

MagLev / Turbocor Compressor Information for Multistack Chillers

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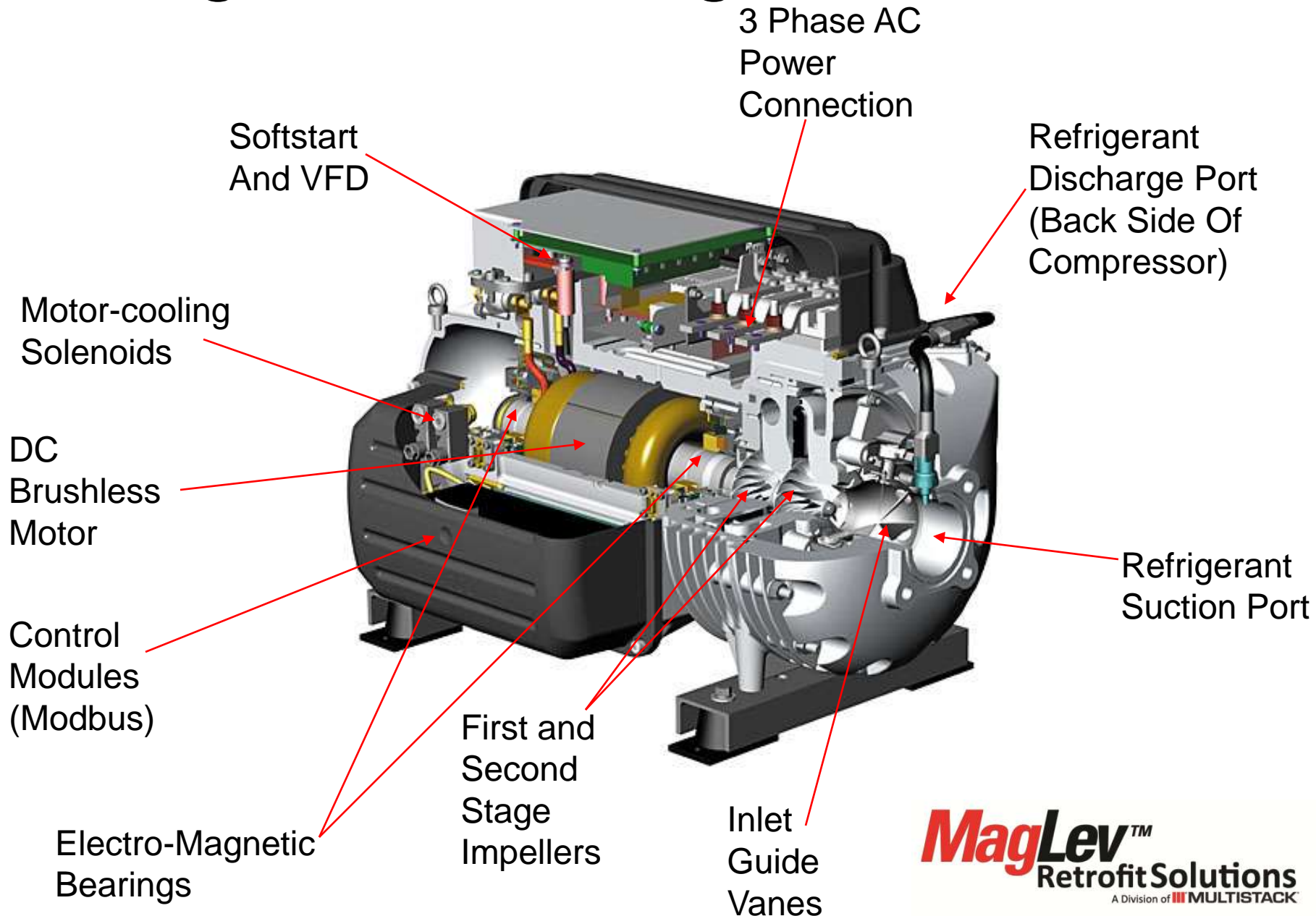


Compressor Overview

The MagLev Turbocor Compressor

- A 2 Stage Centrifugal Compressor which has Magnetic Bearings and starts at 60 ton Capacity
- Designed To Provide Typical Full Load Performance and Superior Part Load Performance
- Oil-Free, Very Quiet, and Vibration Free
- Small & Lightweight (only 20% weight of normal compressor)
- On Water Cooled Chillers, estimated 30% Energy Savings
- On Air Cooled Chillers or DX Systems, estimated 50% Energy Savings
- Multiple MagLev Compressors on Multistack Chillers give good system redundancy

Magnetic Bearings & Oil Free



The Sinclair Building – Pasadena, CA (Retrofit)

- 6,400 lbs was replaced with 265 lbs (and reduced power bill by more than 50%).



