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Commentary

CMotors made of stainless steel are ideal for the food and beverage industries

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Abstract

In the food and beverage industry, maintaining a clean manufacturing line has never been more critical. Before even considering the potential effect a product recall could have on an organization's brand and reputation, preventing any contamination saves time and money.

It's critical to be able to clean and service food-processing equipment in the most efficient and straightforward manner possible, as this can reduce the danger of product contamination.

Keywords: Molybdenum, Hosed, Compliance, Corrosion.

INTRODUCTION

Stainless steel is a category of ferrous alloys that contain at least 11 percent chromium, a composition that prevents the iron from rusting while also providing heat resistance. Carbon (from 0.03 percent to greater than 1.00 percent), nitrogen, aluminium, silicon, sulphur, titanium, nickel, copper, selenium, niobium, and molybdenum are all components found in stainless steel. AISI three-digit numbers, such as stainless, are frequently used to identify certain varieties of stainless steel. In a useful interchange table, the ISO 15510 standard includes the chemical compositions of stainless steels specified in current ISO, ASTM, EN, JIS, and GB (Chinese) standards (Werra 1974).

The inclusion of chromium in stainless steel alloys results in the formation of a passive coating that protects the underlying material from corrosion attack and can self-heal in the presence of oxygen. Corrosion resistance can be further improved by using the following methods:

Increase the chromium content to over 11%.

Nickel should account for at least 8% of the total.

Molybdenum should be added (which also improves resistance to pitting corrosion) Nitrogen additionally improves pitting corrosion resistance while also increasing mechanical strength. [5] As a result, there are a variety of stainless steel grades with different chromium and molybdenum concentration to suit the climate in which the alloy will be used.

Stainless steel is an appropriate material for many applications where both steel strength and corrosion resistance are required, thanks to its resistance to corrosion and staining, easy maintenance, and familiar gloss. Stainless steel can also be rolled into sheets, plates, bars, wire, and tubing, among other things. These can be found in cookware, cutlery, surgical tools, major appliances, cars, large-scale construction materials, industrial equipment (such as paper mills, chemical plants, and water treatment), and chemical and food storage tanks in the case of chemicals and food goods. The corrosion resilience of stainless steel, its ease of steam cleaning and sterilisation, and the lack of the requirement for surface coatings have spurred its use in kitchens and food processing industries (Klang and Gemmel 1984).

Food processing equipment, as well as the requirement to adhere to stringent sanitary and hygienic requirements throughout all phases of the operation, are two crucial areas where contamination is a high risk.

Because food particles frequently accumulate in the motors used on a food production line, this is particularly significant. The motors must be cleaned on a regular basis, often with high-pressure water, and caustic cleaning chemicals are frequently used (Bilgili 2006).

Depending on the materials used for the motors, this cleaning process might pose serious problems for the equipment, with cleaning solutions corroding parts of the motor and the likelihood of rust and paint flaking off, resulting in contamination.

A stainless steel motor also has the advantage of not corroding when hosed down, unlike cast iron or aluminium motors.

Stainless steel motors offer a significant reduction in the danger of contamination as well as a reduction in equipment replacement costs, which is especially important in the food manufacturing and production industry(Steiner et al., 2000).

In comparison to cast iron or aluminium motors, stainless steel motors do not corrode when hosed down.

Stainless steel motors reduce the risk of contamination while also lowering the cost of equipment replacement, which is particularly important in the food manufacturing and

It's crucial for on-site maintenance to remember that any loss of regulatory conformity in a geared motor will result in

production downtime until the problem is fixed. Protecting uptime is critical to ensuring profitability in an industry with low margins per unit. Stainless-steel geared motors are the industry standard because they require less maintenance and are more durable, resulting in longer FDA compliance.

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