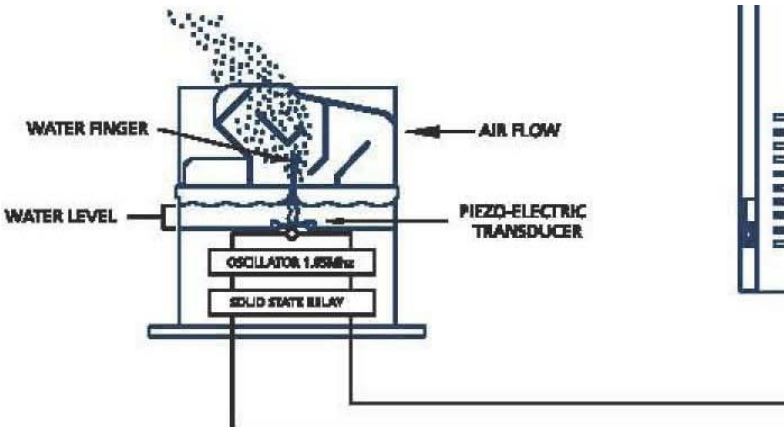
Ultrasonic Advantages & Energy Analysis

An Ultrasonic Humidifier needs only 7% of the power required by an electrode steam humidifier. Assuming a humidification requirement or 20 Ibs/hr., a Humidifirst MF20 has a power requirement of 0.495 KW at 20.0 Ibs/hr. Using a comparable capacity steam electrode type humidifier, the power requirement is 6.8 KW at 20 Ibs/hr, which is an energy savings of approximately 93%. In a typical application, the yearly humidification requirement is approximately 2500-3000 hrs.



Principle of Operation

A piezo-electric transducer, immersed in a water bed, converts a high-frequency electronic signal into a high-frequency mechanical oscillation.
The water tries to follow the high frequency mechanical oscillation but cannot due to its mass inertia. A momentary vacuum and strong compression are produced in the water.
In the negative oscillation of the transducer the momentary vacuum causes the water to cavitate into a vapor at low temperature and pressure. In the positive oscillation of the transducer, high pressure compression waves are produced and by focusing the pressure waves on the surface of the water, very tiny droplets (average one micron in diameter) of water are generated and are quickly absorbed into the air stream.

Ultrasonic Advantages

- **Maximum Energy Savings**

  Compared to Electrode Boiler or Infrared humidifiers the Ultrasonic Humidifiers require 93% less electrical energy.

- **Lowest Electrical Wiring Costs**

  As the Ultrasonic Humidifier only requires 7% of the electrical power required for conventional systems, significant savings can be realized in the cost of wiring, electrical distribution boards, standby generation and even the main input transformer to the building.

- **Reduced Air Conditioning Requirements**

  The Ultrasonic Humidifier is an adiabatic constant (enthalpy) humidifying process which reduces air temperature during the process and reduces the air conditioning cooling load.

- **Most Economical Water Consumption**

  Spray Humidifiers have a water loss of up to 70% through mist elimination and standard steam generators or infrared humidifiers have a water loss of up to 20% for the flushing cycles. -Ultrasonic Humidifiers have no water loss unless a flush cycle option is selected.

- **Clean Humidification**

  Reverse Osmosis with Deionized (RO/DI) water is used for cleaner, mineral-free humidification.

- **No Fire Risk**

  Humidification is generated with no heating or boiling of water, thus the risk of fire is minimized.

- **Redundancy by Design**

  Each humidification module/transducer is independently wired, thus if one fails, redundancy is achieved through the other modules.

- **Excellent Control Features**

  The -Ultrasonic Humidifier has an immediate response to the call for humidification and also switches off immediately, preventing delay and overrun humidity cycles. The -Ultrasonic Humidifier is also available with proportional control, utilizing return and hi-limit sensors.

- **Very Fine Mist**

  Ultrasonic Humidifiers produce a very fine mist of approximately
  0.001 mm (1 micron) average diameter, which is quickly absorbed into the air stream.

- **Long Service Life**

  All the main components of the -Ultrasonic Humidifier are made from high-quality, stainless steel or ABS plastic.

- **Fast Payback Period**

  Energy analysis calculations show that due to lower electrical energy and water usage and due to reduced compressor operating hours, payback periods of less than one year are common.