

Hot water thermal efficiency

Water heating in NZ makes up a large amount of a households total energy bill. A poorly designed hot water system can cost the building occupier in extra energy and the installation might not comply with New Zealand's building code (NZBC).

NZBC clause H1 outlines the mandatory requirements for thermal efficiency. For hot water systems, H1.3.4 says:

Systems for the heating, storage, or distribution of hot water to and from sanitary fixtures or sanitary appliances must, having regard to the energy source used,—

(b) be constructed to limit heat losses from storage vessels and from distribution systems; and

(c) be constructed to facilitate the efficient use of hot water

So when designing and/or installing a plumbing system, consideration must be given to the distance that hot water needs to travel to the outlet and how much heat will be lost in the draw off process.

NZS 4305:1996 (cited in H1) gives the acceptable solutions for energy efficiency for domestic hot water systems to meet the mandatory requirements of H1.3.4. NZS 4305 outlines that:

- water heaters should be located as close as practicable to the areas they service
- the pipe supplying the kitchen sink should not be more than a total volume of two litres
- the maximum hot water pipe length to a kitchen sink is;
 - 12 meters for a pipe that has a nominal pipe size of 15mm; and
 - 7 meters for a nominal pipe size of 20mm.

NZS 4305 came out in 1996. Since that time a number of new types of water supply pipes have come into the market. So, NZS 4305 may not have considered the individual characteristics of the newer pipe systems and their thermal efficiency.

If a plumber is not installing the pipework as per NZS 4305 they can use an alternative solution as long as the installation meets the mandatory requirements of the building code (e.g. NZBC H1.3.4). For consented work, the plumber must get approval from the council for an alternative solution before they do the work.

There can be several ways to meet the requirements of H1. However, before a plumber installs the hot water system it is important they consider all aspects of the design; this includes considering the location of the water heater, pipe type, pipe volume and insulation before starting the installation.

Useful links

NZS 4305:1996 – Energy efficiency – Domestic type hot water systems

[file:///C:/Users/Samuel/Downloads/nzs-43051996%20\(1\).pdf](file:///C:/Users/Samuel/Downloads/nzs-43051996%20(1).pdf)

NZBC H1 – Energy efficiency

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