages. These bearings are perfect for a whole string of applications with water, alkali and acid environments. They manage without the usual grease or oil lubrication.



## **Chrome-plated corrosion-resistant bearings SPACEA™**

Thanks to nickel-plating, these bearings display an extremely high resistance to corrosion. Even constant underwater operation cannot adversely affect their performance.



## **Life-Lube® bearings**

The Life-Lube® series from NSK combines the corrosion resistance of our Silver-Lube® housings with the outstanding sealing and lubrication attributes of the Molded-Oil™ units. They can hold water as well as process fluids and chemicals at bay.



## **Molded-Oil™ bearings SPACEA™**

NSK Molded-Oil™ bearings are maintenance-free and thrive in wet and dusty environments without needing regular lubrication.





### Corrosion-resistance through nickel-plating

#### **SPACEA™**

These bearings can withstand chemical washing processes and represent a cost-effective alternative to totally ceramic bearings. They are suitable for alkaline and mildly acidic environments as well as for applications with water rinsing.



### Stainless steel bearings **SPACEA™**

Stainless steel bearings are more corrosion-resistant than bearings made of ordinary steel, thus offering a longer operational life. They are, therefore, perfect for use in wet and damp environments.



### Stainless steel bearing units

These stainless steel ball bearing units are housed in stainless steel cases and lubricated with Molded-Oil™. They are perfectly suited to applications requiring cleanliness and corrosion resistance, such as in fryers and conveyor belts for the meat and fish processing industries.



### Triple-lip sealed inserts

Triple-lip sealed inserts can replace ordinary ball bearing inserts in applications where bearings are subjected to strong dust or water pollution, such as in vegetable washing plants or in fish processing plants.

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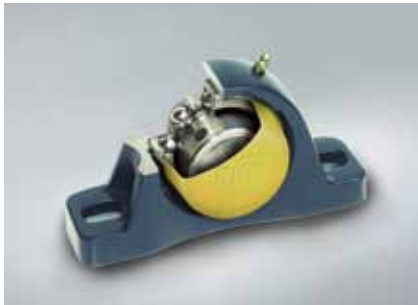
# Innovative products for increased productivity

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## **Single row angular contact ball bearings**

NSK angular contact ball bearings were developed to satisfy the ever-increasing demands of pump manufacturers. With angular contact ball bearings in polyamide, steel or brass cages, NSK offers one of the most extensive ranges in this sector.



## **Mounted units**

The cast iron or pressed steel housings are available as pillow block, 2-bolt flange, 4-bolt flange or take-up units that are suited to either metric or imperial shafts. Both the standard and special seals are suited to rough environments and applications.



