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Compressed
air treatment

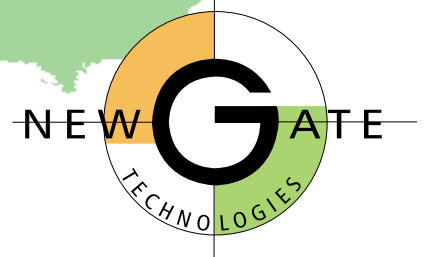
Large Flow Refrigerated



Air Dryer with
Cold Coalescing Filters



2in1



Refrigerated Air-dryer

The new **MDR Energy** dryer incorporates many technological and performance **firsts**. It combines unmatched air purification efficiency with maximum oil removal through cold coalescing as a standard feature, enhancing dewpoint performance.

All this along with increased durability and reliability and the total elimination of corrosion of the heat exchangers. Additional features such as ease of access for maintenance, extremely small footprint, and environment friendly refrigerants make this an unbeatable investment at a very competitive price.



Quality of compressed air exceeds ISO 8573-class 1.4.1 Specifications:

- Dew point = 38 °F
- Oil residual = 0.001 ppmw
- Particulates residual = 0.01 micron

How it Works

All **MDR Energy** dryer/purification systems cool the compressed air in **two stages**, resulting in a dew point of 33-38°F at which point the liquid condensate is efficiently removed.

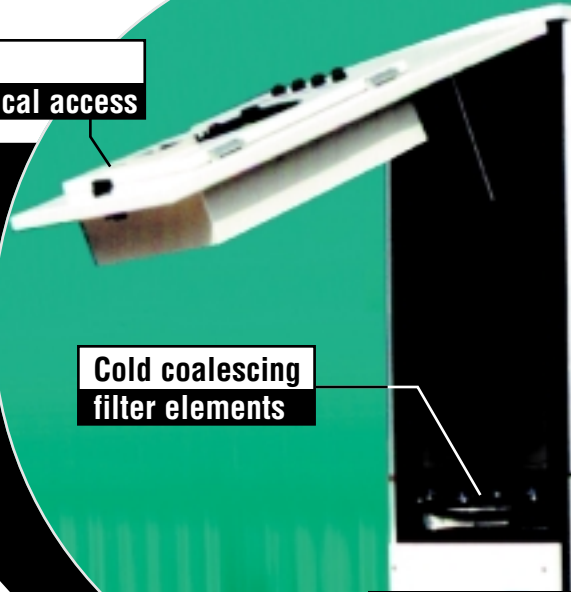
In the first stage, a highly efficient, 100% copper recuperator (**air/air heat exchanger**) creates a heat transfer between the hot compressed air entering the dryer at up to 100°F and the treated compressed air leaving the dryer at 33- 38°F, equalizing both airstreams at approximately 70°F.

The incoming pre-cooled compressed air then flows to the evaporator (**air/refrigerant exchanger**), where a refrigeration circuit completes the cooling process. The air temperature is further reduced to between 33-38°F. A hot gas bypass valve precisely modulates the dryer to avoid the risk of freezing the condensate, even down at very low air flows.

Finally, high efficiency **cold coalescing filters**, positioned at the point of the lowest air temperature (the point at which maximum condensation has occurred), **removes 99.9999% of all water and oil condensate** down to 0.001 ppmw, as well as all dirt contamination down to 0.01 micron (see facing page for details.)

Independent and fully automatic **electronic drains with adjustable timer** remove all liquid condensate from the system.

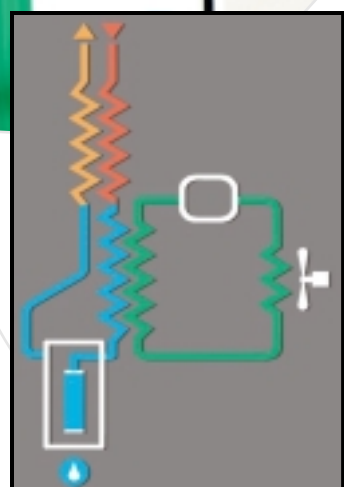
Dual electrical access



Cold coalescing filter elements

Simple and easy access door with gas struts, allows unrestricted access for filter changeout and electrical work.

