



ICE RINK TECHNICAL BULLETIN

A) Why the need for ice rinks that operate on R22 refrigerant to address refrigeration alternatives NOW.

1. The U.S. EPA has mandated the production and import stoppage of virgin R22 effective December 31, 2019.
2. The *easiest and least* expensive way to keep the R22 ice rinks running is to convert to ComStar's RS-45 (R434a) R22 drop-in replacement refrigerant.
3. With approximately 1600 plus ice rinks in the U.S that currently operate with R22 (some with multiple pads of ice), it is almost impossible to convert all the rinks to RS-45 by January 1, 2020 unless rink conversion begin now.
4. Currently, there are no EPA plans to phase out RS-45 refrigerant.

B) RS-45 was introduced to the U.S ice rink community in May of 2016. Since then dozens of rinks have converted to RS-45.

1. The rinks converted where both the "DIRECT" flooded system type (liquid refrigerant under the ice pad floor) and the DX "IN-DIRECT" chiller barrel with Glycol or Brine under the ice pad floor type.
2. The "DIRECT" over feed flooded system can hold from 4,000 lbs to 10,000 per ice pad of R22 refrigerant. The DX "IN-DIRECT" chiller barrel system with Glycol or Brine can operate on 500 lb to 1500 lbs or more of R22.
3. All types of R22 ice rinks can be converted to RS-45. The easiest are the "In-Direct" type (many by Cimco) and the "Direct" type made by Holmsten. Other "DIRECT" type systems were made by C.W. Davis, Ice Pro and later Ice Builders. You can find the name of the company on the systems control box.

4. The method of *oil separation* in the C.W. Davis, Ice Pro and Ice Builder DIRECT systems differs from the Holmsten DIRECT systems and in the DX Indirect systems. In the Holmsten and DX Indirect systems the oil is skimmed off the top of the liquid column/level of the low side receiver. Whereas in the C.W. Davis, Ice Pro and Ice Builder systems the oil is drawn from the bottom of the low side receiver. In the C.W. Davis, Ice Pro and Ice Builder systems, this difference makes it necessary to either change the mineral oil to synthetic POE (Polyolester) oil or add ComStar's *Oil Coupler* product which allows the mineral oil already in the system to bond with the RS-45 refrigerant for better oil return.
5. If the decision is to change the existing mineral oil to POE oil then it is recommended to change the compressor shaft seals to a material that is compatible with POE oil...check with the compressor manufacturer for their recommendation.

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