### **Single row deep groove ball bearings**

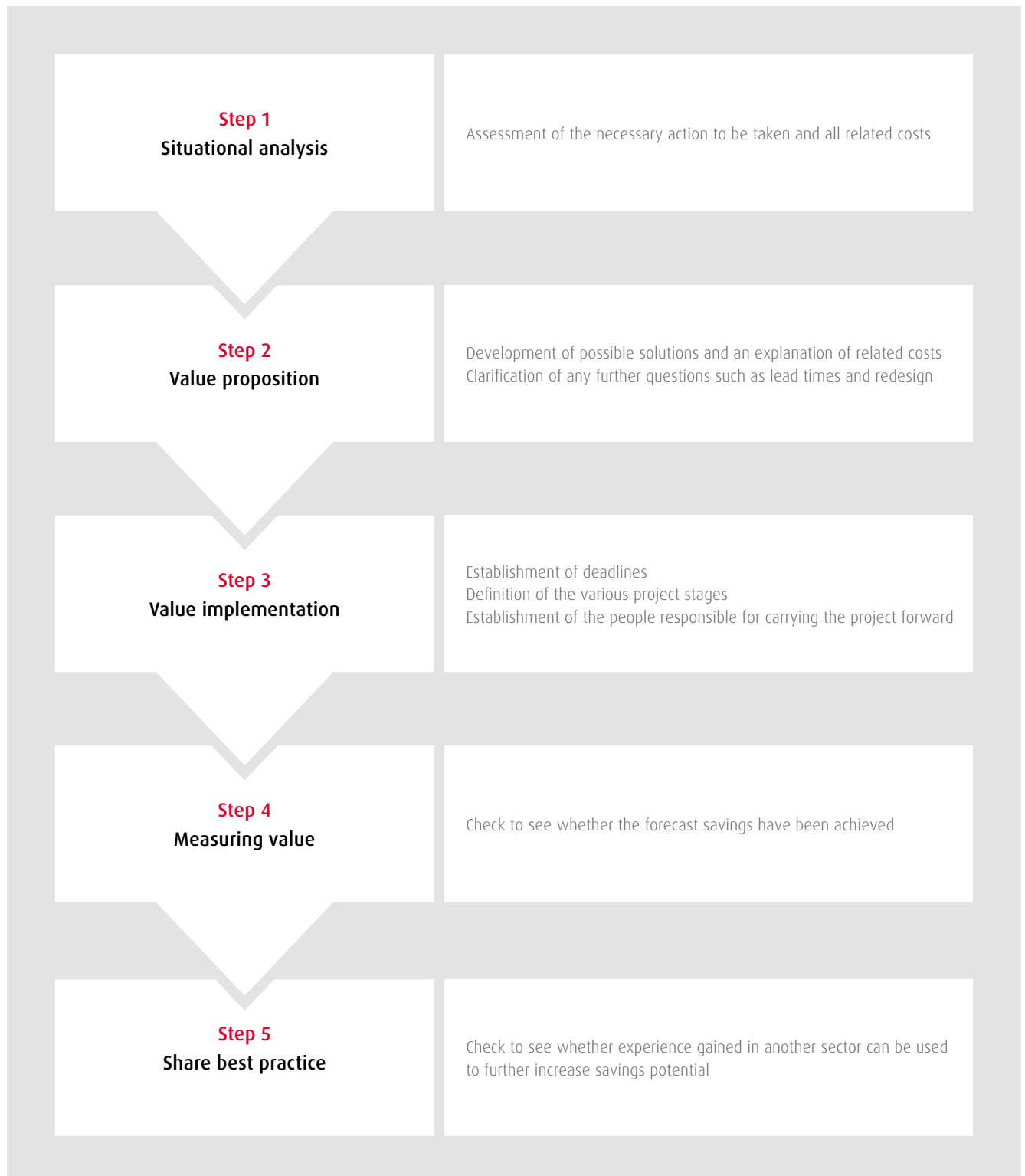
NSK is the worldwide leader in deep groove ball bearing production. Primarily for use under radial loads, they can, however, also withstand moderate axial loads in either direction. Due to their low torque, they are suitable for applications where high speed and low power loss is required.



### **Silver-Lube® mounted units**

NSK's Silver-Lube® series is a range of corrosion resistant bearing units specifically for use in industries where frequent thorough washdowns are necessary, optimum hygiene standards are required and good chemical resistance is important over a wide temperature range. The units are available in pillow block or 2-bolt flange, 4-bolt flange or take-up unit configurations.

# Getting to the heart of service: the AIP Value Cycle





To be the manufacturer and distributor of good products is not enough nowadays; we believe that being an active partner with a broad spectrum of services to support our clients is more important. Our highly experienced staff are on the ground and ready to work with you directly to find individual solutions for smooth, efficient and profitable production processes in your company.

**Increased profitability thanks to AIP**

Less machine and plant downtime. Cost reduction without affecting quality. With AIP, a well-proven asset improvement programme, we help you to recognise, and act on, profitability potential. The programme combines existing knowledge in your field of competence and your corporate processes with the latest NSK technical knowledge.

Starting with a situational analysis, we compile a structured catalogue of measures together with you and assist you with its implementation. A Measuring Value check ensures that you achieve the sought-after advantages inside the agreed time frame.

Additionally, we offer training courses, carry out specialised service and repair services in our NSK Service Centres, and continually expand our online applications on our secure client site.



**NSK Service Spectrum**

Technical Support	Training Courses	Analytical Services	Value Added Services
Application Reviews	Introduction to Bearing Technology (Parts 1 & 2)	Failure Mode Analysis	NSK Cost Down Approach
Engineering Support	Best Practice Fitting & Removal of Bearings (Sections 1 & 2)	Material Analysis	Maintenance Schedules
Machine Design Consultancy	Bearing Diagnostics	OEM Part Conversion	Site Surveys
Bearing Surveys	Application of Bearings	Standardisation & Rationalisation	Maintenance Tool Audits
Diagnostic & Vibration Analysis	Sector Specific		Super Precision Service Package
	Food & Beverage Pumps & Compressors Quarry, Mining & Construction	Paper, Metals & Steel Machine Tool, Railway	





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