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| **Technical Note** | | | **TN-008** | |
| **Test:** DH Low temperature tests | | | **Test no.:** 1d, 1e, 1f, 2b, 3b, 4b, 5b | |
| **Assumption: 55 °C flow temperature** | | | **Assumption no:008** | |
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# **Introduction**

The next technical note analyses if it is viable to perform all Low Temperature tests with 55 °C of DH flow temperature.

# **55 °C temperature on heating test**

The most demanding heating test is 1f requiring 4 kW with 35-45 °C conditions. These conditions will be easy to achieve for most HIUs with the current heating PHEs. This test won’t suppose any problem to perform.

# **DHW dynamic test**

DHW supply tests are the most demanding ones because the power requirements are higher while keeping smaller temperature approach at the flow side.

2 models of main HIU PHE manufactures have been checked using the software supplied by these manufacturers. The selection of PHE model has been based on the PHE being able to achieve 42 kW in the same conditions. Appendix 1 and 3 show the results of the PHE with 0.13 kg/s of DHW demand at 50 °C. Both PHE perform properly.

# **Maximum power performance**

Current Besa test was thought to test the HIU at the most common demand conditions. However, the lower flow temperature limits the capacity of the HIU delivering higher demands than tested. Appendix 2 and 4 show the capacity of the PHEs to achieve 42 kW.

Notice that Swep PHE had to be installed switching the circuits in other to have a reasonable pressure drop at the primary side. On the test, pressure drop should be also measured on the secondary side.

# **Conclusions**

The test at 55 °C is doable, however, the HIU manufacturers will need to select very carefully the PHE of their HIUs. Not all the HIUs in the market will be capable of delivering the proper demand with 55 °C on the primary temperature.

Any consultant that decides to run their system at 55 °C will also need to keep in mind the DHW demand reduction.

# **Recommendation**

It is recommended to test the HIUs at 55 °C DH temperature. However, it is highly recommended to add another test that shows the maximum power achievable by the HIU with these conditions.

# **References**

[1] Appendix 1: Calculation of Performance of Swep E8LAS-40 with 55 °C flow 0.13 kg/s DHW at 50 °C

[2] Appendix 2: Calculation of performance of Swep E8LAS-40 with 55 °C 42kW DHW at 50 °C

[3] Appendix 3: Calculation of performance of Danfoss XB06-36 with 55 °C flow 0.13kg/s DHW at 50 °C

[4] Appendix 4: Calculation of performance of Danfoss XB06-36 with 55 °C 42kW DHW at 50 °C