

Press Release
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Increased safety for occupants as FläktGroup announces the first packaged HT fan and VSD meeting new standard

Fläkt Woods UK (FläktGroup), together with Danfoss drives, are the first to announce a fully certified EN12101-3: 2015 packaged HT fan and VSD solution in the UK & Europe.

EN12101-3:2015 – Full Compliance delivers safer buildings. Full compliance with this Enhanced Smoke and Heat control systems standard will drive increased safety for building occupants.

On the 8th April 2017 the Smoke and Heat control systems standard changed to include the option to use Frequency Converters during a fire event. This revision, FläktGroup believes, is a real game changer, as it offers designers more solution possibilities and significantly improves building occupant safety.

Full compliance with this revised standard means that the group can offer all 3 defined solution choices defined within the standard. The designer can therefore choose from the following:

- Fully tested and certified High Temperature Fan/VSD range (Ducted and Thrust fan variants)
- By-pass the VSD during a fire event
- De-rate fan drive motor by 20% and fit Voltage Waveform filter



Fully tested and certified High Temperature Fan and VSD range

Having successfully completed third-party testing of its core fan range, FläktGroup is proud to confirm that Fläkt Woods UK, together with Danfoss Drives, are the first to announce a fully certified EN12101-3: 2015 packaged HT fan and VSD solution in the UK and Europe.

This VSD fan control solution is the most practical, flexible and cost-effective solution as it removes the need for over-sizing fan drive motors and having to fit a Voltage waveform filter (although this could still be considered). Reliability of a dual mode fan and matched VSD package is also higher, as fire mode fans are effectively “run tested” every day. Dedicated fire mode fans are typically only tested a few times a year.

As full compliance requires fan manufacturers to undertake extensive third-party fan testing with VSDs as an integral part of the solution (rather than being just an accessory), this HT fan certification re-validation process represents a significant time and resource commitment.

To ensure delivery of the best possible customer solution, Fläkt Woods UK teamed up with leading VSD manufacturer, Danfoss Drives. Both companies, who together have amassed a total of 150 years’ experience within the HVAC industry, are passionate about quality, excellence and fire safety.

When delivering a robust and reliable Smoke Extract Fire Safety solution, there are two significant factors to consider

Firstly, correct Axial fan design is critical, especially related to its core component, the impeller, as this is vital to ensuring overall product integrity and reliability. One key factor here is the gap between

the fan casing and impeller blade tip (to allow for material expansion at elevated temperatures), but accurately assessing operating component stress levels is the most significant factor when ensuring durability of any powered smoke extraction solution. The fan drive motor design and specification (especially bearings) is another very significant design factor which influences overall product reliability. The second solution element is the VSD. Historically, system designers have often opted to switch out or by-pass the VSD during a fire event, but using a VSD during an emergency smoke extraction event is increasingly becoming more desirable, as they add additional control flexibility to ensure that smoke control and extraction performance is optimised.

By-pass the VSD during a fire event

By-passing the VSD during a fire event does, on the face of it, provide a more robust solution, but doing this would force the fan to run at full speed. If the fan is used within a pressurisation system then doing this could cause system component damage, by over-pressurising them. Worst still, over-pressurising stairwell pressurisation systems would have very serious consequences, as this may then make it impossible for occupants to open escape route doors. In addition, by not using a VSD it would make it much more difficult for the system designer to achieve desired smoke control and extraction strategies.

Using a non-certified fan and VSD package during a fire event

EN12101-3:2015 allows VSD speed control for a dual mode fan, even during a fire event, but unless the fan, drive motor and VSD have been third party tested and certified, the drive motor rating must be increased 20%. In addition, the installer must fit a voltage waveform filter between the VSD and motor.

The issue here is mainly cost and practicality, as voltage waveform filters are very expensive, often costing more than the VSD. In addition, as these should be housed inside a remotely mounted control panel, the enclosure needs to be larger, while extra wiring would also be needed. As the fan drive motor must also be larger, fan cost will increase, while higher amp ratings could impact on wiring and control equipment ratings and costs.

Fläkt Woods and Danfoss Drives packaged solution is fully certified Axial fan range with matched VSDs and offers enhanced protection, reduced risk and lower installation costs.

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