UPG
Technical Services

APPLICATION ENGINEERING
BULLETIN Number # AE-008-07

- TOPIC: Developing frequency over 60 HZ for the Variable Frequency drive in the Millennium unit

- SCOPE & PURPOSE:
  - To understand the ability and process of drive adjustment in the Millennium product

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- CONTENT:
  - This bulletin is to explain how to over drive the Danfoss drive in the Millennium product

- SUMMARY/CONCLUSION:
  - The ability of the variable frequency drive in recent years to finitely control motors and pumps has been growing exponentially. In the early days of VFD control the drives were big and bulky, loaded with capacitors and generated massive amounts of heat. Today's drives are small compact and offer a broad spectrum of control for the technician as well as the building owner.
  - The Millennium product in the VAV configuration has ability to be overdriven as long as the parameters that are associated with the motor and blower wheels are adhered to.
  - Upon start up you may discover that the unit has "topped out" on frequency, or 60 Hz. If this is the case a simple check of the motor amperage could tell you if you could overdrive the motor with no fear of damage to the motor or unit.
  - In this example let say that the unit needs 16000 cfm, and your measured cfm after measuring across the evaporator from the chart in the installation manual is 14700. The first step would be to get air flow then amperage for motor @ 60 Hz. After finding out the amperage, let's say the motor is rated for 26 amps and @ 60Hz you are only pulling 14 amps. This means that you have room to over drive the motor

you just cannot go over name plate rating or blower rpm limitations. The Baldor motors we use are suitable for this type of use and in no way does this deplete the motors longevity or damage it in any way.

- Rpm limitations for blower wheels are as follows:
- 25 /30 ton Class 1 = 920 rpm (part# 294141),Class 2 = 1172rpm (part# 9013)
- 40ton class 1 = 790 rpm (part# 294142), Class 2 = 1013rpm (part# 9015)
- Understand first that the drive converts AC to DC and then back to AC. Motor and frequency increase = rpm increase. The limitations are 130Hz and 4000 rpm on the motor, however it must be noted that our blower wheels have rpm limitations as well and should not be exceeded or catastrophic failure can occur. The only parameter that needs to be adjusted would be parameter 205 or max frequency reference. These only needs to be done if you have a full understanding of how the drive will react to this change. If not, call tech service for assistance. To change this parameter go to the drive and depress the "quick menu" button and the + button at the same time and this will open the quick menu. Now scroll up to parameter 205 using the + button, when you reach parameter 205 depress the Change data button and the use the + button and raise frequency in 5 Hz increments until desired air flow is reached. During this operation you should be checking amperage of motor to be assured of not exceeding rated name plate amperage and checking blower wheel rpm so limitations are not exceeded. The motor name plate amperage should already be input into the drive at the factory so over load amperage would still result in a fault or shutdown of the unit.
- If higher frequency is input after start up it should be labeled conspicuously on the drive or in the vicinity of drive so other technicians can be aware of the change from normal 60Hz operation.

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- 05-14-2007

KEY WORDS: (For searches)

- Elite
- Millennium
- VFD
- Variable frequency drive

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