Design Guidance

The University of Leicester operate several buildings which connect to the local area district heating system. This system is operated by a third party, namely ENGIE. The district heating water is referred to below as “primary” water and the temperature, pressure, pressure differential and water quality of this water is controlled by the third party directly.

The UoL connections to the primary district heating water presently fall into two generic types

- A primary district heating (ENGIE) to secondary building (UoL) water to water plate heat exchanger.
  - The secondary building water is therefore hydraulically separated from the primary water and serves the various buildings heating and domestic hot water systems heat needs.
  - UoL are in full ownership of the secondary water system.
- A primary district heating (ENGIE) direct piped connection to an item of UoL plant.
  - The primary water therefore directly serves hot water generators or air handling unit heater batteries.
  - Primary water will then flow within our buildings and route within the same to serve these items of plant.
  - Confusingly UoL own these primary mains within buildings and are responsible for the maintenance of the same but are not in control of the water temperatures, pressures etc within the same as these are determined by ENGIE.

With regard to any connections to the district heating system UoL are obligated to provide low return water temperatures and therefore need to use two port valve control technology wherever possible to give lowest return water temperatures.

New capital development projects

On all such projects, where new connections to the district heating are required (and this is only one of several options available for new heat sources, see other documents) the University requirement is for the whole building development to be fully hydraulically separated from the primary ENGIE district heating network.

Therefore:

- Ensure ENGIE provide run and standby water to water plate heat exchangers to generate our UoL secondary water at whatever temperature the designers require.
- Serve all UoL building heat needs from the secondary water side to include fabric heating, air systems heating, domestic hot water heating and any process heating.
- Maximum secondary water temperatures will be limited by the primary water temperature.
- Design secondary systems such that the primary water return is no greater than 75°C absolute maximum at any given time.
- No ENGIE primary water pipework must be run within UoL buildings except for those mains entering the plate heat exchanger plantroom which must be located at ground level.
Design Guidance

New refurbishment or maintenance projects including minor works

On all such discreet projects it is hoped that no new connections to the district heating will be required. All heat sources should be taken from the building secondary systems.

Where there is an opportunity to remove existing primary ENGIE water pipework from within the building this should be discussed and options explored although it is noted that the primary to secondary water to water plate heat exchangers may need a capacity increase to achieve this aim.

Where works are undertaken on any air handling units, hot water generators or heat emitters directly connected to the primary ENGIE network the following should be noted.

- Many emitters are presently directly connected to the primary ENGIE network by means UoL owned pipework systems and use of three port control valves. Where this is the case the bypass should presently be isolated to make the system run under two port control and thus give lowest return water temperatures as required by ENGIE.
- When working on or modifying such emitters, including valve replacements, the existing three port valve and bypass should be removed and replaced by a two port control setup.
- The use of any two port control valves must ensure that
  - The control valves are suitable for use with the high pressures used by ENGIE within the network. PN16 systems are required.
  - The control valves are suitable for use with the high pressure differentials used by ENGIE within the network.
  - Valves will be full water tight shut off against the high pressure differentials on the network.
  - Differential pressure control valves are used when required
  - System may need a local water system rebalance.
- When existing three port valves have failed and need replacement then two port alternatives should be fitted and the bypass fully removed. The above requirements apply regarding pressures etc.