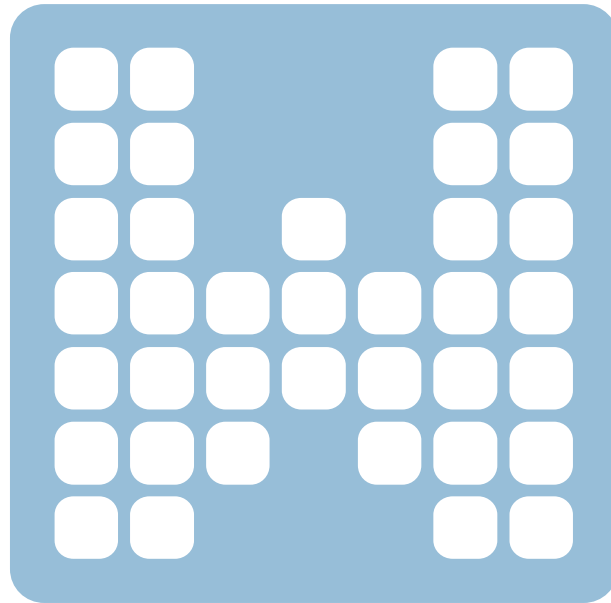




**WENZEL**  
ELECTRONIC::SYSTEMS



# Fan Concept

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## For CESAA and ELISA III

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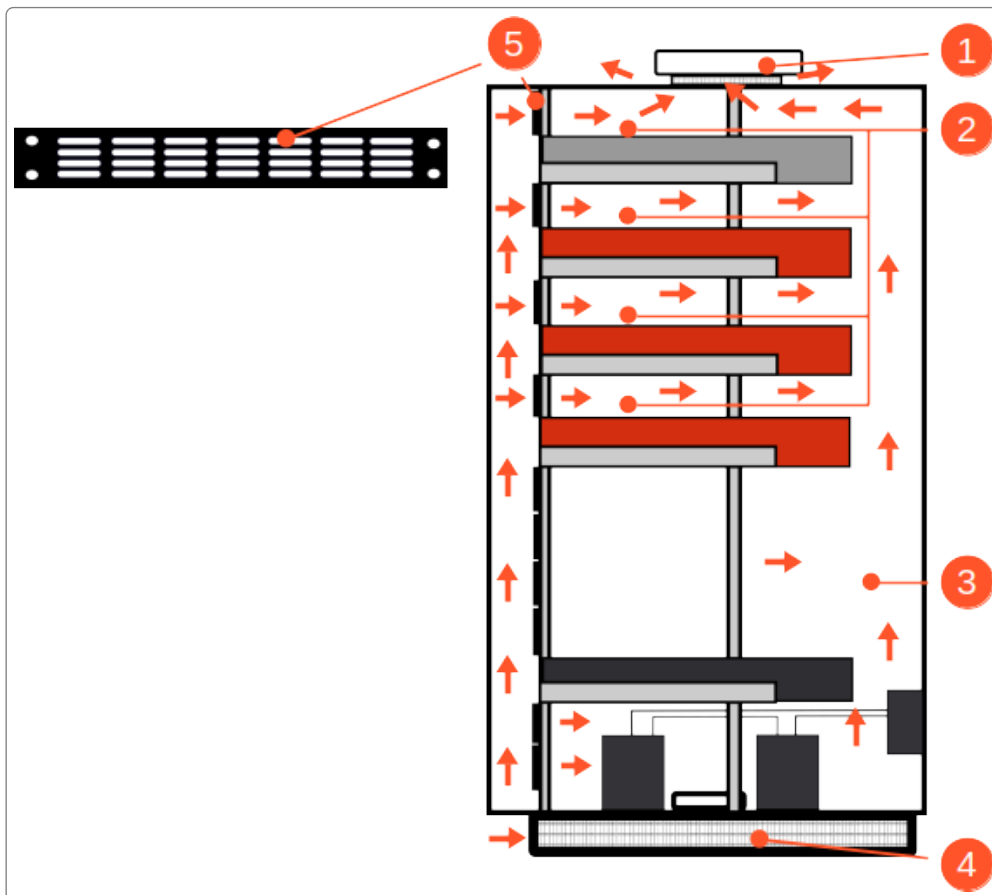
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# 1. Fan Concept

Wherever energy is transported, heat is generated. Modern product families like **CE-SAA** and **ELISA III** can be used optimally with little effort by taking special measures to avoid heat.



**Figure 1. Example cabinet with several CE-VAS4 central units, each 1 U spacing**

Pos.	Designation	Pos.	Designation
1	Roof fan	4	Grid with filter insert
2	1 HU space	5	Screen with air slots
3	Air circulation		

The control cabinet in the graphic has several CE-VAS4 central units, each with 1 HU spacing. In between the screens with air slots are attached.

