

Round Robin Tests: Inter-Method-Reliability of test methods at three test laboratories for energetic evaluation of non-ducted ventilation units with reversible direction of fan rotation

Summary

The testing of thermodynamic characteristics of non-ducted ventilation units with reversible direction of fan rotation, also called alternating units, can be conducted with two differing test methods.

These are firstly the purge air test method and secondly the direct test method according to (DIN) EN 13141-8:2014.

The task of this research report is to answer whether these test methods deliver reliable and comparable results and can therefore be valid and usable for approval tests for German Construction Approvals, issued by the Deutsches Institut für Bautechnik (DIBt) – the German Institute for Construction.

In the course of this research, test results of three selected test laboratories for tests according to both standards are compared.

It was anticipated that the purge air tests lead to smaller deviations when comparing inter-laboratory reliability than the test method according to (DIN) EN 13141-8. The conducted round robin tests verify this hypothesis. Comparing the tests nonetheless highlighted the necessity to further clarify and delineate the conduction of purge air tests. Testing furthermore showed that the measuring of moved volume flows was subject to influencing factors not yet considered in the test regulation for purge air tests as well as direct tests according to EN 13141-8.