



Application Engineering Bulletin
AE-1284-R1

Revised December, 1994

SWITCHING REFRIGERANTS IN FIELD INSTALLATIONS

As a result of price increases and possible shortages of the commonly used refrigerants caused by the CFC issue, substantial interest has developed in switching refrigerants in existing systems (such as switching CFC-12 systems to CFC-502 or HCFC-22 and switching CFC-502 systems to HCFC-22). In most cases, such a switch is not economically justified as Copeland believes most existing systems will be able to be maintained for their useful lives by recycling existing refrigerants and repairing leaks.

Copeland strongly recommends against switching refrigerants without doing an extensive engineering evaluation of the system. Refrigeration systems are highly engineered for a specific application with a specific refrigerant. As a result, switching refrigerants in an existing system will strongly affect the operation of major system components such as the compressor, operating controls, expansion valves, pressure actuated valves, condenser fan controls, and safety controls. In addition switching refrigerants may require major system piping changes due to differences in gas velocity and oil return characteristics. Switching refrigerants could also reduce system efficiency and cause new leaks in the system because of higher operating pressures. These higher pressures could create a potential safety hazard in the case of structurally weak components. Furthermore, the capacity of the system may change substantially and the reliability of many of the components may be severely compromised. Because of these problems Copeland does not advocate switching refrigerants in existing systems.

Before such a change would be undertaken, a comparison of the potential costs and benefits of switching refrigerants should be made and **specific approval and recommendations from the original equipment manufacturer should be obtained.**

As alternative refrigerants to CFC's become available in the marketplace, Copeland will publish guidelines for retrofitting to existing compressors as appropriate. These are available for the following:

R-12 To R-134a
R-502 To R-404A/R-507
R-12 To R-401A
R-12 To R-401B
R-502 To R-402A

It is expected that OEM system manufacturers will provide similar information for their equipment.

