



CHEMSONIC™

Chemsonic is the chemical treatment of the Chemsonic System for improving HVAC / Refrigeration Systems Efficiency

How Chemsonic Works in HVAC / Refrigeration Systems

Chemsonic is a synthetic catalyst technology that helps HVAC / refrigeration systems operate more efficiently. HVAC / refrigeration systems that operate closer to their design potential, operate less and use less energy to achieve the desired temperature set point.

Chemsonic is a fifth (5) generation synthetic technology that has been proven to reduce the energy consumption of HVAC / refrigeration systems by as much as 25%. The Chemsonic catalyst causes a change in the rate of chemical reaction when it is installed in the HVAC system's refrigerant and oil. The catalyst is not consumed by the reaction itself. Because it is a true catalyst it may participate in multiple chemical transformations. The catalyst speeds the reaction and is classified as a positive catalyst which enables the desired reaction at lower temperatures. The effect can be illustrated with a Boltzmann Distribution and Energy Profile diagram. In the catalysed elementary reaction, the catalyst does not change the extent of the reaction: it has no effect on the chemical equilibrium of the reaction because the rate forward and the reverse reaction are both affected. The fact that Chemsonic's catalyst does not change the equilibrium is a consequence of the second law of thermodynamics.

Chemsonic achieves the energy savings by allowing the system to operate less while at the same time delivering cooler air to achieve the temperature set point faster. It does not make the system use less energy when it is operating, the energy savings are realised by the system operating less.

Catalyst 1:

The first catalyst breaks the surface tension forces (Van der Waals effect) between the oil molecules that are attached to the piping and coils / evaporators. This breaks up the oil fouling in the coils / tubing TXV and orifices, reduces sludge particles in the filter / dryer and returns the oil back to the compressor. This allows the system to return close to the original design efficiency of the system.

Catalyst 2:

Chemsonic's second catalyst reacts with the refrigerant to lower the boiling point of the liquid. This is a small change of 0.5 degree to 1.5 degrees. This allows the refrigerant to release its energy faster and results in cooler air delivered at a rapid rate. Chemsonic's chemist found that a small change in the energy release timing resulted in a faster cool down for the system and helped reduce the run time. The reason for the reduced energy used is based on achieving the set point for the area(s) cooled by the system(s) faster, so the system run time is reduced.

Catalyst 3:

Chemsonic's third component is a LUBRICITY agent that increases the lubricity of the compressor oil by up to 56%, (Intertek Laboratory report). This reduces the friction of the moving components of the compressor. The Lubricity agent reduces the operating temperature of the compressor, while also dramatically reducing the audible sound emanating from the system. The energy saving is fractional but contributes to the overall reduction of energy required to operate the system.

The cumulative result of Chemsonic's three (3) components working together in a system produces the reduction in energy required to operate the system. No one agent or catalyst could produce the same results in system efficiency.



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