

High power VLT® drive solves Hi-Lo-Hi medium voltage application



The ID fans in the Korean incinerator plant

Since July of 2005, a low voltage VLT® frequency converter has controlled a 3300 V motor in a vital process in a South Korean waste incinerator plant., reducing power consumption by 50% and recovering the customer's investment within one year.

Danfoss supplies low voltage frequency converters with a maximum voltage of 690 VAC. Some high power applications require drives to control medium voltage motors above 2000 VAC.

Medium voltage drives (above 690 V) tend to be costly, due to lower market demand and significantly more expensive power electronics. This is especially true in power ranges that are typically low for medium voltage drives, such as 250 kW.

The Hi-Lo-Hi approach for medium voltage, variable-torque applications, is a competitive Danfoss solution. The medium voltage incoming power is stepped down to a low voltage compatible with a VLT® drive.

After the power is processed through the drive and passed through a sine-wave

filter, it is then stepped up to the higher voltage via a step-up transformer as required by the motor.

VLT® operation of a 3300 V motor

In South Korea a VLT® 6000 has been engineered into a medium voltage drive system to supply variable frequency power to a 250 kW, 3300 V motor. Two 250 kW, 460 volt, integrated VLT® drive panels with matching output sine-wave/LC filters were delivered. The variable speed application is for an induced draft fan on an industrial waste incinerator.

Compact dimensions, high efficiency and ease of use

The order was secured from Green Solutions Co. Ltd. (GREENSCO), which specializes in industrial waste incineration. Danfoss won against stiff competition from competitors that manufactures medium voltage drives up to 7000 kVA with output voltages of 3300 V & 4160 V. The customer selected Danfoss drives for their compact dimensions, high efficiency and user-friendly operator interface.

Breakdown is life-threatening

The technical director of GREENSCO ex-

presses his satisfaction at the trouble-free operation of the VLT® drives. The VLT® system has resulted in reduced starting power, high energy efficiency, and lower mechanical maintenance. Above all, equipment reliability is a key performance parameter for the application. The drive performance and reliability is critical to the operation of the plant, since any breakdown will lead to the emission of dioxin, a toxic chemical which is extremely harmful to the human body. Emissions of this toxic chemical are monitored on-line by the government and strict penalties are imposed for non-compliance with the norms. Since reliability is so important, the customer purchased a second stand by drive to ensure uninterrupted operation of the incinerator plant.

The Hi-Lo-Hi solution from Danfoss has delivered the reliability and performance demanded by the customer.

Pay-back in one year

With the installation of the VLT® frequency converter, power consumption has been reduced by 50% and the customer has recovered his investment within one year.