

Technical Information Crossflow Heat Exchangers

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Condensation

It is important during the design of the unit to take condensation into account. The heat exchanger should be oriented so that the condensing water easily can flow downward and means to collect the water and to drain it out from the unit should also exist.

At air velocities below about 3 m/s the water will not be carried by the airstream and this should be taken into account when designing an air handling unit if it is unacceptable that water is carried along by the airstream.

If it is desired to condense as much water as possible from the warm air stream then this air stream should move upwards but the air velocity must of course be lower than 3 m/s. This is however not recommended if there is extremely much water in the air because if the water will block part of the channel the fans may start to pulsate. A downward flow will work in the same direction as gravity at all air velocities and is the best way to make sure the water leaves the heat exchanger.



Pay attention to the effects of condensation in the heat exchanger.

Should there be a lot of condensation in the heat exchanger limestone and other contaminants may deposit on the surfaces and this will in time influence the performance of the exchanger, so provisions should be made to have access for cleaning.

It is not possible to make a heat exchanger 100% tight so if it is unacceptable with condense water on the supply side the design of the air handling unit must be made in such a way that there always will be a higher pressure on the supply side than on the exhaust side.

In general exhaust air containing corrosive vapours in moderate concentrations will not damage the heat exchanger surfaces unless condensation occurs. Even if during normal running no condensation will take place it can happen during start up or shut down of the unit and it is therefore important to vent out the unit thoroughly when it has been closed down.