

DRY STAR HOT

REFRIGERATED AIR DRYER

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Campbellsville, Kentucky

DRY STAR HOT DRYER OPERATION

Compressed Air Flow - Saturated hot air from the discharge of the air compressor enters the aftercooler located internal to the dryer. The aftercooler and the refrigerant condenser are independent components. The aftercooler removes heat from the incoming compressed air. This heat removal condenses moisture and conditions the air before entering the evaporator. Pre-cooling the air allows for the use of a smaller refrigeration compressor, smaller components and reduces energy consumption. As the compressed air is cooled, moisture is condensed and coalesced in the 3.0 micron filter/separator. The collected moisture is discharged from the system through a gravity activated float drain and the air passes onto the evaporator.

The cold air and condensed liquids are separated inside the evaporator. This causes the heavier liquid moisture to separate out from the lighter cold air. Once separated the liquids are held in the separator sump until drained by the automatic drain.

Once free of the condensed liquids, the cold dry air returns to first stage pre-cooler/reheater where it is reheated by the incoming warm air. The air is reheated to approximately 85°F temperature to eliminate pipe sweating downstream.

Refrigerant Flow – Beginning at the discharge of the refrigerant compressor, the hot, high-pressure gas is discharged into the air-cooled condenser; the hot high-pressure refrigerant is cooled. The result of this cooling is to make a cool, high-pressure liquid. Installed downstream of the refrigerant condenser is the refrigerant filter/dryer which protects the refrigeration system from moisture and dirt. All models use an expansion valve to modulate the refrigerant flow. Once the low-pressure liquid refrigerant is in the evaporator, it absorbs heat from the compressed air and boils off as gas. Now the low-pressure warm gas refrigerant discharges the evaporator and is returned to the inlet of the refrigerant compressor and the cycle begins again.