- Reduces downtime
- Saves money



Removes 99.9999% of all water and oil condensate regardless of air flow.



MDR

Energy

The power of cold coalescing



Lowest cost: Calculate the expense of a conventional dryer with the additional cost of a coalescing after-filter, increased piping and higher pressure drop compared with the value of the MDR dryer with the internal cold coalescing filter, installed at the coldest point where oil removal is maximized several folds, resulting in technically oil-free air downstream.

The savings and performance are significant.

Internal Cold Coalescing filters: the heart of energy savings and efficient oil removal.

FACT: the formation of condensate in a dryer depends solely on the reduction of the compressed air temperature.

Only at the point of lowest air temperature in the dryer (33-38°F) is the largest quantity of liquid condensate formed.

This condensate is in the form of droplets of various sizes, from large ones down to microscopic sizes.

Out of the total condensate, approximately 30% are drops so small that they are called **aerosols**. According to ISO 8573, these aerosols are so small and of irrelevant mass that they have a dropping speed lower or equal to 1 fps, and therefore remain airborne in the airstream. It is for this reason that they cannot be removed by the traditional methods of condensate separation, (demister pad centrifugal or inertial impaction) most commonly used by most drying systems sold today. These inexpensive solutions to condensate separation are totally inefficient and actually get worse as the air flow velocities drop further during reduced air system demands!

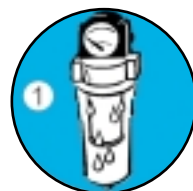
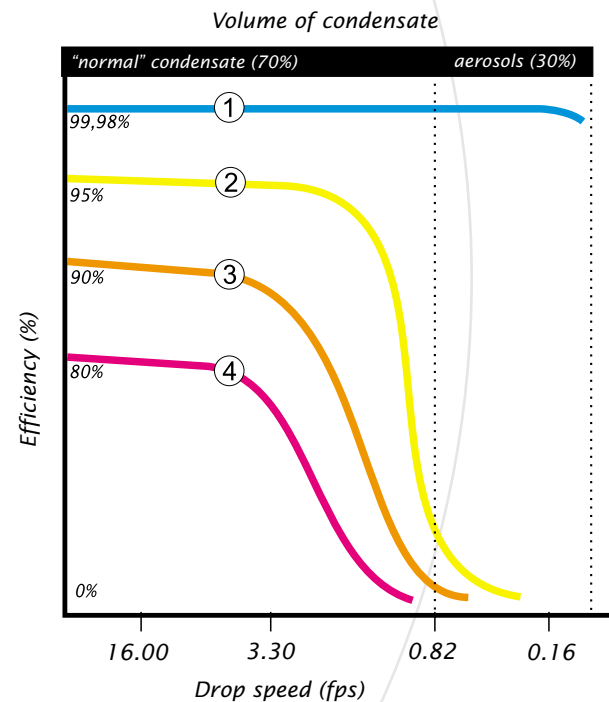
If these aerosols are not removed by a more efficient method and at the point of lowest air temperature, they will be re-entrained in the outgoing, reheated air as it passes through the **air-to-air** heat exchanger, where the ability of the air to hold these aerosols increases.

Its is impossible to remove these contaminates with a coalescing filter at the outlet of the dryer, the most common but totally inefficient method of oil and water removal.

The graph on the right shows the efficiency of condensate separation with different types of separation systems commonly used in dryers today. All methods have a high efficiency rating in the area of large condensate mass, which represents only about 70% of the total condensate.

Notice however that in the area of aerosols, only the **MDR Energy high efficiency coalescing filter** maintains its performance. All other systems have inadequate separation efficiencies.

Only **MDR Energy** dryers employ high quality coalescing filters with borosilicate microfibers and highest efficiency ratings. It is not sufficient to use just any filter for this application. The quality and the efficiency of design and quality of materials used make a very significant difference in overall performance and insure quality air purification.



MDR Energy coalescing filter with borosilicate microfibers of high efficiency (D.O.P. = 99.9999%)



Condensate separator with centrifugal action.



Coalescing demister steel pad.



Condensate separator with inertial impaction.

