

DISCUSSION **360°**



5 MAIN

**CHALLENGES FOR
BEARINGS
IN THE
FOOD & BEVERAGE
INDUSTRY**



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Bearings are fundamental where mechanical equipment performs a business-critical function in any operation. This is a fact that is applicable across many industry sectors. Given that the food and beverage industry is the UK's largest manufacturing sector, and is worth an annual £28bn to the economy, it's worthy of some focus here.

Throughout the 21st century, there has been a shift in increasing mechanisation and process automation within the food and beverage industry, with no sign of this slowing down. These process improvements aim to increase efficiencies in the face of an ever-growing demand for both vast and varied products, and they also magnify the reliance on both mechanical performance and reliability. Components like bearings also have a significant part to play when it comes to complying with the health and safety regulations synonymous with the sector.

This article highlights some of the main challenges that bearings face in the industry.

1. CONTINUOUS HIGH SPEEDS

Food and beverage businesses are under a series of uniquely intense pressures.

These include the need to maintain high levels of productivity, compete pricing-wise in a highly competitive market, comply with strict safety measures, and continually diversify products in reaction to consumer demand, all while aiming to make a profit. Because of these pressures, a heavy emphasis is placed upon the productivity of machinery and personnel working in production environments.

An unrelenting requirement for high operating speeds takes its toll physically, quickly committing wear to equipment such as bearings. This presents problems around reliability and increases the threat of breakdowns and the costly hit to production that any downtime would bring. All bearings must guarantee outstanding performance by being robust enough and lubricated effectively, to withstand the high and continuous speeds required of them.

2. EXTREME TEMPERATURES

High temperatures can be a result of continuously high running speeds but are most evident in environments where the heating, boiling, or baking is taking-place. At the other end of the scale, very low temperatures are encountered by bearings as part of freezing or refrigeration processes.

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Bearings operating in environments where extremes of temperature are expected should always be correctly lubricated and protected from ambient conditions by a housing and/or a heat-shielded skirt. It is critical to know the temperature range that any bearing can operate within, as bearings can sustain catastrophic damage if they are exposed to temperatures either above or below their recommended limits.



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ANY WATER OR
CLEANING FLUIDS
REMAINING IN AND
AROUND BEARINGS CAN
QUICKLY TURN INTO A
BREEDING GROUND FOR
BACTERIA.

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3. EXCESSIVE MOISTURE

Product safety is vital for the industry, and so regular and thorough washdown cycles are required. Products that fail to meet strict standards risk endangering consumer health, costs the business in terms of revenue lost to product recalls, and also damages public perception of the brand.

Due to the frequency and high-pressure of washdown cycles, the integrity of bearings can easily become compromised. High-pressure cleaning can allow water to access parts of the production facility (including inside bearing units) that aren't designed for being wet. Any water that is not properly drained has the potential to become a potentially dangerous harbour for bacteria. There is also a real risk that lubricants within bearings can be flushed-out during washdowns, jeopardising performance.

4. CHEMICAL EXPOSURE

Washdowns don't only involve the use of water, but also chemicals in the form of detergents and sanitisers, to successfully eliminate bacteria. Harsh chemicals, acids, and alkalis can easily cause corrosion, and so bearings should have good resistance qualities to the cleaning agents being used. This is why stainless steel is often the metal of choice for bearing units in the food and beverage industry.

5. CONTAMINATION

The main source of concern in terms of contamination from bearings operating in the food and beverage industry is the lubricant used within. Food-grade lubricants are essential. These products are classified by NSF dependent on their ingredients, with the highest standard being H1. H1 lubricants are suitable for use in environments where there is a possibility of incidental contact with food or drink, with formulations only permitted to be composed of approved base stocks, additives, and thickeners (if grease). Food and beverage businesses should be certain that lubricants used in their bearings, including those that are supplied pre-lubricated, are appropriate for the application, or they risk falling victim to contamination.

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