

**RUBIX**

# Top 3 Challenges

in the *Food & Drink* Sector...

and how to ensure your bearings meet them



**SKF**

Authorized  
Distributor

# Why Are Bearings So Important?

Used in every conceivable manufacturing application, bearings keep production rolling. As they often act as an unofficial warning system for faults elsewhere in a system, they are also one of the most frequently replaced components.



As with any component, you want your bearings to provide trouble free performance and have a long operational life. To maximise lifetime expectancy, the bearing must be correctly installed, lubricated and maintained. It is also vitally important to select the correct bearing for the application at hand. Different bearing types

are designed specifically to suit different operating load conditions, whilst components such as rolling elements, cages and seals of different design and material are available to accommodate various operating speeds, temperatures and contamination levels, all of which can have a dramatic effect on bearing performance and service life.



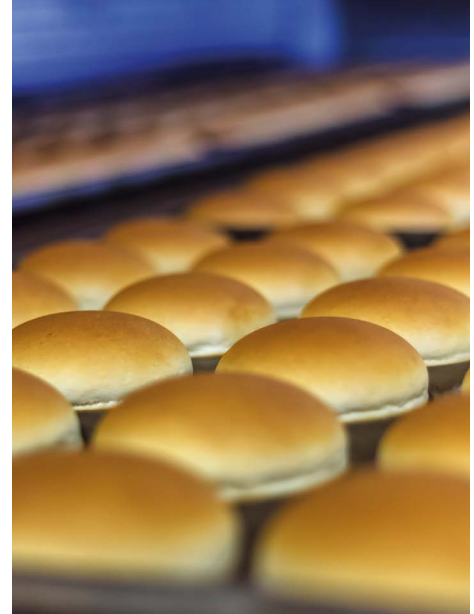
# Bearings in the Food & Drink Sector: *Unique Challenges*

In the food and drink sector, bearings are subject to some of the most demanding environments to be found, required to perform across a very wide range of temperatures, subject to frequent washdowns and guided by regulations that are becoming ever more stringent; and, of course, you have cost considerations. In the food and drink sector, therefore, your choice of bearings is constrained and requires careful consideration.

At Rubix we have extensive experience of working with some of the biggest names in the food and drink sector and also of working with the leading bearings

manufacturers, including SKF. An SKF Authorised Distributor across Europe, we have been supplying SKF bearings for decades and have an in-depth understanding of the company's extensive product range. Our joint experience means that we are able to better understand the unique and special needs that relate to your business and your production processes and to provide bearings that meet those needs.

Together with SKF we look at the top three challenges faced in the food and drink sector and suitable bearing options to meet those challenges.



## Rubix and SKF: Bearings Advice You Can Trust

Every year we sell over 100 million bearings from the largest, most comprehensive bearings range and stock. Our product knowledge and technical support is second to none, and advice is available to all customers at any time from our expert design and engineering specialists. Our expertise has delivered over €70 million in bearing cost savings to our customers over ten years. This level of expertise is only available from Europe's leading authorised bearings distributor.

As an authorised distributor for SKF, we've built up a huge amount of knowledge and technical expertise having worked with this leading manufacturer for years. This includes

any specific bearing advice or guidance you may need – and we can work directly with SKF's technicians to provide brand specific technical solutions if necessary.

Of course, our technical expertise isn't restricted to the food & drink sector. We can help you to improve bearing

longevity, increase your production efficiency and save you money, across an incredibly wide range of industries.







# Challenge 1: Safety

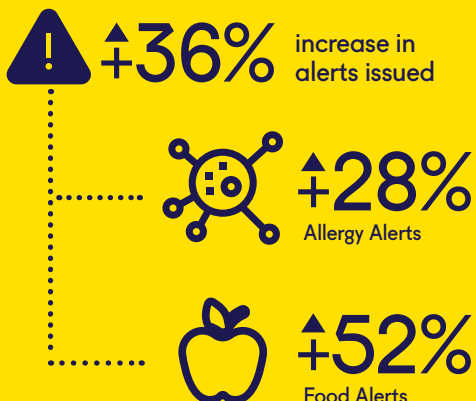
Safety is a key issue in most manufacturing and industrial processes, but when it comes to food and drink, safety concerns go far beyond just the safety of staff, covering safety of every aspect of the food item, with contamination prevention being a top priority.



