

ENGINEERING  
TOMORROW

*Danfoss*

Danfoss Maneurop® inverter reciprocating VTZ

## High Precision and Cost Effectiveness at the Core of your Process

Danfoss Maneurop® - VTZ reciprocating inverter compressors 11 – 166 kBtu/h multirefrigerant units - R404A, R407C and R134a - for commercial and process cooling applications prevent you from oversized and short cycling systems by automatically adapting to the current load in your commercial package air conditioning, chillers and rooftops. Use the compressor package that utilizes variable speed technology.

**±0.3°C**

precise and stable  
temperature control  
improves process  
and equipment  
reliability



Refrigeration compressors are normally selected to correspond with maximum expected system loads. Since loads vary throughout the year, the compressor designed for maximum loads turns out to be oversized during long periods (it has been estimated that on average systems are running partially loaded at least 85 % of the time).

The conventional regulation systems used for compensating this excess capacity are on / off controls, pressure regulation unloading valves or hot gas bypass.

In comparison with these methods, the Danfoss variable speed VTZ Compressor Drive™ offers a superior, innovative and energy efficient solution.

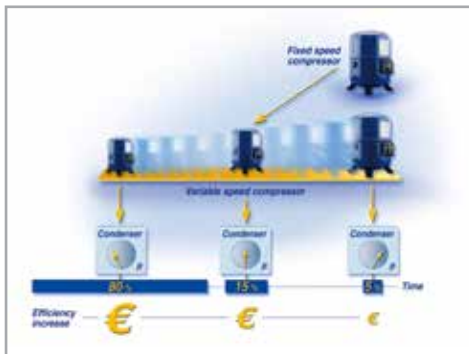
# 4 Fundamental Reasons to Go for VTZ Compressor Drive™ Solution:

## 1- Operation and energy efficiency

### High COP across the whole operating range

In a standard hermetic piston compressor, the capacity is fixed: the electrical motor and crankshaft rotate at a speed of 2900 rpm (50 rps).

In a VTZ Compressor Drive™ the rotation speed may be varied with a frequency band from 30 to 90 rps depending on the cooling needs. So the compressor is always well dimensioned with respect to the cooling needs providing a high COP across the whole operating range.



### Energy savings

The energy consumption of the VTZ Compressor Drive™ is lower when the compressor is running at a reduced speed.

Product competitiveness is increased with the high efficiency at part load and improved SEER.

### Smaller compressor

In comparison with a single speed compressor, the variable speed model can be designed several sizes smaller to match the nominal system load, hence increasing efficiency at every capacity load.

## 3- An innovative and reliable solution

The VTZ Compressor Drive™ combines the latest technology developments of frequency converters and compressors.

### Intelligent system

The communication option through serial port RS 485 and modbus enables easy connection to building management systems.

### Increased lifetime of mechanical parts of the installation

The limited number of on / off cycles and soft starting feature of the drive provides a reduction of mechanical and electrical stresses on the compressor and other mechanical parts of the installation.

### Noise reduction

provided by the speed reduction at night and the limited number of starts and stops.

Control panel options



## 2- One qualified “plug & play” solution

### Reduced set up time and lower installation costs

No need to select the appropriate drive to the compressor: the solution is prequalified and you get easily your code for ordering.

Lower installation and commissioning time: the drives are factory preset in all parameters to run with an external 0-10 V signal and for optimum performance on the whole VTZ Compressor Drive™ range.

### Many integrated functions for reduced costs in additional equipment

Smaller cables and electric devices ratings & lower electrical power supply contract: the built-in soft starter reduces peak current during compressor start.

Reduced costs in external electrical components: built-in motor protection and RFI filter (Radio Frequency Interference). No need for power factor correction.

### Electrical installation savings

Applied cost reduction with integrated crankcase heater, soft starter and downsizing of components.

### No need for external controller

The built-in software provides a PID function enabling control of suction pressure or room temperature while offering additional smart features like anti-short cycling, built-in pressostat to manage on/off control of the compressor...

Reduced costs in panel instrumentation: the drive's graphic display gives most necessary electrical and mechanical information (energy consumption, speed, current...)



### Capacity modulation

In manifolded units, this controller allow staging of up to two fixed-speed compressors.

### A proven qualified solution

Validated by extensive R&D laboratory and field tests. Enhanced reliability with smart short cycle timer, discharge gas temperature protection, oil return management.



### A unique Danfoss commercial and technical support for the VTZ Compressor Drive™.

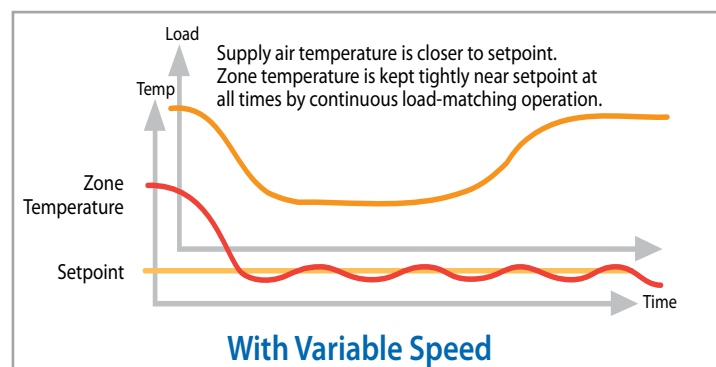
## 4- Flexibility and precision cooling within a wide capacity range (30-90 rps)

### Precision cooling

Improve data center or industrial process efficiency with step less capacity control.

### Maintain an optimum set point for a better media temperature regulation

The drive decreases fluctuations of the evaporating temperature (usually caused by compressor cycling) and therefore allows a stable and constant regulation with higher evaporating temperature.



**Wide flexibility in cooling capacity** in a VTZ Compressor Drive™, the rotation speed may be varied from 30 to 90 rps. Depending on the cooling needs the compressor capacity varies in accordance.

## Quick Selection Guide: R404A - R407C - R134a



**VTZ 038-G  
& Compressor Drive 4.0 kW**



**VTZ 086-G  
& Compressor Drive 7.5 kW**



**VTZ 242-G  
& Compressor Drive 22.0 kW**

Cooling Capacity (Btu/h)	R404A Evap. 14°F Cond. 113°F	R407C Evap. 41°F Cond. 122°F	R134a Evap. 41°F Cond. 122°F
35 rps	5 751	10 416	6 573
60 rps	10 915	18 328	12 167
90 rps	15 031	26 652	18 437
35 rps	8 734	14 382	9 870
60 rps	15 741	26 768	18 256
90 rps	21 584	38 526	27 686
30 rps	13 481	22 529	16 065
60 rps	25 410	40 618	29 007
90 rps	39 007	59 041	44 061
30 rps	20 700	35 078	21 986
60 rps	35 939	62 003	38 952
85 rps	49 130	86 242	55 539
30 rps	27 567	48 546	31 703
60 rps	50 034	86 304	57 785
90 rps	76 113	129 962	87 495
30 rps	36 317	63 611	42 249
60 rps	63 720	112 836	76 331
90 rps	99 017	165 754	115 747
30 rps	40 666	70 440	46 242
60 rps	72 266	123 181	81 799
85 rps	96 201	172 915	117 123

**Voltage code:** G (380-480V / three-phase motor)  
For other voltage codes available, please refer to the VTZ guidelines.

**Rating conditions:**  
Superheat 18°F - subcooling 0°F  
Dew point value for R407C.

For further information, please ask to your local Danfoss organization.