How it works

Automated hydraulic balancing · https://faqdoc.info/en/systemauswahl/alpha-rf-light/automated-hydraulic-balancing-arfl/how-it-works-asw-arfl/

The integrated control system enables automated hydraulic balancing based on a temperature-based method. The system is designed to control thermally actuated valves which regulate the flow in surface heating systems (e.g. underfloor heating). It is particularly suitable for systems with several individual zones and slow-responding heat transfer elements. The aim of automated load balancing is to distribute the heat generator’s available heat output efficiently amongst several heating circuits that are active simultaneously, thereby ensuring that the connected rooms are supplied in line with demand without limiting instantaneous flow rates. Optimisation is achieved by coordinating the timing of the valve openings.

The heating requirements of the various circuits are picked up by the algorithm, which distributes the opening times of the thermal actuators evenly over a fixed period of time. Thus, even in hydraulically unbalanced systems, all circuits are supplied with sufficient heat. If possible, the circuits are not supplied with heat at the same time. This mode of operation is used only for inertial heating systems such as surface.

The prerequisite for automatic balancing is that the technical conditions (e.g. flow temperature, pump pressure, pipe routing, valve settings) allow all rooms to be heated evenly and correctly.
In heating systems with strong deviations from the mentioned conditions or in case of poor implementation (e. g. kinked pipe, pump pressure not constant) the following measures may be necessary:

1. Gradually increase the flow rate via the presettable valve / screwed return connection of the problematic area.
2. If the valve to this room is already set to full flow, gradually throttle the valves of the other rooms.
3. If the first two measures are not sufficient, increase the pump pressure at the heating circuit circulating pump.
4. As a last measure, increase the flow temperature of the heating circuits.

Video: How automatic hydronic balancing works

Embedded media: https://www.youtube.com/embed/nDilxcX2eI8?feature=oembed