68 Condensing passive cooling

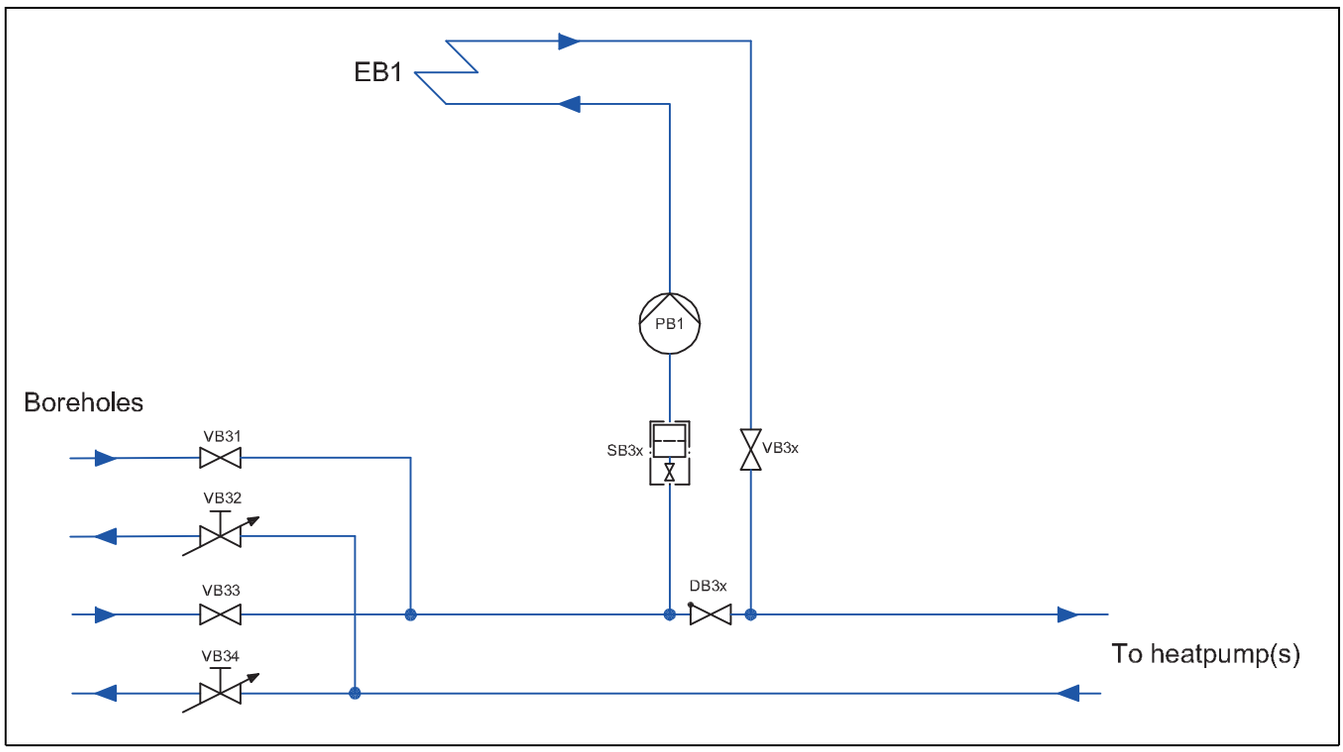

Fig. 65

Condensing passive cooling

Overview

This system solution is intended for properties with fluid-distributed cooling that can handle condensing water, like ventilation cooling batteries with drip pan, or fan-coils with drained drip pans. All cooling pipes must also be condense insulated.

Function

When cooling is needed, PB1 is started by the controller of the cooling system to circulate brine to cooling system. Cooling capacity can be achieved either by 0-10V speed control of PB1 (also controlled by the controller of the cooling system) or by using 2-way valves in the cooling system which in turn affects the internal delta pressure speed control in the pump.

