



Performance of Smart Shot Cool Enhancer

Smart Shot is dispersed in the lubricant and remains active constantly in the system. As long as the system's lubricant is not changed, Smart Shot continues to perform. As demonstrated by the Ashrae 97 tests, the presence of Smart Shot shows:

- 1) The decomposition of refrigerant was reduced from 50% to 90% depending on the type of refrigerant. For refrigerants that tend to decompose, for example the HFOs, the stabilization is more efficient. The more stable a refrigerant, for example HFCs, the stabilization loses influence.
- 2) The lubricant has no color variations, its viscosity at the end of the test does not change with respect to the initial one
- 3) No variation in total acid Number (TAN)
- 4) No variation in corrosion of aluminium
- 5) Corrosion of copper was significantly reduced
- 6) Corrosion of steel was completely reduced

System efficiency:

A good cooling system is evaluated on its ability to exchange heat. The more efficient the exchange is, the better the system is. When talking about exchange capacity of the system, the exchanger receives heat or cold from the gas and diffuses it into the ambient. Smart Shot does not exchange heat, or act as a carrier. The action of the additives is aimed at removing the heavy deposits of lubricant which perform an insulating action between the flow of the gas, refrigerant, or heating and the metal structure of the exchanger. The activity efficiency is then measured on the efficiency of the system and how much less energy is required to achieve the same temperature in the ambient.

The activity of Smart Shot is therefore not an activity that can be determined with a univocal data. Depending essentially on how much exchange capacity the system has lost. We have therefore performed measurements on reference systems with the following characteristics:

- 1) Systems with 4 years of activity
- 2) Different installations with minerals, PAG and POE with different refrigerant gases
- 3) Exchange yield below the technical specifications
- 4) Energy consumption above the technical specifications

The average result of the different types of system:

- a) The system produces colder air averaging 5 °C.
- b) The heat exchange of the refrigeration lines increases by 73%
- c) Reduces the energy consumption of the system at least + 20%



The efficiency in the inclusion of Smart Shot was evaluated on the system in operation, that would have worked at least 1000 hours. Therefore, the best lubrication performance determined in the unit are the result of three factors activated by the action of Smart Shot. (1) The return of most of the lubricant dispersed in the system to the compressor,(2) the rebalancing of its heavy fractions, which are those that are most deposited, and (3)the increase in fluidity generated by the additive. Result show:

- a) Increases the effectiveness of the compressor lubricant by 54%
- b) Extends its efficiency life up to 50%
- c) reduces friction inside the compressor by reducing vibration and noise
- d) reduces maintenance costs at least 30%

The average life of the mounting systems was compared to the models of the compressor in question. Then the compressors treated with Smart Shot and the untreated compressors were dismantled and the degree of corrosion, wear and dirt present in the compressor was observed. Smart Shot is an additive developed to be compatible with all lubricants, whether they are esters, glycols or minerals. Smart Shot has been tested on all refrigerant gases, CFC, HFC, HCFC, HC, HFO.

- R000 the whole series, R22 and R32
- R100 the whole series, R113, R134a, R170
- R200 the whole series,R227ea, R290
- R300 the whole series, R316
- R400 the whole series,R404A, 407A, R410A, R450...
- R500 the whole series,R507A
- R600 the whole series, R600, R600a
- R700 ONLY R744
- R1000 the whole series, R1234yf, 1234ze, R1270

Smart Shot, correctly dosed in the system lubricant, works correctly at all operating temperatures and pressures. The product has passed 1000 h of test in blast chiller systems. operating at -40°C without undergoing changes.

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