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FREE ZONE™ CHILLER CONVERSION



When retrofitting R-12 centrifugals to FreeZone RB-276, several important issues need to be fully addressed. These items are:

1. Many Centrifugals are serviced by OEM or larger and more capable service contractors that are more interested in selling new equipment or selling a driveline enhancements than offering their customers a lower cost solution of converting an older chiller. In many cases simpler conversion options will be viable and very attractive with FreeZone RB-276. To determine if RB-276 is an alternative for your customer you will need to ask the following questions.

2. How many chillers are being considered to convert? At what percentage of maximum load (all chillers operating) are needed to meet the customers cooling requirements at worse case actual operation. Are the chillers controlled by variable speed, i.e. steam turbine drive, gas engine, or variable speed control? How ever there are a number of chillers that do not require variable speed to work on RB-276

3. The critical factor for centrifugal compressors is surge line and the stonewall or choke points. These points are a function of capacity or flow and lift or head. Since only the manufacturer knows where these curves and points exist in a centrifugal, we need to determine the closest points by looking at the operating logs and determine the maximum lift or head capability of the compressor's aerodynamic design. The maximum lift is the ratio (absolute pressures) between the maximum condensing pressure (typically at the highest entering condenser water temperature) and the pressure in the evaporator the design LCWT. We also will need the Δt across the evaporator and chilled water flow rate to determine refrigeration capacity. Please also provide the speed of your gas-powered engine drives, steam turbine drives, or variable frequency drives at the same conditions and to what speed, if any, it could be increased? With this information we can predict performance expectations with FreeZone for your application. See the log sheet below and fill in the data requested.

4. Because FreeZone is a blend designed to emulate the pressures of R-12, please list all control set points that are based on refrigerant pressure and we can determine new set points with FreeZone. Some

typical controls include the following:

Inlet vanes for capacity control
 Low pressure and/or anti icing cutout
 Low oil pressure cutout

5. Because FreeZone is predominantly an HFC, and contains a neptenic oil designed to thin the existing systems mineral oil we suggest following the manufacturer recommendations for converting to R-134a. Oil analysis should be taken annually thereafter and a log sheet for added oil should be maintained.

6. Gaskets and o-rings may need to be changed out when converting and if changed they should be changed to R-134a compatible materials.

Blends are not a new idea, just not offered by the major equipment and refrigerant manufacturers because it results in fewer sales of equipment and service. FreeZone RB-276 offers owners another option.

Print this Performance Log, fill it out completely, including your fax number, and fax to 770.888.9252. Using this information, we will provide an answer to the efficiency of RB-276 in your particular system.

	Design	Worse Case Hot Day	Expected Performance
CHILLER Refrigerant	R-12	R-12	FreeZone
OIL TYPE			
SUCTION PRESSURE			
DISCHARGE PRESSURE			
OIL PRESSURE			
DRIVE TYPE			
DRIVE RPM			
CURRENT AMPERAGE/HP			
RATED CAPACITY			
# OF CHILLERS			
RESERVE CAPACITY%			
CHILLED WATER			
LCWTEMP			
RCWTEMP			
CHILLED WATER FLOW GPM			

MAX LCWT			
CONDENSER WATER			
ECondWTEMP			
LCondWTEMP			
COND. WATER FLOW GPM			
Pressure Control Set Points			
l			
Low pressure and/or anti icing cutout			
Low oil pressure cut-out			

Please include the Model of the Compressor, Model number of Chiller and the model number of the vessels.

Fax number to return RMS conversion information:

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