Before



After

- R22 built up DX system converted to R134a

Screw Compressor Retrofit



Before



After

Centrifugal Compressor Retrofit



Before

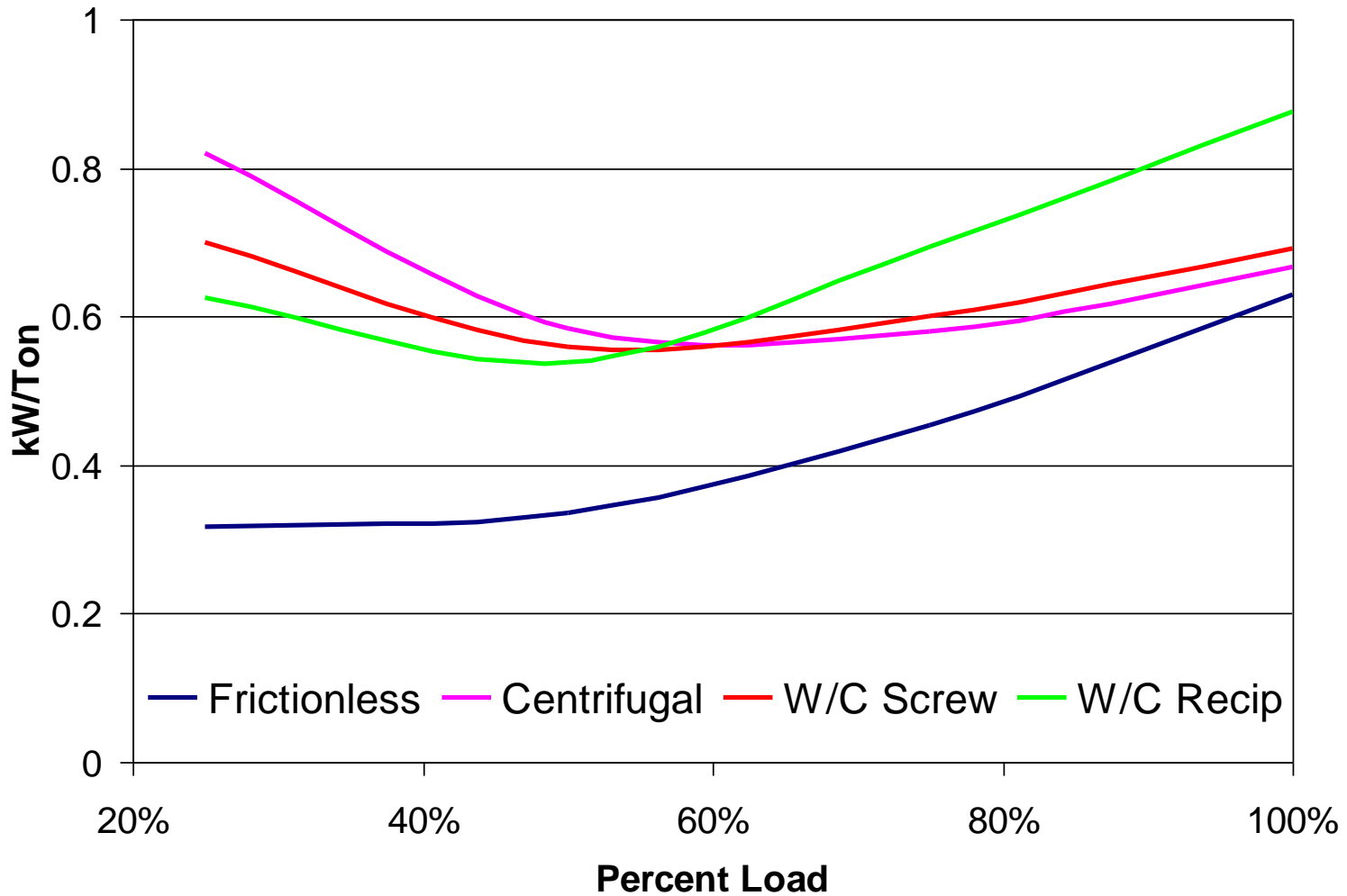


After

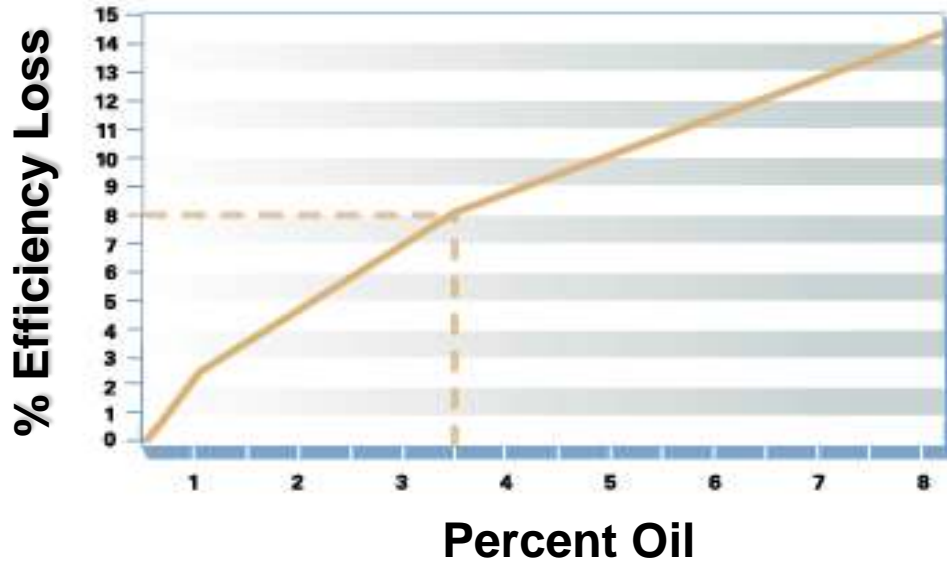


Since no oil is used in MagLev Compressors eliminates oil piping complexity, additional material/labor costs, and potential joint leaks associated with oil return.

Chiller Efficiency Comparison By Compressor Type (Total chiller, not just compressor alone)