## CONTAMINATION

The FDA states food recalls are up nearly 93% since 2012, with bacterial contamination and undeclared allergens being the main causes, with other contaminants including glass and plastic.

In the UK alone, food safety recalls have increased by over a third, according to FSA data. 1 April 2018 and 31 March 2019 compared to the same period in 2017/18.



As a key bearings supplier to the food and drink sector, SKF did an extensive test behind and around mounted bearing units in a typical food processing setting to identify levels of contaminants and where they are to be typically found. SKF discovered contaminant levels to be high, even after washdown; in some cases contaminant levels actually increased after washdown. Similar results were found in bearings end covers. The food residue gets trapped behind the bearing mounting unit and inside the cavity through the shaft gap during processing and pressure cleaning. It doesn't dry so fosters growth of bacteria. These bacteria can spread in multiple ways, lingering in the air for several hours and then settling on equipment post disinfection stage; getting stuck in the bearings grease; and, worryingly, actually distributed by the washing process itself.

## REGULATIONS

Stringent regulations are in place to ensure the safety of food and drink products, and are wide ranging covering safety through to religious requirements, which can impact the nature of the bearing lubricant used, amongst other things.

## Meeting the Challenge

For bearings operating in food and drink processing environments, there are three important aspects to focus on when it comes to safety matters: hygienic design of the bearing unit, food safe sealing materials and lubrication strategy.



### HYGIENIC DESIGN

As we have seen in the SKF test, contamination can be found behind and around mounted bearing units and in end covers, which washdowns are not always able to remove. Prevention is better than cure, so selecting a unit that has been designed with hygienic geometry of the housings reduces potential contamination traps. Look for a housing which has no crevices or recesses where soiling and bacteria might accumulate and has extremely smooth angled surfaces to promote self-draining and improve hygiene at washdowns. When it comes to seals, you want a back seal that seals statically against the housing and dynamically against the shaft, and an end cover that fully seals against the housing on the front side, preventing process material from entering the bearing, effectively sealing the unit off.

In terms of the materials used, high-grade stainless-steel bearing rings, rolling elements and seal backing plate are optimal for the food and drink sector.

SKF Food Line Blue Range is an ideal choice here as it has been specifically designed from the ground up, component by component, for improved hygiene and compliance with food safety regulations.

### SEALING MATERIALS

Bearing seals both prevent contaminants from entering the bearing unit, which will reduce bearing life expectancy, whilst

keeping lubricants from leaking out. No matter how well made a component is, ultimately it will start to suffer from wear and tear. If pieces of the rubber seal break off a moving part they can migrate through your system and into your product. Searching for, and locating fragmented rubber parts is a costly, time-consuming and difficult process requiring expensive x-ray equipment, manual observation and an extensive maintenance programme. However, failure to locate missing parts can have an even costlier outcome!

A simple, cost-effective solution is the use of rubber seals coloured blue for optical detectability, complying with FDA and EC recommendations.

A number of innovations have been made in this sphere including a patented, bearing sealing system from SKF which adopts a radically different approach to preventing damage caused by detergent ingress into the bearing. This unique sealing system features internal gutters to guide detergent away from the bearing by simple gravity.

### LUBRICATION STRATEGY

When it comes to lubrication in the food and drink sector, first and foremost you must ensure you are using high-quality food safe lubricants, that are NSF, Halal, Kosher or CFIA approved. The exact type of lubricant will depend on the immediate environment and process in which the bearing is being used. Where there is potential for incidental food

contact, NSF category H1 lubricants are essential.



