Eliminating forklift brake performance inconsistency in cold room environments

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While cold rooms are essential for storing products in the food and beverage industry, the very conditions that allow preservation present a very real challenge to power transmission equipment. As any motorist will know, brakes can be particularly susceptible to performance drop-off in cold or moist conditions.

To ensure that forklift truck brakes can operate reliably in cold room environments, Warner Electric has developed custom brake friction material that provides consistent performance despite extreme temperature variance and the effects of moisture.

Positioned in line with the motor or between the motor and the gearbox, spring applied electromagnetic motor brakes are utilised on forklift trucks to provide service and parking braking. OEMs typically require specialised braking systems for forklifts operating in the food and beverage industry, due to the multiple application challenges of operating in cold rooms.

Brakes must provide consistent performance in all conditions. However, moving in and out of cold rooms into different environments around the facility demands consistent brake performance across a wide temperature range. To present a further challenge, this variance in temperatures can cause condensation to build up on brakes, which can lead to another phenomenon: sticking.

Sticking happens when moisture causes standard friction materials to bond with the counter-friction surface when the forklift is parked. Consequently, the brake and motor are locked in place, stopping the truck and causing downtime while maintenance is arranged.

With tight, contract delivery schedules for supermarkets, suppliers and other vendors to be met, having a forklift truck out of action for any period is undesirable in the food and beverage industry. To help improve uptime for end users, Warner Electric, a global manufacturer of electromagnetic braking solutions for forklift trucks, addressed these multiple environmental challenges with a new material solution.

A leading brand of Altra Industrial Motion Corp., Warner Electric has developed proprietary friction material specifically designed for cold room and outdoor environments with high moisture levels and wide temperature differentials. Developed and tested in-house, the new material retains stable torque characteristics for static parking and high energy stopping in tough cold and wet environments. Furthermore, it is specialised to combat the sticking phenomenon.

To prove the performance of the new material, rigorous testing was carried out. A climate chamber was used to simulate the extreme temperature changes of moving in and out of the cold room. The results were then compared with cold environment tests in the field, ensuring the material would perform in the real-world. Engineers also conducted endurance testing. Both the lab and field test results confirmed that there was virtually no sticking – not even a tenth of a Nm of drag torque.

The new material is currently available on all Warner Electric PK motor brakes in different configurations depending on customer requirement. A popular selection for forklift trucks, power dense PK brakes are available with an enclosed design, ideal for applications where the brake may be exposed to moisture.

With the global cold storage market expected to be worth $212 billion by 2025***(1)***, forklift operators in the sector need reliable brakes to improve uptime, so that they can capitalise on market growth and unlock new efficiencies. Now, Forklift OEMs have access to a specialised brake friction material that is proven to maximise uptime in the unique environmental conditions of food and beverage logistics.

Source Ref: ***(1)*** https://www.altramotion.com/en/newsroom/2018/08/is-we-brake-friction-material-improves-performance

Image captions:

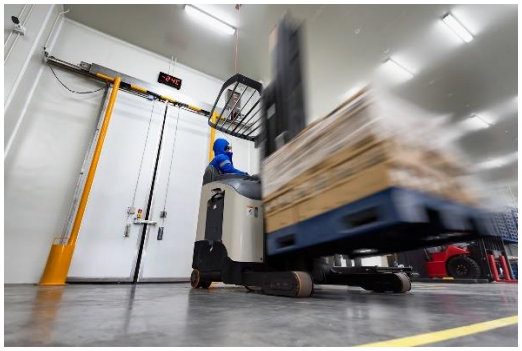

Image 1: To ensure that forklift truck brakes can operate reliably in cold room environments, Warner Electric has developed custom brake friction material that provides consistent performance despite extreme temperature variance and the effects of moisture. (Image Source: AdobeStock_126084927)

Image 2: A popular selection for forklift trucks, power dense PK brakes are available with an enclosed design, ideal for applications where the brake may be exposed to moisture.

About Warner Electric

For over 70 years, Warner Electric has grown to become a global leader in electromagnetic clutch & brake solutions. Warner engineers utilise the latest design, materials and manufacturing technologies to develop easy-to-use and install clutches and brakes with longer life and improved accuracy and repeatability. Warner Electric offers the broadest selection of industrial clutches, brakes, controls, web tension systems, sensors and switches available from a single manufacturer.

Reliable Warner Electric components are used in a very wide range of markets including material handling, packaging machinery, food & beverage, elevator & escalator, turf & garden, agriculture and off-highway, forklift, crane and motion control. Applications include conveyors, lift trucks, wrapping machines, servo motors, capping equipment, combines and balers, baggage handling systems, military vehicles, hoist drives and lawn mowers.

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