The Effects of Oil in a System

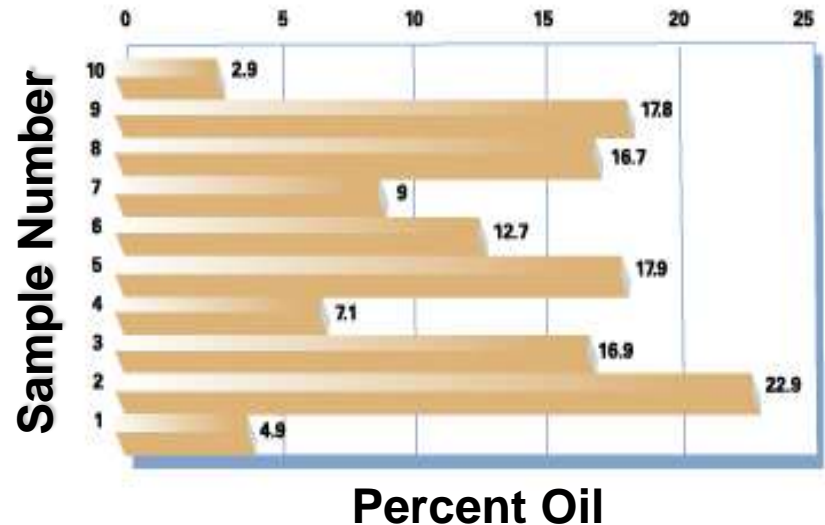


3 ½% of oil in the refrigerant charge reduces system efficiencies by 8 %

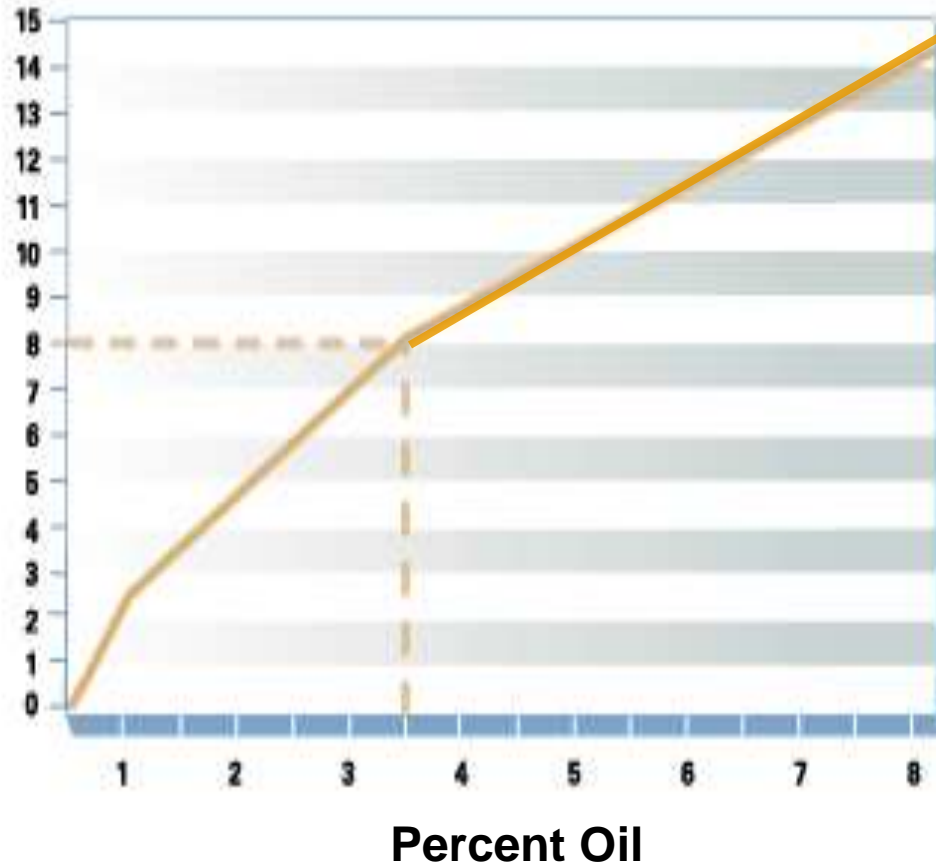


An ASHRAE study determined that the vast majority of installed chillers have an excess amount of oil in the cooling system