Whilst SKF Foodline Ball Bearing Units are re-lubrication free thanks to the advanced sealing systems, applying the correct amount of lubrication, at the right time, is the next major consideration. Re-lubrication to purge often takes place after each washdown in the knowledge that cleaning media and rinsing water might have penetrated the bearing seals. You require sufficient lubricant for the bearing to perform to its best capacity, but not so much that it risks contaminating the product or dripping on to the floor where it becomes a potential slip hazard.

The good news is there are options other than manual lubrication. Consider the use of automatic lubrication systems, which deliver accurate lubricant quantities for increased HACCP compliance. However, for the ultimate safety solution when it comes to lubrication in the food and drink industry opt for relubrication free bearings, which dramatically reduces the risk of potential food contamination both from the lubricant itself and from bacteria growing on the lubricant.



## Challenge 2: Cost Control

When it comes to understanding the cost of bearings, the total cost of ownership (TCO) rather than the cost of the bearing unit alone needs to be taken into consideration.

To appreciate the TCO the unit purchase price does of course need to be included, but this needs to be understood in relation to the following:

- Installation/commissioning costs
- Energy usage
- Operation and maintenance costs (including lubrication)
- Machine downtime (planned and unplanned)
- Expected length of life
- Disposal costs (of both lubricant and the bearing unit)

When looking at the bigger picture, the bearing unit itself frequently only accounts for just 10% of TCO, so buying a low cost bearing rarely provides any notable cost savings and, more likely, could actually increase TCO due to reduced life and increased maintenance requirements.





## > Meeting the Challenge

All industries have to weigh up the cost of component parts to ensure value for money. The food and drink industry shares many similar issues to bring into the equation, such as planned downtime required to relubricate bearings. However, it also has its own unique challenges to add to the mix, including the intense cleaning regime required.

### OPERATIONS & MAINTENANCE

Relubricating bearings typically requires the machinery to be switched off, which results in downtime. The frequency of lubrication and the time it takes will clearly depend upon individual applications, but in many cases can take over a day and needs to be performed regularly. Planned downtime of this nature can be removed by choosing relubrication-free bearings. This also leads to labour cost savings.

### RESOURCES

The two key resource costs related to bearings are energy usage and lubricant.

Whilst energy usage per bearing is very small, the large numbers of bearings in use throughout the world mean that every tiny reduction in energy consumption has the potential to make a positive impact in reducing overall energy usage and costs. The key to reducing energy consumption in the bearing is through reducing friction, so look for bearing units that focus on this.

In the food and drink sector, it's not just energy usage of the bearing itself that needs to be taken into account, but also the energy expended in cleaning them. Consider swapping from open bearing units to re-lubrication free sealed units to reduce this cost. Third party testing has shown that SKF's Food Line Blue Range uses 33% less heated water for cleaning when compared to open bearing units.



Re-lubrication free bearing units will also save money on the cost of both buying and disposing of lubricants. SKF estimates the following is a typical requirement of relubricating 100 bearing positions:

- 15g (0.53 oz.) of lubricant per bearing purge, which equals
- 1,5kg (3.3 lbs.) per weekly maintenance cycle, or a total of
- 78 kg (172 lbs.) of lubricant per year.

Re-lubrication free bearing units aren't the only way to reduce lubrication costs though. When it comes to commercial fryers, SKF has an innovative solution that won't cost you anything in lubrication! SKF Fryer Bearing Units use the hot cooking oil inside the fryer to enter the bearing and act as a lubricant.

### AVAILABILITY & PERFORMANCE

Avoiding downtime is fundamentally important to any business. Unplanned downtime attributable to bearings is mostly down to early bearing failure, with SKF estimating that 50% of bearings failure in the food and drink sector comes down to lubrication issues. Using automated lubrication systems, or swapping to lubrication free bearings as mentioned above, will overcome this particular challenge.

Washdown can also reduce the lifetime of a bearing unit. Use sealed rather than open bearing units to reduce the damage water and detergent can do to a bearing. You can also invest in bearings with specialised sealing systems, such as SKF's sealing system featuring internal gutters to guide detergent away from the bearing to achieve high levels of performance.



Many of these features and high-level product design make for a more expensive bearing unit than you may be used to using. However, the added value they bring will actually reduce TCO, resulting in reduced downtime, improved performance and compliance.



