

Case note

Michelin makes big savings in energy and CO₂ emissions using high efficiency ABB motors.



Michelin

Michelin's auto and tractor tyre plant at Valladolid in northern Spain has drastically reduced its energy consumption after changing its old motors to new, more energy efficient ones. An audit was carried out by ABB in relation to the efficiency of the motors on the plants production line. The result of the audit showed that although the line had a high available production capacity, the installed motors had a low EFF2 efficiency rate with an output of 76.9%. The motors were replaced with high efficiency EFF1 or IE2 motors with an output of 84.2%.

The Valladolid factory is the newest of the company's four factories in Spain, as it began operating back in 1973. Nowadays, the factory has automatic chains for the manufacturing of medium-to-high range car tyres using state-of-the-art computer science, robotics and electronics. 80% of production is sent to major vehicle manufacturers such as the Seat-Audi-Volkswagen Group, Renault, Citroën, the Fiat Group and Toyota.

High efficiency

Motors in copper wire conductor machines with an average age of 20 years are replaced with new motors, leading to a drastic reduction in energy consumption and CO₂ emissions. Every year this reduction results in a saving per motor of 895 kWh. The motors had a capacity of 1.5 kW, 4 poles and 76.4% and were replaced with new aluminium ABB motors with a capacity of 1.5 kW, 4 poles and 84.2% (M3AA 90 LD4 model).

The motors operate under a system of 5,880 hours per year at a 90% load 100% of the time. The annual consumption for an existing motor was 10,322 kWh, whereas annual consumption for a high efficiency ABB motor is 9,428 kWh. The resultant saving, already mentioned above, is 895 kWh per motor. This translates into energy savings of 390,220 kWh for the 436 motors that are going to be replaced.

Amortization and financial savings

Pursuant to the results of the energy audit carried out, it was calculated that return on investment would be achieved in just 1.4 years due to the fact that if we calculate that annual energy savings are 895 kWh at a price per kWh of 0.08 Euros/kWh, without taking into account price variations, a saving of 72 Euros is obtained per motor with the price of said motor being just 99 Euros. Therefore, savings of 360 Euros per motor will be obtained in 5 years and 720 Euros in 10 years, which can be translated into the equivalent of purchasing 7 new motors.

Analyzing the data, the client obtains a high level of satisfaction thanks to savings in consumption and thanks to improvements provided by the product, including less noise and reduced maintenance. Furthermore, the client is helping to preserve the environment thanks to low CO₂ emissions.



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