

Certificate **Alpha direct Balance - Automatic hydraulic balancing of room heating systems by means of an electronic control system**

Additional explanation: The validation of the method was carried out on the basis of two supervised simulations (real-time as well as 10-fold accelerated) of the heating and operating behavior in an arrangement of eight heated rooms (floor heating) for an existing hydraulic net.

Registration no. **268065243**
Certificate holder **Möhlenhoff GmbH
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TÜV Rheinland confirms that the Alpha direct Balance control by Möhlenhoff is capable of performing an automatic hydraulic balancing on an unbalanced heating system (underfloor heating). Alpha direct Balance by Möhlenhoff is thus at least equivalent to conventional hydraulic balancing.

The basis for this is the report Validation of the automatic hydraulic balancing with the individual room control system Alpha direct Balance from 05.11.2020 with the summarized results

- Optimized adapted controller behavior
- Transition heating to night setback
- disturbance variables
- Automatic adaptation of the system conditions regarding heating up

Validation of the method was performed using supervised simulations in an array of eight heated rooms for an existing hydraulic network.

System used

Test configuration Alpha direct Balance System:

- Windows Runtime Engine: LABview 2010 SP1
- Simulation software ADB IO-Simulation v1.4.0
- Data logger Agilent 34970A
- Base station B 21902-08N2; Firmware: V1.00; Hardware V01; 24 V
- USB measurement/control system: USB-PIO USB TTL digital I/O
- OR8 external optocoupler and relay cards
- Common room control units of different manufacturers

Test basis

Measurements under real conditions in a building

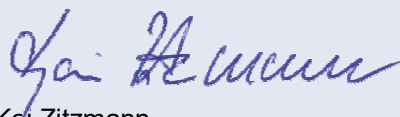
Valid from

01.12.2021

Valid until

30.12.2022

Changes to the control algorithm affecting the certification content require a new certification.



Nuremberg, 01.12.2021 Kai Zitzmann
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