# Challenge 3: Sustainability

Sustainability is headline news. Never before has the issue of sustainability been more hotly debated. Yet the very term has come to mean different things to different people. For some, it has a very broad definition, addressing everything from overexploitation of natural resources and over consumption through to energy hungry manufacturing operations, pollution and even societal inequalities.



## FOOD WASTE

In the UK every year there is approximately 6.6 million tonnes of food waste; 4.5 million tonnes of which could have been eaten. Progress has been made in this field, with sustainability charity WRAP showing how 251,000 tonnes of food was saved from waste and 670,000 tonnes of greenhouse gas (GHG) emissions potentially avoided as part of the third year of the Food Waste Reduction Roadmap.



## GHG EMISSIONS

The UK government has set a target to bring all GHG emissions to net zero by 2050. Net zero means the amount of greenhouse gas produced is no more than the amount removed from the atmosphere. Many food and drink businesses are already taking action to reduce GHG emissions across their own operations and with good reason: according to WRAP, 35% of the UK's total GHG emissions arise from feeding people in the UK (with food waste contributing 23% to that figure).



## WATER RESOURCES

With the UK climate you might think water resources are plentiful, yet there are areas even within these green isles that are water stressed. This is problematic for the food and drink industry as water is necessary as a raw material and also required for a variety of processing and operational needs. Water quality is also an issue, be it in feed water or waste water. Improvements in water availability, quality and efficiency of usage are therefore essential.



## > Meeting the Challenge

Being in such widespread use throughout industry and also being one of the most frequently replaced components, the sustainability of the bearings you use matters. But what makes a bearing sustainable? Bearings have little impact on food waste, but they can make a difference when it comes to reducing GHG emissions and improving water resources.



### MANAGING WATER RESOURCES

The cleaning regime in food and drink processing environments is typically frequent and uses large quantities of water and detergents in order to prevent bacteria growth. The waste water from this cleaning is often contaminated from excess bearing grease. The aim should therefore be to reduce water usage in cleaning and waste water contamination. This is readily achieved by using sealed, re-lubrication free bearings.

SKF Food Line ball bearing units – Blue Range require 33% less heated water for cleaning when compared to open bearing units. Furthermore, there is no lubricant to contaminate the waste water, plus no cleaning rags and paper towels to dispose of.

### WASTE REDUCTION

When it comes to bearings and GHG emissions, CO<sub>2</sub> is the main issue. CO<sub>2</sub> is generated in the manufacture of the bearing, in its energy consumption when operational and in its disposal.

By investing in good quality bearings that are specifically made for use in the food and drink sector, greater longevity can be expected from the product. The longer it performs, the less you need which is good for the planet and good for your maintenance and overall operations.

To reduce energy consumption, again opt for good quality bearing units from reliable manufacturers such as SKF, whose ball and roller bearing designs can help to reduce friction by as much as 30% which is the determining factor in energy usage.

Of course, all good things must come to an end and, at some point in time, your bearing will need to be replaced. Check to see if you bearing can be recycled. With SKF Food Line ball bearing units – Blue Range, you can avoid sending your bearings to landfill as 59% of the product can be recycled and 41% is energy-recovered.



59%

of the product can be recycled



41%

is energy-recovered



# RUBIX

## For all your SKF bearings needs, and more.

Rubix is SKF's largest Authorised Distributor across Europe. We have the widest SKF product range, exceptional availability, in-depth knowledge and technical expertise. Talk to us to find out how we can help improve your production facilities with SKF bearings best suited to your needs and budget.

Of course, our product range goes far beyond bearings. We offer more than 5 million different product lines - 500,000 of which are in stock at any one time, all available 24 hours a day, 365 days a year. Available via our centrally-located National Distribution Centre in the Midlands, plus a network of branches across the UK, we'll get it to you on time, every time.

With our specialist expertise, international strength and local presence - combined with our thorough understanding of the food & drink industry - we are ready to become your parts and products partner.



Image Source: SKF

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