INNOVATION

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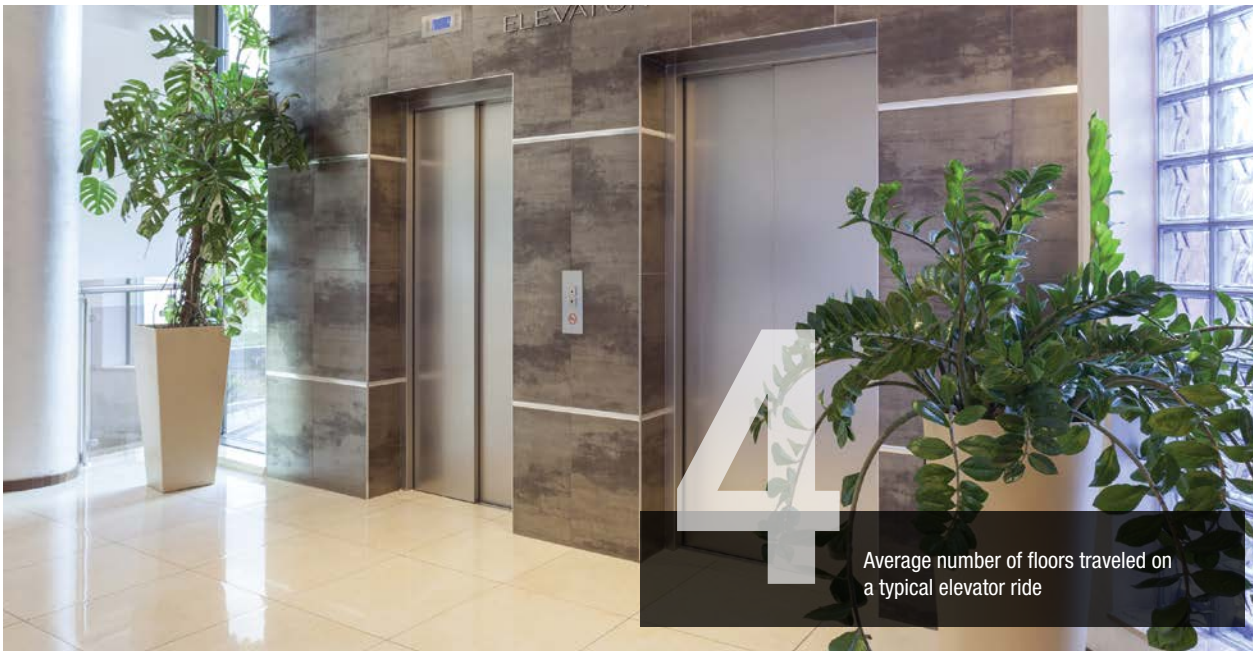

GLOBAL ELEVATOR OEM LOOKS TO WARNER ELECTRIC FOR A UNIQUE NEW BRAKING SOLUTION

A leading elevator OEM has enjoyed market-leading success with their low rise elevator line as well as with their line of elevators for high-rise buildings. However, customers began calling for a flexible elevator solution to meet the needs of the growing global mid-rise, mixed-use building market. The definition of a mid-rise building can differ significantly depending on local and surrounding buildings. For example, a mid-rise building in Madison, Wisconsin might be 4-11 floors, while a mid-rise structure in Chicago could have 40-50 floors.

The construction boom of mid-rise buildings can be attributed to several factors. Developers are more apt to build “short” because it requires less capital and the time to get permits approved is reduced considerably, especially in developing countries.

In response to the growing demand, the elevator OEM began developing a new elevator design that was adaptable for a variety of mid-rise buildings including apartments, hotels, offices and shopping centers. To ensure global acceptance, the new flexible elevator was designed to meet building codes around the world.

APPLICATION EXPERTISE

Due to their reputation as a market leader in elevator braking systems, Warner Electric was asked to design an innovative braking solution for the new elevator. Warner engineers worked closely with the OEM’s engineering team as the elevator design evolved.

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UNIQUE ENGINEERED BRAKING SOLUTION

The challenging gearless motor elevator application required dynamic torque <160% of nominal static torque, noise <54 dBA and very high energy, up to 57kJ. The braking system had three functions: ascending car overspeed protection, unintended car movement protection and maintaining car position in parking mode.

Warner Electric engineers developed a solution that had low wear but high energy, noise dampening with low torque impact combined with torque stability and precision. To meet the criteria, two modified ERS VAR15 electrically-released brakes with fixed magnets and a floating friction disc were designed. The highly modular, compact units allowed the configured system to fit within the customers tight footprint. Units are microswitch equipped, EC 95/16 certified and provide EN81-1 redundancy.

The brakes were subjected to a full array of lengthy testing including energy, life cycle, climatic, aging and destruction tests. Pre-packaged brake assemblies are delivered to the customer with ready-to-mount paired magnets and burnished discs.

COMMITMENT TO QUALITY MANUFACTURING

Warner Electric has recently invested in new, state-of-the-art manufacturing technology while optimizing their elevator brake manufacturing workflow for improved quality and efficiency.

Manufacturing upgrades include a new production line divided into two new work cells. The primary work cell allows for semi-automatized assembly utilizing conveyors. Components and brakes are traceable via bar codes. Visio software is used for component presence and profile detection. A slaved system has also been incorporated for screwdrivers, di-electrical tests,etc.

A new, multi-station robotized cell is also incorporated into the production process to provide friction disc burnishing, static torque adjustment, electrical adjustment, dynamic torque measuring, and component crimping to secure the adjustment. All production parameters are stored in a custom software program developed exclusively for Warner Electric. The program provides traceability for future analysis and continuous improvement.

The new production enhancements to the Warner Electric plant in Angers, France will allow Warner to more effectively meet the anticipated demand for the new elevator brake from Europe, Asia Pacific, and Latin America.

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