

Maintenance and Wear of A/C Units

Effect after application of SRA

This document describes how the Synthetic Refrigerant Additive (SRA) from Power Knot affects the maintenance and wear of an air conditioning system into which it is installed.

1. There are two major synthetic components in the SRA:
 - a. The major additive is one which removes the oil-fouling plaque. This plaque is extensively described by ASHRAE.
 - b. The other is an advanced lubricity agent. The advanced lubricity agent extends bearing life, and increases the efficacy of the compressor oil.
2. After treatment with SRA, you will typically observe a decrease in compressor power consumption of between 2% and 5% when it is operating. In addition, reductions in compressor temperature of 10°C (20°F) are common.
3. General Electric has reported that for every 10% less current that a compressor uses, the operating temperature is reduced by about 10°C. General Electric also says that for every 10°C lower temperature of operation, you can expect to double the life time of the compressor motor.
4. Because SRA generally lowers current draw (amps) by about 5%, then the compressor runs cooler by about 5°C, which according to GE, will increase compressor life by about 50%. The number one failure mode of air conditioners is compressor failure, and the number one cause of compressor failure is thermal conditions or over heating. So when SRA causes the compressor to run at a lower temperature it has a direct effect on preventing compressor failures and extending the life of the system.
5. SRA will clean and restore older systems of oil fouling residue on internal components such as expansion valves. The components of SRA will help extend equipment life and reduce maintenance costs.
6. SRA meets or exceeds all equipment manufacturers' warranty standards for compressor oils. Thus there can be no concerns that the compressor oil is degraded by the addition of the SRA.



7. SRA has no effect on gaskets, seals, insulators, or any other component of the refrigeration system.
8. Typically, the compressor oil will last up to 50% longer between oil changes after treatment with SRA. This is due to less operation time, cooler operation, and lubricity compounds that extend oil life. Customers are encouraged to alter their preventive maintenance procedures to have oil tested on a regular basis rather than being changed on a regular basis. Reduced oil changes will save money for purchase of replacement oil, save labor and call out charges for changing the oil, and save disposal costs to eliminate the old oil which is generally classified as hazardous waste. The reduced frequency of oil changes is a “hidden savings” of SRA.
9. Since the air conditioning system cools the space faster after having been treated with SRA, the air conditioning equipment runs up to 15% to 25% less time than prior to treatment with SRA. Less run time is the way in which electricity is saved. Since the system is running 15% to 25% less, all normal annual maintenance costs are reduced by about 15% to 25%. Costs are reduced, from changing air filters to coil cleaning, to normal wear of components such as contactors, parts, labor, and so on. The equipment runs 15% to 25% fewer hours per year, so it is likely to last at least 15% to 25% longer. All regular maintenance intervals can be extended since the unit will run 15% to 25% fewer hours.¹



This is an example of the benefits of the Synthetic Refrigerant Additive (SRA) supplied and supported by Power Knot. For more information on the SRA, please contact your local sales representative or send an e-mail to Power Knot at powerknot@powerknot.com.

Power Knot provides safe and economically sound solutions for businesses seeking to reduce energy costs and their carbon footprint through maximizing the efficiency of their cooling systems. Power Knot works with commercial, industrial, and military customers globally to reduce cooling system energy usage, improve energy efficiency, provide colder air, reduce maintenance expenses, and increase the lifetime of the systems. Their technologies are proven and available today, have been in reliable use for many years, and offer a payback period typically of less than two years. For more information, access www.powerknot.com.

Copyright © 2010, 2011, Power Knot LLC. All rights reserved. 2011-02-14.

1. Extending equipment life and increasing effective cooling capacity are two reasons why some air conditioning equipment manufacturers and air conditioning contractors may not recommend SRA to their customers. Your savings from SRA may result in decreased revenue for an air conditioning manufacturer or an air conditioning contractor.