

DuPont™ ISCEON® MO59

CASE STUDY

Refrigeración STARR finds retrofit fast and easy



Recently, Refrigeración STARR helped DuPont Santa Clara retrofit the air conditioning systems in its conference rooms from R-22 to DuPont™ ISCEON® MO59. This project is a perfect example of how fast and easy it is to replace hydrochlorofluorocarbons (HCFCs) with non-ozone-depleting refrigerants.

Founded in 1951, Refrigeración STARR is a well-respected HVAC contractor located in Iztapalapa, Mexico City. The company has an impressive list of customers that includes restaurant chains such as VIPS and Sanborn's, as well as major retailers such as Sears.

Situation

DuPont Santa Clara is a warehouse refilling site located in Ecatepec, Mexico State, which is 40 km outside of Mexico City. There are two conference rooms at the site, each cooled by a Trane split system cooling condenser with a three-ton Climatuff® scroll compressor and 3-HP evaporator. The systems were originally charged with R-22 in September 2001.

The condenser units are located on the roof of the building and the evaporators are located inside the conference rooms. DuPont Santa Clara decided to retrofit these systems to be more environmentally acceptable. They chose to use ISCEON® MO59 because of its proven performance, ease of retrofit and non-ozone-depleting properties.

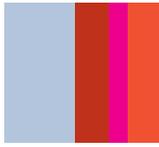
Retrofit

"This was a quick and easy retrofit," said Salvador Villanueva, a service technician who has worked for Refrigeración STARR for more than 20 years. "Each system took only two hours, which is half the time it normally takes to retrofit a system under similar conditions to those at DuPont Santa Clara."

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According to Villanueva, the speed and ease of these retrofits were due to two main factors. First, he did not have to change the oil because ISCEON® MO59 is compatible with alkylbenzene (AB), the lubricant that was originally in the system. This saved a considerable amount of time and money that is typically required to remove the oil, flush the system and replace it with new oil. In addition to being compatible with AB, ISCEON® MO59 is also compatible with other traditional and new lubricants, including mineral oil (MO) and polyol ester (POE).

The second time-saving factor was that the only equipment change or adjustment that Villanueva had to make was replacing the drier filters. Although not required, changing the drier filters is a good practice highly recommended by manufacturers.

During the retrofit, Villanueva recovered 8 kg of R-22 and replaced it with 5 kg of ISCEON® MO59. A digital thermometer, digital amperemeter and a pressure manifold.

Benefits gained

The benefits of this retrofit were immediately apparent. By comparing the data collected before and after the retrofit, it was easy to see that with ISCEON® MO59, the compressor in system #1 runs at a significantly lower discharge temperature and pressure vs. R-22. This is likely to prolong the life of the compressor.

For system #2, the discharge temperature is slightly lower and the pressure is nearly the same. This can be attributed to the advanced age and relatively poor condition of the system prior to the retrofit.

Table 1. Comparison of discharge temperature and pressure before and after retrofit

	System #1 with R-22	System #1 with DuPont® ISCEON® MO59	System #2 with R-22	System #2 with DuPont® ISCEON® MO59
DISCHARGE TEMPERATURE (°C)	48°C	33°C	38°C	35°C
DISCHARGE PRESSURE (PSI)	220 PSI	205 PSI	205 PSI	208 PSI

The coil air/water temperature out of the evaporator was also lower after retrofitting the system with ISCEON® MO59. This means that the compressor will work less with ISCEON® MO59 to achieve the same operating conditions seen with R-22. As a result, energy savings can be obtained over time.

Table 2. Comparison of coil air/water temperature before and after retrofit

	System #1 with R-22	System #1 with DuPont® ISCEON® MO59	System #2 with R-22	System #2 with DuPont® ISCEON® MO59
COIL AIR/WATER OUT TEMPERATURE, °C	14°C	11°C	15°C	12°C

In addition, with ISCEON® MO59, the system draws less amperage, which can translate into important energy savings.

Conclusion

The retrofit at DuPont Santa Clara was a fast and easy process for the contractor and a benefit-gaining decision for the site owner. Now, the two cooling systems are delivering satisfactory cooling performance and are more energy-efficient thanks to ISCEON® MO59. What's more, by replacing the R-22 refrigerant with ISCEON® MO59, DuPont Santa Clara is now using a non-ozone-depleting refrigerant, which is better for the environment.

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For more information about DuPont™ ISCEON® MO59, visit our website at www.refrigerants.dupont.com



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