

Case Study: Nissan, Sunderland, UK

Plug fan upgrade

Benefits:

- Upgrade reduces fan/motor energy consumption by 30%
- Short return on investment - only 21 months
- Reduced maintenance costs
- Better control and more redundancy

Plug fan upgrade pays back in only 21 months

Nissan's Sunderland plant in the UK is the biggest automotive manufacturing facility in the country, producing more than 500,000 vehicles a year and employing over 6,500 workers.

Nissan has been heavily investing to support facility expansion, new model line-ups and job creation. NMUK produces the Nissan Qashqai, Note and Juke and the 100% electric Nissan

LEAF as well as lithium-ion batteries at its battery plant.

The Nissan LEAF made history as the world's first affordable, mass-market, 100% electric vehicle. Powered using lithium-ion battery technology, these innovative vehicles make no noise and emit zero emissions.

To produce the batteries needed to power these electric vehicle, Nissan's plant in Sunderland built a 25,000m² clean/dry room that requires very precise and constant climate conditions.

Munters strictly controls climate

Munters ensures this area is held at -55°C dewpoint with 100% fresh air, by using three MDU2500 gas reactivated desiccant dehumidification units fitted with pre and post treatment. Designed to meet the specific requirements stipulated by Nissan, the systems were commissioned in 2011 and maintained by Munters Service.

Focus on energy savings

To ensure Nissan car plant remains productive and efficient, the Nissan Facilities teams are always looking for projects that can save energy, reduce CO2 emission and costs. These projects will need to provide return on investments (ROI's) in less than 2 years.

Since Munters Service is dedicated to helping customers optimise the value of their air treatment equipment, different options for energy optimisation on Nissan's MDU dehumidification systems were investigated.

Fan/motor upgrade

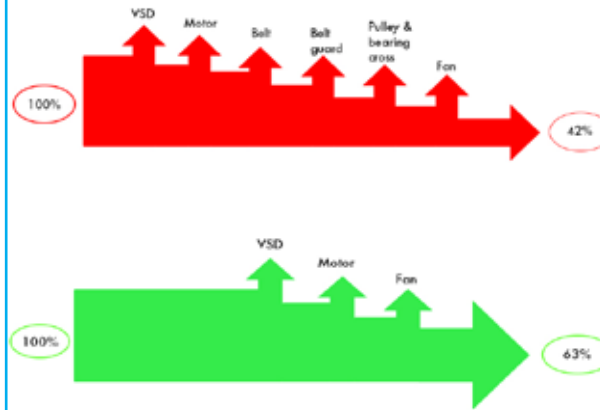
Due to advances in fan and motor technology, it became apparent to Munters that it would be beneficial to NMUK to update the original belt driven process fans and motors in the MDU's with newer and more energy efficient direct drive plug fans fitted with IE3 motors.

After surveying and installing data loggers Munters were able to provide estimated energy savings and an average ROI of twenty one months across the project, which was well within the client's stipulated ROI of two years.

The project involved upgrading the three Munters' MDU2500's systems and also three McQuay air handling units with direct drive plug fans.

The existing Munters systems were originally fitted with belt driven fans driven by 15kW motors, and because of the efficiencies gained by direct drive

Comparison on fan efficiency



Belt driven fan:

High number of loss factors greatly reduces efficiency

Direct drive plug fan:

Fewer loss factors= higher efficiency

- Direct drive (no belts/pulleys)
- More efficient impeller design
- More efficient motor class

plug fans it was possible to replace one 15kW motor with two 5,5kW plug fans for each system.

The replacement of the fans was carried out in the beginning of 2016 and Facility Engineer Phil Laing at Nissan expresses great satisfaction with the project:

"With the update we are increasing the capacity of the units for the same amount of energy used. It offers us more redundancy and gained resilience".

The increased capacity and redundancy are important advantages in a manufacturing plant, constantly striving to optimise production processes. In total Munters will save the client 47% of the fans running costs on the three dehumidification systems. In addition there will be less maintenance to be done, as there are no belts and pulleys to change and service.

Upgrades also on AHU systems

In general the conversion from belt driven fans to direct drive plug fans reduces the energy consumption by 30% and Munters Service offers these upgrades not only on older Munters' MDS and MDU dehumidification systems, but also on non-Munters conventional air handling units. Contact your local Munters Service Team and we will assist you in calculations on estimated energy savings in your specific case.

Read more about our Service Products on www.munters.com/service or watch a movie on the Nissan upgrade project on www.munters.com/Nissan



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