

Technical Note		TN-026	
Test: Heating test		Test no.: 1a, 1b, 1c, 1d, 1e, and 1f	
Assumption: Differential Pressure 50kPa +/- 2 kPa		Assumption no: 61	
Rev: 02	Date: 17/01/2022	Author: Josu Aurrekoetxea	Checked: Tom Naughton

1. Introduction

The 2018 test regime document describes the set up of the Differential Pressure (DP) pressure control of the test rig as follows:

“The rig DPCV shall be set to 50 kPa +/-2 kPa when the HIU is delivering 4kW of space heat under the low temperature test condition - test 1f. Once the DPCV is set under this stated condition it shall not be changed for all the tests in the Test Regime.”

This technical note will analyse the suitability of that set up.

2. Considerations for 50 kPa

Assumption 45 sets 50 kPa as the DP to perform all tests. There is no reason for considering any different value for the heating test. 50 kPa is an industry accepted value.

Generally, the HIU minimum DP is set by the DHW supply because it is the service that demands higher flow and therefore needs higher DP. Heating needs less DP to meet the demands of the apartment. However, both services are exposed to the same DP on site and there is no reason for having a different value for heating test.

However, the HIU can be exposed to higher DP and there is a proposal to conduct the test at different DP conditions. Based on the TNXX it is proposed to do 1 kW tests 1b and 1e with 200 kPa of DP.

3. Consideration 2. DP tolerance +/-2Kpa

Initially the tolerance required on the test is +/-2 kPa. This tolerance, a 4% of set point value, is adequate for testing purposes, however, since test 1b and 1e are going to be performed with 200 kPa of DP the accuracy required tolerance would be +/-1% of set point value. 1% tolerance control is difficult to achieve during the whole test and might cause longer test time to achieve the values increasing the cost of the test while the accuracy of the DP is less relevant at high values on the HIU.

It is considered reasonable to retain a +/-4% tolerance for the 200 kPa tests 1b and 1e.

4. Consideration 3. DPCV

New test DP will be controlled by pumps instead of a DPCV. The description of the test set up should include pump control instead of the DPCV

5. Conclusions

Heating test description should include 50 kPa +/-4% for test 1a, 1c, 1d and 1f, while test 1b and 1e should include 200 kPa +/-4%. The DPCV shall be removed from the text description and will be replaced with pump control.

6. Recommendation

It is proposed to amend the test regime document including the following text:

“The rig primary pump shall be controlled to achieve 50kPa +/- 2Kpa of differential pressure across the HIU primary side during test 1a, 1c, 1d and 1f. Pressure set point shall be 200 kPa +/- 8Kpa during 1b and 1e tests.”