



# Fan intersection point

Devices consisting of heat exchanger, drip tray, fan, box and protective grille must comply with the manufacturer's specifications in terms of performance and air volume flow. This requires several conditions to be met.

When positioning the devices, the dimensions **X** and **N** must be adhered to according to the manufacturer's instructions, to ensure the correct circulation of the air.

The device manufacturer must choose the distance **Z** between the heat exchanger and the fan in such a way, that the air velocity of the heat exchanger is as uniform as possible over the entire intake surface, which can be achieved much better with a suction fan arrangement.

Performance and pressure drop measurements on the heat exchanger at ideal flow conditions in an air duct do not correspond to the values of a heat exchanger installed in a device.

Performance and the air volume flow are reduced and the pressure drop over the entire cooling unit is higher than just at the heat exchanger.

The device manufacturer should therefore determine the intersection point between the fan characteristic curve and the pressure drop of the entire device in laboratory measurements and compare it with the software.

The **HEH-FAN** software is a great help for such calculations.

The **black characteristic curve** of the fan is determined with 6 vertices via spline interpolation, without deviations at the vertices. The number of fans per finned heat exchanger is freely selectable.

The **red characteristic curve** results from the unit pressure drop, i.e. the sum of the pressure drops of the finned heat exchanger, the box, the protective grille and the positioning of the cooling unit in the building, which are taken into account as a percentage.

The **red intersection point** is determined within a few seconds via a macro in the Excel-based application.

In the **picture on the right**, an example shows the performance and the air volume flow as a function of the percentage pressure drop of the heat exchanger.

The aim is to ensure, that the proportion of heat exchanger pressure drop does not fall below 60%, which in this example corresponds to a loss of performance and air volume flow of less than 10%.