69 Non-condensing passive cooling

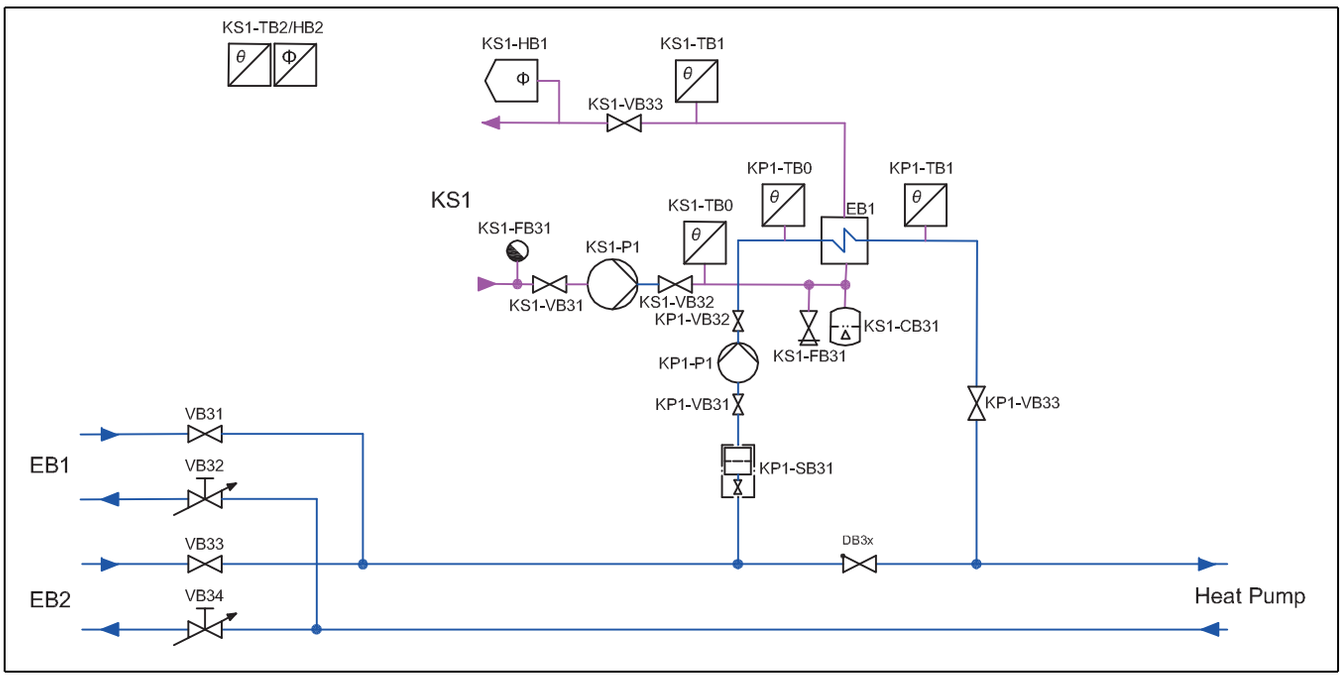

Fig. 66

Non-condensing passive cooling

Overview

This system solution is intended for properties with fluid-distributed cooling that cannot handle condensing water, like cooling baffles, cooled floors, walls or ceilings, or fain coils where the drip pans are not connected to drain. Cooling pipes does not need to be condense insulated.

Flow temperature control

The cooling system flow temperature is controlled by a PI-controller with settable P-band and I-time. The controller uses a temperature sensor input for supply temperature cooling circuit, and an analogue output for primary pump speed.

Dew point control

Dew point control is used in order to avoid condensation in the cooling pipe system, especially when chilled beams or roof/floor/wall cooling are connected. The function increases the supply temperature of the cooling circuit depending on the present dew point in the room. A combined humidity and temperature transmitter (e.g. Regin's HTRT) is connected and configured. The dew point function calculates the actual dew point temperature and adds it to a settable setpoint displacement (factory setting 1°C). Then the sum is compared with the present setpoint. The highest value will be used as supply temperature setpoint for the cooling system.

Pump control

In the cooling system, a digital output can be used to control the pump. The pump can be configured to run continuously or with pump stops. Pump stops are activated via the outdoor temperature sensor and a potential free digital input. It is also possible to add a pump stop delay and a pump start delay. During pump stops, the output to pump speed is 0 V. Start of main brine pump and /or switch over valve from heating to cooling. A digital output can be used to start/stop the main brine pump and/or activate cooling mode. The output follows the pump settings, with the only difference being that exercising the pump does not affect the output

Temperature limit

The supply temperature can be max limited via a fixed settable value. It is also possible to min limit the return temperature. When the return temperature falls below the minimum limit, the supply set point will be overridden with a settable factor. This function makes it possible to run cooling without a primary mixing valve, even if the brine temperature is below 0 °C

Dew guard

A dew guard is also included in the control as an extra safety measure, stopping the cooling if dew is forming here the dew guard sensor is placed (normally on the flow pipe at the secondary side after the plate heat exchanger).