ASHRAE research study 601

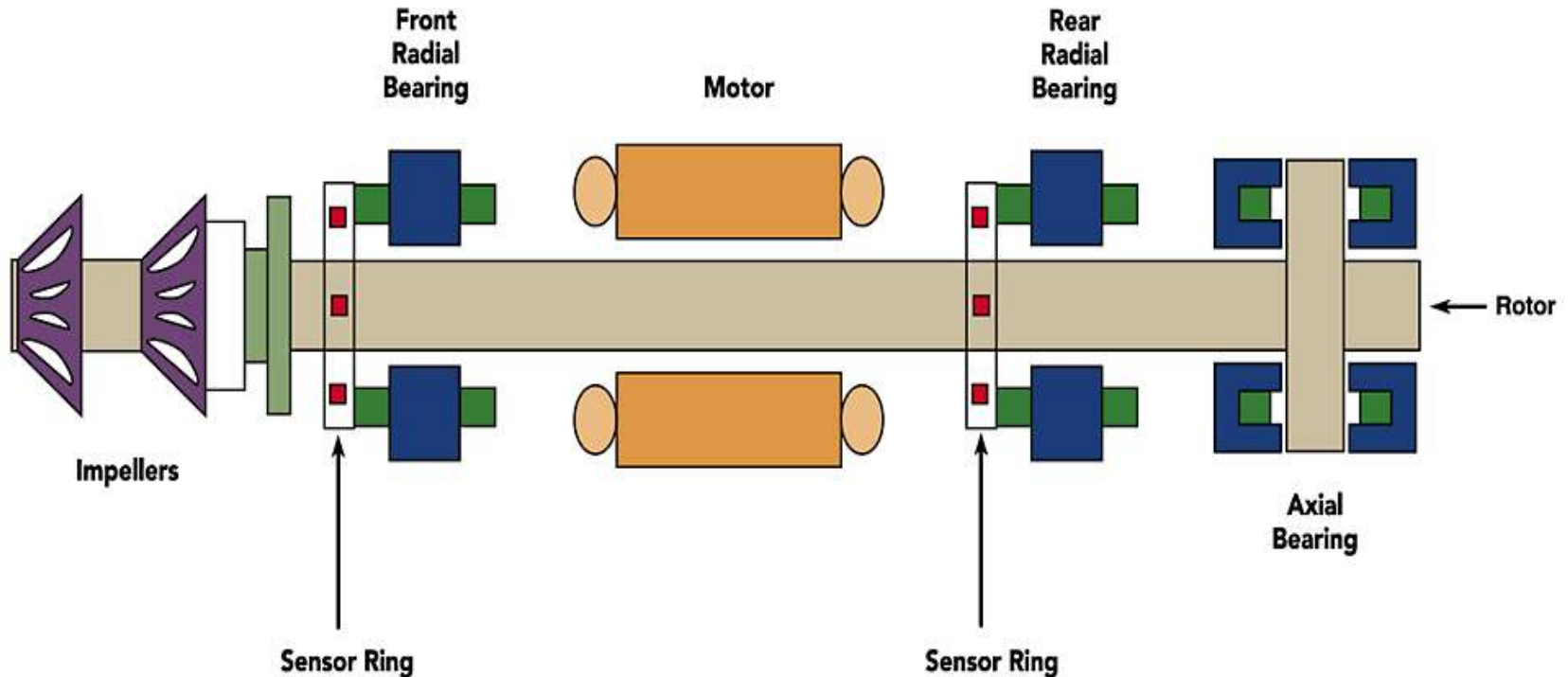


Effect of Oil Overcharge from the Ten Chillers Tested



In the ten (10) chillers tested in the AHRAE study, the **average overcharge** of oil in the system was **12.88%**, this equated to an average **energy loss of about 21%**.

Direct Drive Centrifugal With Magnetic Bearings (in x, y, and z planes)



Magnetic bearings and sensors keep the shaft properly centered and positioned at all times (shaft position is monitored 100,000 / sec).

Sound Data



BENCHMARK
COMPRESSION SOLUTIONS



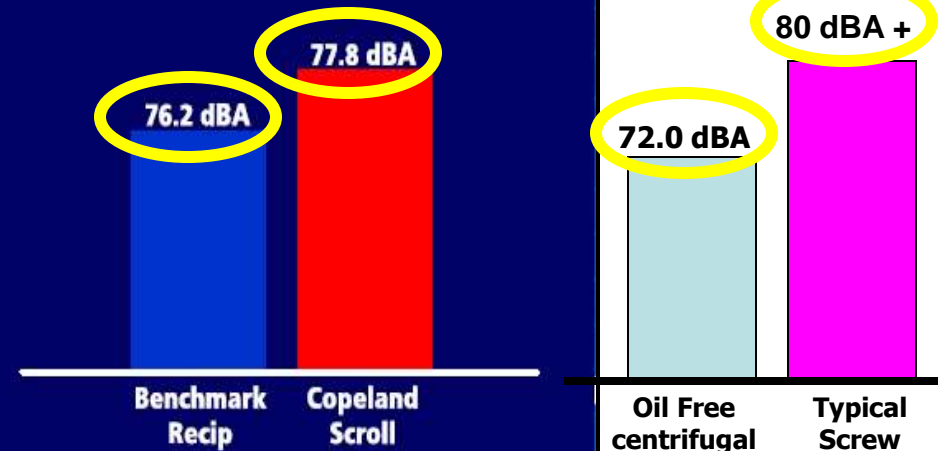
COPELAND
SCROLL T

SOUND SAMPLING METHODOLOGY

CLOSE

Compressors were recorded in a controlled environment under identical conditions. Audio recording was conducted after the fan shut-off for more accurate comparison of compressor sound.

