

# DuPont™ ISCEON® MO29

## CASE STUDY: SEALAND MECHANICAL

**Sealand Mechanical's success with supermarket conversions to ISCEON® MO29 carries over to the Edison Chouest Offshore Fleet.**



Reducing the number of refrigerants it carried was an important goal for Sealand Mechanical. DuPont™ ISCEON® MO29 allowed this service company to retrofit various units on seagoing vessels.

### Background

Sealand Mechanical is a premiere HVACR service company that has responsibility for the engineering, design, purchase and installation of HVACR equipment on vessels for its parent company, Edison Chouest Offshore, which specializes in building vessels for the offshore drilling and production industries. Sealand Mechanical also services large supermarkets in Texas, Louisiana, Mississippi, Alabama, and the Florida Panhandle.

Describing his first experience with DuPont™ ISCEON® MO29 (R-422D), Sam Sanderson, General Manager, said, "About a year ago, we conducted trial retrofits from R-22 to ISCEON® MO29 (versus to R-404A) at a major supermarket in Baytown, Texas. We are now doing a store conversion every other week in these regions—we're in and out in less than a week."

### Supermarket conversion situation

Sanderson explained, "We initially began conducting retrofits several years back at a major national supermarket, converting R-22 to R-404A in Porter, Texas. Our main objective became 'stop the bleeding' due to the labor intensive part of the job, such as changing the thermal expansion valves (TEVs), resetting the superheat and, in some cases, redoing the line sizes.

"R-404 is a good refrigerant. However, when ISCEON® MO29 was introduced and we were asked to pioneer the conversions on a trial basis at the same supermarket chain, we found it to be a great thing," he added.

Sealand Mechanical worked with a supermarket chain's regional manager in Baytown, Texas, on one of the first supermarket store conversions to ISCEON® MO29. Sanderson described him as "a tremendous skeptic—a rack system expert extraordinaire." This particular regional manager was on site for the retrofit. He was very skeptical and the supermarket chain's management was waiting for his approval of this new refrigerant. "As the system came back up after the retrofit, we started to see him change his mind," said Sanderson. "After the retrofit, he became a believer and wanted to change all his regional stores to ISCEON® MO29."

### Benefits gained

Sanderson continued, "The beauty of ISCEON® MO29 is that you don't have to change the oil, and very rarely have to change the TEVs; we've found that very few valves have to be reset. We always go into the store in advance, assess it and determine what adjustments need to be made due to previous issues.

"There are also tremendous time and labor savings with ISCEON® MO29," Sanderson noted. "With R-404A conversions, we were sending nine guys to do the retrofit; with ISCEON® MO29 we send four guys to do the retrofit and a one-day spotter to check superheat and alarms as a safety check. We're in and out within one week."

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He continued by saying, "An additional safety precaution we take is to change all highside ball valves including Schraeder valve core and caps." To date, Sealand Mechanical has transitioned 40 stores from R-22 to ISCEON® MO29.

"I like the fact that you don't have to change out the mineral oil to polyol ester oil (POE) with this refrigerant," said Sanderson. "I typically check the mineral oil and replace the mineral oil with one change. That's cheap maintenance. I've seen too many systems where the existing mineral oil looks like motor oil. It's just good practice to replace it."

### Offshore vessel situation

The Edison Chouest Offshore Fleet includes offshore supply vessels, anchor handlers, icebreakers, tractor tugs, and a variety of specialty vessels sailing the oceans of the world. Sealand Mechanical was acquired by Edison Chouest in 2001. Two months ago, two research vessels and two platform supply vessels were in the final building stages and a call came in to Sam Sanderson: "What refrigerant are we going with?"

These vessels are equipped with two high-pressure R-404A air-conditioning systems, two R-404A refrigeration systems, and four supplemental R-22 Carrier indoor packaged units. Sanderson had been looking to reduce the number of refrigerants they had to carry. "We were carrying four to five different types of refrigerants to service our fleet," explained Sanderson. "We wanted to standardize to one refrigerant, eliminate the issue of polyol ester oil (POE) and go with a refrigerant that was available worldwide."

Sanderson continued, "We made a decision to go with ISCEON® MO29 for both the air-conditioning systems and refrigeration systems on all newly built vessels. We were retrofitting the new systems before the vessel ran."

### Benefits gained

Marty Rohlfs, HVACR Specialist, candidly stated, "Surprisingly, these comfort cooling systems were operating on R-404A, so to convert to ISCEON® MO29 all we did was change the R-404A powerheads to R-22 powerheads on the TEVs. On the refrigeration units and supplemental carrier units, we didn't change valves. Previously, we had difficulty with suction pressure with the R-404 air-conditioning units. It could have been a design issue with TEVs; I don't know. However, it actually seems like the air-conditioning units are running better with ISCEON® MO29—more on track with pressure and electrical consumption."

Sanderson added, "We're very happy it worked. The various pieces of equipment have responded and are running very well. There are no issues with either the air-conditioning or refrigeration units to date."

### Conclusion

Sanderson spoke highly of the technical support he received from Eddie Gallego, Refrigeration Specialist at Baker Distributing, Inc., in Metairie, Louisiana. "Baker was very good about developing contacts for everything we did, especially Eddie, who did a great job of providing us with his knowledge and putting us in contact with the right people."

Rohlfs added, "It was a little scary, dealing with something so new like using R-404A valves with R-22 powerheads and the refrigerant having only the pressure/temperature chart and product information that we found on the web site. The way it worked out was fantastic!"

Sanderson heartily agreed and noted, "ISCEON® MO29 is like a gift for me. Because of the success we had with supermarket conversions and now the success we had with the high pressure air-conditioning and refrigeration units on the vessels, we are planning to retrofit all of our Edison Chouest vessels to ISCEON® MO29, both newly built vessels and when they come in (or at sea) for service.

"For anyone considering ISCEON® MO29 as an alternative to R-22 in supermarket refrigeration units, just do it—without reservations," Sanderson advised. "ISCEON® MO29 is the answer!"

DuPont ISCEON® MO29 is the closest match to R-22 capacity and efficiency in most systems with significantly lower discharge temperature versus R-22. This is likely to prolong the life of the compressor. ISCEON® MO29 provides up to 8% improved cooling capacity and up to 14% improved efficiency versus R-22 at low-temperature conditions as a result of taking off demand cooling. ISCEON® MO29 provides slightly lower cooling capacity (about 5%) and comparable efficiency versus R-22 at medium-temperature conditions with 10°F (6°C) subcooling.

ISCEON® refrigerants require an engineering assessment before retrofitting from the existing refrigerant.

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