

ARTICLE

# UPS system prevents loss of several millions at Novo Nordisk

One production standstill at Novo Nordisk in Gentofte, Denmark can result in a loss in production of several millions in Danish Krone. Since August 2014, a UPS-I system from ABB has prevented 30 probable production breakdowns due to voltage dips in the power supply.

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01 Jesper Agertoft Pihl, electrical engineer and plant owner, is responsible for the electrical installations at Novo Nordisk in Gentofte.

Novo Nordisk in Gentofte, produce medicine for the bleeding disorder hemophilia. During the manufacturing process, the ventilation systems contribute to keeping the environment sterile by generating pressure, which prevents impurities from penetrating from the outside. However, Novo Nordisk had problems with voltage drops in the power supply, where the sensitive ventilation system cut out – resulting in large production losses.

“In case of missing pressure above the atmosphere, all medicine must be discarded and production premises as well as equipment shall undergo an extensive cleaning that takes three days”, says Jesper Agertoft Pihl, electrical engineer and plant owner at Novo Nordisk in Gentofte.

A standstill may cost several millions Danish Krone and in the worst case, the pharmaceutical manufacturer will not be able to supply the market. Novo Nordisk in Gentofte is in production 24 hours throughout the year, which means that it is not possible to make up for a production loss and this could affect the supply security of the consumers. That is why the factory chose to install two offline PSC100 UPS-I systems from ABB in 2014, which keeps the voltage stable and prevents shutdowns.

“An offline UPS system is connected in parallel with the supply. It monitors the network, and if it detects a fluctuation in voltage or a failure in the supply, it will take over the load”, explains Rasmus Theill, product marketing director of Power Protection & EV Infrastructure at ABB in Denmark.



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02 The UPS-I facilities had a payback period of only three weeks.

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03 The touch screen visualizes the status of the plant and supply conditions.

### Increase in voltage dips

Previously, the pharmaceutical company typically had four to six shutdowns a year, which had been increasing. From the installation of the UPS-I in August 2014 to mid-December 2016, they had registered 59 voltage dips. From this, 30 would probably have caused downtime because the voltage dips fell below 30 per cent where the ventilation systems cut out.

“Only three weeks after installation, it prevented a breakdown due to voltage dips – it had then paid for itself” says Jesper Agertoft Pihl.

The voltage dips occur at switching of the mains voltage between power plants (wind energy and solar energy). The number of these disconnections had been increasing during the last few years as more and more of the power supply comes from alternative energy sources. The voltage drops may not affect a normal production facility, but it is problematic in highly sensitive facilities.

### Best security in the market

The function of the UPS-I system is not only to prevent breakdowns due to voltage fluctuations, but also to act as a general emergency supply and here every precaution is taken. The construction of the system is redundant with eight modules per plant, each having five battery strings. Even if one module drops out, the remaining modules ensure that there is supply. The plant has no less than ten minutes of battery backup.

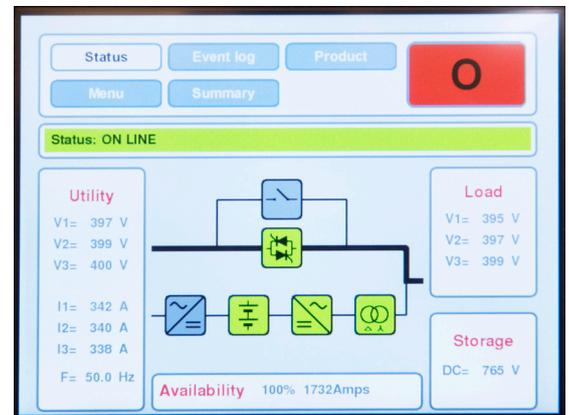
The uniqueness of the UPS-I is that the transfer time - the time it takes for the system to connect, is less than 1.4 milliseconds. Additionally, it does not have the same power loss as an online UPS solution, but achieves an efficiency better than 99 per cent, which is the highest in the market, emphasizes Rasmus Theill.

At the factory, they had previously problems with harmonic currents, which caused unintended tripping and affected the lifetime of the components. For each UPS-I system, they have consequently installed two 100 amp active filters from ABB that solve this problem.

To find out more about ABB's power protection solutions:

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