

# ROBERT L. KISTLER SERVICE CORP.

Retrofit Solutions for R22 to R407C



## OVERVIEW

Currently there is an increased scarcity of refrigerant R22, a commonly used refrigerant found within air conditioning and refrigeration systems. The scheduled phase out of R22 due to its ozone depletion potential has been outlined in the Montreal Protocol. Current phase out for new equipment was January 1, 2010. **All sales of new R22 for use in refrigeration and air conditioning service will cease January 1, 2020.**

### Background

The continued use of R22 presents a risk to owners or managers of building assets. The ongoing reduction in imports is resulting in reduced availability and an elevated cost for this refrigerant, where obtainable. Availability of the refrigerant is expected to be highly constrained from 2017 onwards.

### The Opportunity

The future phase out of R22 has prompted many users to plan to remove refrigerant from existing R22 systems and replace it with a non-ozone-depleting alternate such as R407c. There are multitudes of reasons for this action including standardization efforts with future equipment, corporate policies that require that companies “go green”, desire to have similar systems worldwide, the use of one refrigerant for new and old equipment, etc.

## OUR PROPOSAL

**Retrofitting a system with R407C** requires an evacuation of existing refrigerant. A compressor oil change from mineral or alkyl-benzene oils to POE (polyester) oil. Possible multiple oil changes are required to remove most mineral/A-B oil from the system. Also change out other system components as required. Retrofitting air cooled systems will result in a possible capacity reduction. If an existing system is borderline on capacity we recommend a budget to replace the unit.

### Cost Savings

R22 per pound \$50.00 vs R407c per pound \$11.00 (as of 4/2017)

*Retrofitting existing Refrigerant R22 units with new alternatives may result in capacity reduction*

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## SCENARIOS

### Scenario 1 - 15 Ton Liebert

#### Refrigerant R22

A customer owns a 15-ton Liebert, which holds 200-250 lbs. of refrigerant R22. There was a catastrophic event where a refrigerant fitting has cracked and released all of its charge. In this scenario, the cost to repair the leak and recharge with new refrigerant R22 would be an expensive repair. The system would be about \$12,500.00 in just refrigerant alone. This does not include environmental charges and repairing the cracked fitting, pressure testing and putting a vacuum onto system. This could be an additional \$3,000-\$5,000.00 in repair costs. With this repair, the price would be **\$17,500.00**.

VS.

#### Conversion Refrigerant R22 to Refrigerant R407c

A customer owns a 15- ton Liebert, which holds 200-250 lbs of refrigerant R22. There was a catastrophic event where a refrigerant fitting has cracked and release all of its charge. In this scenario the cost to repair the leak and recharge with new refrigerant R407C would be an average repair cost. The system charge would be about \$2750.00 in just refrigerant alone. This change will need at least two oil changes and which the system would already be at atmospheric pressure and possible isolation valves will need to be put into system. When doing this conversion other system components must be changed out as well. Also the repair of the cracked fitting, pressure testing and putting a vacuum onto system will need to be done as well. This could be an additional \$3000-\$5000 in repair costs. With this repair the price would be **\$7750.00**.

### Scenario 2- 3 Ton Liebert Mini-Mate

#### Refrigerant R22

A customer owns a 3-ton Liebert Mini-Mate, which holds 10-15 lbs. of refrigerant R22. There was a catastrophic event where a refrigerant fitting has cracked and released all of its charge. In this scenario, the cost to repair the leak and recharge with new refrigerant R22 would be an expensive repair. The system would be about \$800.00 in just refrigerant alone. This does not include environmental charges and repairing the cracked fitting, pressure testing and putting a vacuum onto system. This could be an additional \$2,000-\$3,000.00 in repair costs. With this repair the price would be **\$3,800.00**.

VS.

#### Conversion Refrigerant R22 to Refrigerant R407C

A customer owns a 3- ton Liebert Mini-Mate, which holds 10-15 lbs. of refrigerant R22. There was a catastrophic event where a refrigerant fitting has cracked and release all of its charge. In this scenario, the cost to repair the leak and recharge with new refrigerant R407C would be an average repair cost. The system charge would be about \$165.00 in just refrigerant alone. This change will need at least two oil changes and which the system would already be at atmospheric pressure and possible isolation valves will need to be put into system. When doing this conversion other system components must be changed out as well. Also, the repair of the cracked fitting, pressure testing and putting a vacuum onto system will need to be done as well. This could be an additional \$2,000-\$3,000 in repair costs. With this repair, the price would be **\$3,165.00**.

## CONCLUSION

**Consider the benefits of retrofitting from R22 to R407C before the need arises.** The cost savings, availability of the product, and the green aspects of conversion make this an affordable and highly effective solution.

For more information, please contact **Robert L. Kistler Service Corporation** for a detailed analysis of your service needs.



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