## Expected Heat Development in the Cabinet

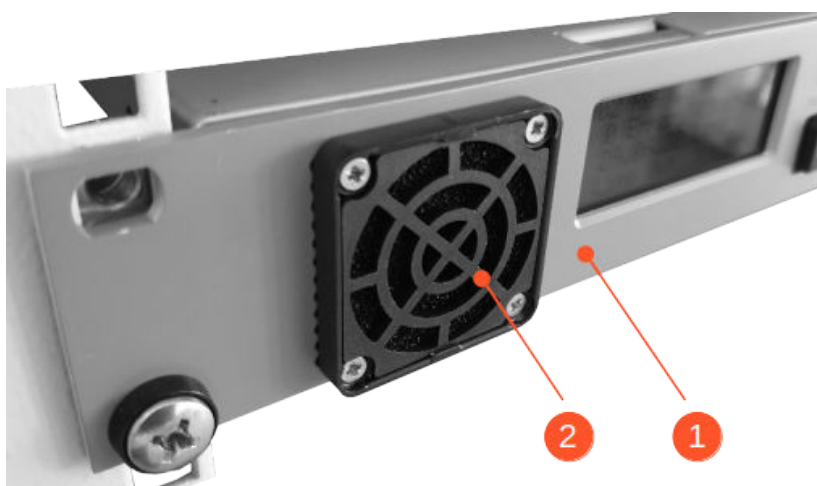
1. The typical heat development of a single central unit **CE-VAS4 / ELISA III-IP** is around 25W. If a height unit (HE) is kept free above each device when installing several central units in a switch cabinet, this heat is passively dissipated via the upper housing plate. Fans contained in the device are not activated - even if the ambient temperature is increased.
2. If there is not enough space for these free spaces, the fan switches on from time to time at a slow speed to dissipate the heat input. In a fully equipped large control cabinet with bw. 20 units type **CE-VAS4 / ELISA III-IP** there is a heat input of approx. 500W (approx.  $20 * 25W$ ).

A temperature sensor controlled cabinet ceiling fan is used to dissipate the heat from the cabinet.

In addition, an attached central supply air filter with replaceable filter mats is installed in the cabinet below. The cabinet stands on a base with integrated grids through which the supply air is fed into the cabinet. During this time, dust is filtered out to prevent contamination of the electronics.

Depending on the amount of dust, the filters must be checked regularly and replaced if necessary. These filters must be checked at regular maintenance intervals, cleaned or replaced if necessary. In the case of normal exposure to dust and dirt, a once-a-year test can be used as a guide for the maintenance interval.

3. Alternatively or in addition, individual filter attachments (material number: 22-1-308-400-190) can be placed in front of the openings of the **CE-VAS4 / ELISA III-IP** to be assembled. The filter mats included should be replaced if necessary (material number: 22-3-608-3089)



**Figure 2. Filter in front of the central unit**

Pos.	Designation
1	Central unit
2	Filter attachment with filter mat

4. The maximum heat development to be taken into account arises in a fully equipped, large control cabinet that has to carry out sound reinforcement, e.g. in shopping centers or train station buildings with central sound reinforcement.

Per unit **CE-VAS4 / ELISA III-IP** even approx. 65W heat input is expected. In total,  $20 * 65W =$  approx. 1300W must be taken into account in this example. The output output (for speech / music) would be approx. 2000W, the theoretical maximum sine output is even approx. 10kW. The maximum sine output must be taken into account when planning the power supply including fuses and cable cross-section.

In contrast, the lower "pink noise" output is taken into account for heat input and emergency power operation, since the DIN alarm is only played for a short time. Voice announcements convey significantly less power than permanent music recordings.

### Advantages of the Fan Concept

1. Due to the narrow 1 HU height, passive heat dissipation via the upper housing plate can be implemented in most applications. The effective overall height can be planned as "2 U". Fans usually remain switched off, so there is no entry of dirt and no filters that have to be serviced.
2. For a large number of units, type **CE-VAS4 / ELISA III-IP** Central ceiling fans and supply air filters in the control cabinet are worthwhile. Internal fans only switch on when required and then at a slower speed.
3. In the event of an alarm, the fans are immediately switched on at full speed in order to provide full power for as long as possible even in the event of increased ambient temperature. The requirements of the DIN EN 54-16 standard are exceeded many times over.
4. The horizontal, demand-controlled forced ventilation means that there is no dependency on other devices in the cabinet. In contrast to this, passive ventilation using simple heat sinks would no longer work if the rising air continues to be heated and the upper devices experience an ambient temperature that would then be outside the specification. The air flow from front to back avoids this problem very effectively.