

# DCRA's

A steady source of clean, dry air is critical to the efficiency of many operations within the glass making, aerospace and semi-conductor industries. It is also required for powering pneumatic tools, supplying control panels, and driving pneumatic valves. Moisture in the air stream can lead to unwanted condensate in piping and air lines, initiate rust formation, reduce the speed of valve strokes, and gum-up pneumatic tools. A regular compressor aftercooler adequately cools the compressed air to appropriate operating temperatures, but the air remains saturated with water vapor. To effectively reduce the moisture content of the air, it must be further cooled well below its pressure dewpoint. Reheating the air results in very dry air suitable for critical plant processes and operations.

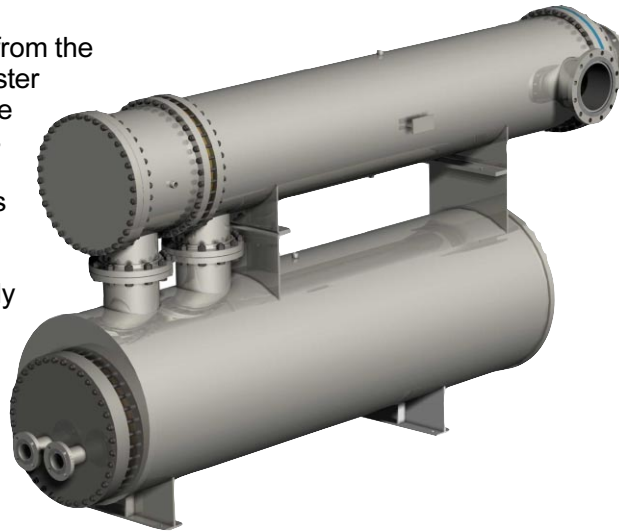
For higher volume requirements of dry air, API Heat Transfer offers the Direct Coupled Reheat Aftercooler (DCRA). Our DCRA features a compact design, integral moisture separation, low cooling water consumption and low system pressure drops.

The DCRA is actually two heat exchangers close coupled together, hence the term 'direct coupled'. One is an air-to-air exchanger and the other cools the process air with tower water, chilled water or chilled ethylene glycol. This close coupling eliminates unnecessary piping, the power robbing pressure drops associated with extra piping and saves valuable floor space. API's DCRA mounts in series at the discharge of any existing aftercooler.

A typical example would have an aftercooler delivering saturated air at 125 PSIG @ 100° F. With the DCRA, the process air stream enters the tube side of the air-to-air unit where it is cooled to about 70° F, condensing additional water vapor. The air stream (and the condensed water vapor) then enters the liquid cooled heat exchanger. In the liquid cooled section, the air is further cooled to within 10 degrees (or less) of the entering coolant temperature. If 40° F chilled water were available, the DCRA would cool the process air stream to 50° F.

The condensed water vapor is then separated from the air stream as it passes through our efficient demister pad. The air stream, now at 50° F, enters the shell side of the air-to-air section where it is reheated. The process air stream exits the DCRA at 80° F and 30% RH. The total process air pressure loss would be less than 4 PSIG.

The DCRA can be fabricated in any commercially available materials. The heat exchanger shells and heads are usually SA-516 gr 70-carbon steel. The tubes can be any of the copper or stainless steel alloys. Tube sheets can be either the same material as the tubes or carbon steel. API supplies DCRA's to ASME and TEMA C (B and R available) as well as the new PED (European common market).



We offer our DCRA in standard capacities of 3000, 5000, 7500 or 10000 SCFM, or we can design a custom system to meet your exact requirements.

## API Heat Transfer

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