07/09/2018

# TECHNICAL NOTE

## APPLICATION: RESIDENTIAL A2W HEAT PUMP

**TYPES**:

1. New House (Low Output Temperature ~ 120F)
    A. Monobloc
    B. Split
2. Retrofit House (High Output Temperature ~ 160F)
    A. Bivalent, A2W Heat Pump with Boiler
    B. Monovalent Cascade, A2W to Hi-temp W2W Heat Pump (Typically R410a OU to R134a IU)

**SOURCES:**

1. LG ThermaV
2. Rotex HPSU hitemp
3. UK Government High temperature heat pumps, hybrid heat pumps and gas driven heat pumps
4. IEA HPT Annex 41 Cold Climate Heat Pumps

**SUMMARY**:

Recent advances (2015 – 16) made in Air-to-Water (A2W) technology so that Outdoor Units (OU) perform well to -13F at ouput temps ~120F. This is suitable for new construction using low temp heating terminals. Current technology requires a second stage of heat to produce output temps ~160F that are compatible with existing high temp heating terminals. See below for system schematics for New and Retrofit applications.

**SYSTEM DESIGN REFERENCES:**

1. Dimplex Heating and Cooling with Heat Pumps, Project Planning Manual
2. Vaillant muliMatic VRC 700, System diagram book
3. PAW Hydronic Systems
4. Resol Control Systems

## New House

With low temp. monobloc & split model, heating and cooling can be done.

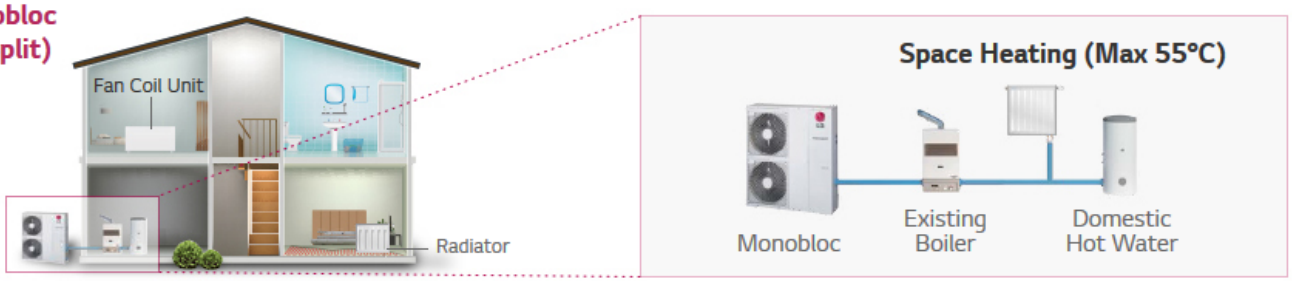
**Monobloc**


**Split**

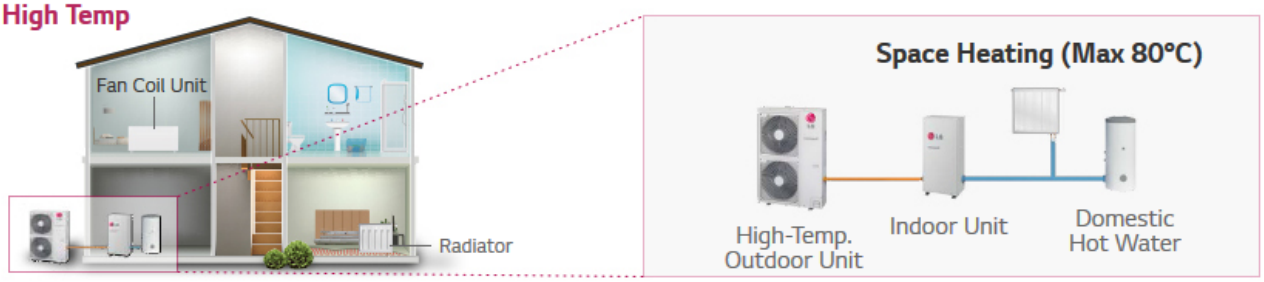

## Renovation House

THERMA V can be connected to existing boiler system to optimize energy efficiency and heating capacity for renovation house. Also THERMA V High Temperature can replace completely exiting boiler by providing 80°C hot water.

**Monobloc (or Split)**




**Split High Temp**




This product contains Fluorinated Greenhouse Gases.(R410A)