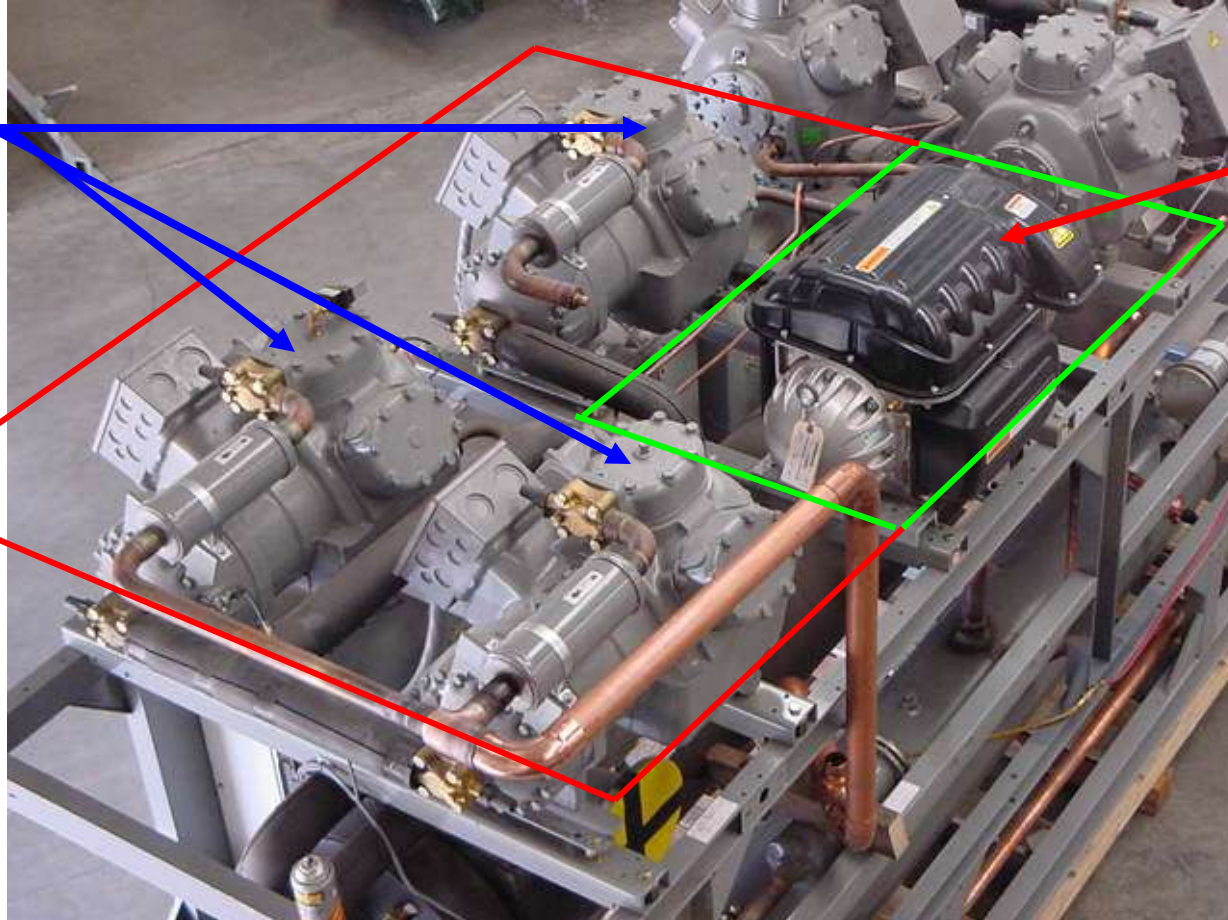
More Than 1.5 dBA Quieter



This is a copy of a Benchmark ad modified to include the centrifugal compressor sound performance by comparison. Note that Recip and Scroll compressors are approximately 10 tons; the Turbocor is 80 tons and still much quieter (dB scale is a logarithmic scale).

TT300 Comparison

75 ton vs 75 ton



25 Tons Each
Conventional
Compressors

75 Ton
MagLev

Efficient use of materials and labor-

Carrying the 265 pound compressor with a section of copper tubing that will be used to re-pipe the compressor



Emergency Generator Operation Benefits

- Only 1.6 amp inrush current at 480 volt with MagLev
- More standby generator capacity allowed due to very low in-rush current

For More Information and to Set Up A Meeting Please Contact

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MagLev™
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A Division of **MULTISTACK**