

Compressed Air Receivers - Why and How to Apply

There are many benefits for properly sized and placed air receivers in a compressed air system. Often system designers will use the term “wet receiver” (supply) and “dry receiver”(demand). What are they referring to?

The term “wet receiver” refers to the storage vessel or tank placed immediately after the compressor. This device helps with contaminant removal, pressure stabilization and pulsation reduction.

As compressed air enters an air receiver, velocity is reduced and often also temperature reduction occurs, allowing contaminants (water, oil and particulate) to condense further and drop to the bottom drain for easy removal. Reduced contaminant load often helps improve the ability for air preparation equipment to operate more efficiently due to reduced temperature and heat exchanger contaminant fouling.

Depending on the technology of the compressor being used, receivers offer a buffer to allow the compressor controls a longer duration of time for the compressor’s load/ unload or control throttle range. Most reciprocating and load/no-load rotary screw compressors require a 10 psi control range. Normal design standards require between 5 and 10 gallons of storage per compressor flow in cubic feet. Newer technology, variable speed units, requires as little as one gallon per cubic feet.

The term “dry receiver” refers to the receiver placed after the air dryer and other air preparation equipment. The primary purpose of this component is to offer capacitance or storage for handling high air usage events in the distribution air piping throughout the plant. Capacitance offers the benefit of time before adding (turning on) additional compressor units. Significant energy reduction can be accomplished by operating only enough compressors to handle average plant air flow demands versus running enough compressors to handle historical demand peaks.

In summary, you can never have too much air storage. Properly placed and sized receivers offer many benefits and improve the life, reliability and functionality of your compressed air system.

Jervey Inglesby
President
I&M Industrials Inc.
<http://www.iandmindustrials.com>