

Compact Heat Storage with Vacuum Insulation

The aim

The performance of a 200 liter water heat storage in the volume of a regular 120 liter storage.

Our Compact Heat Storage

175 liter water in 50 x 50 x 110 cm (275 lt)
35% volume reduction

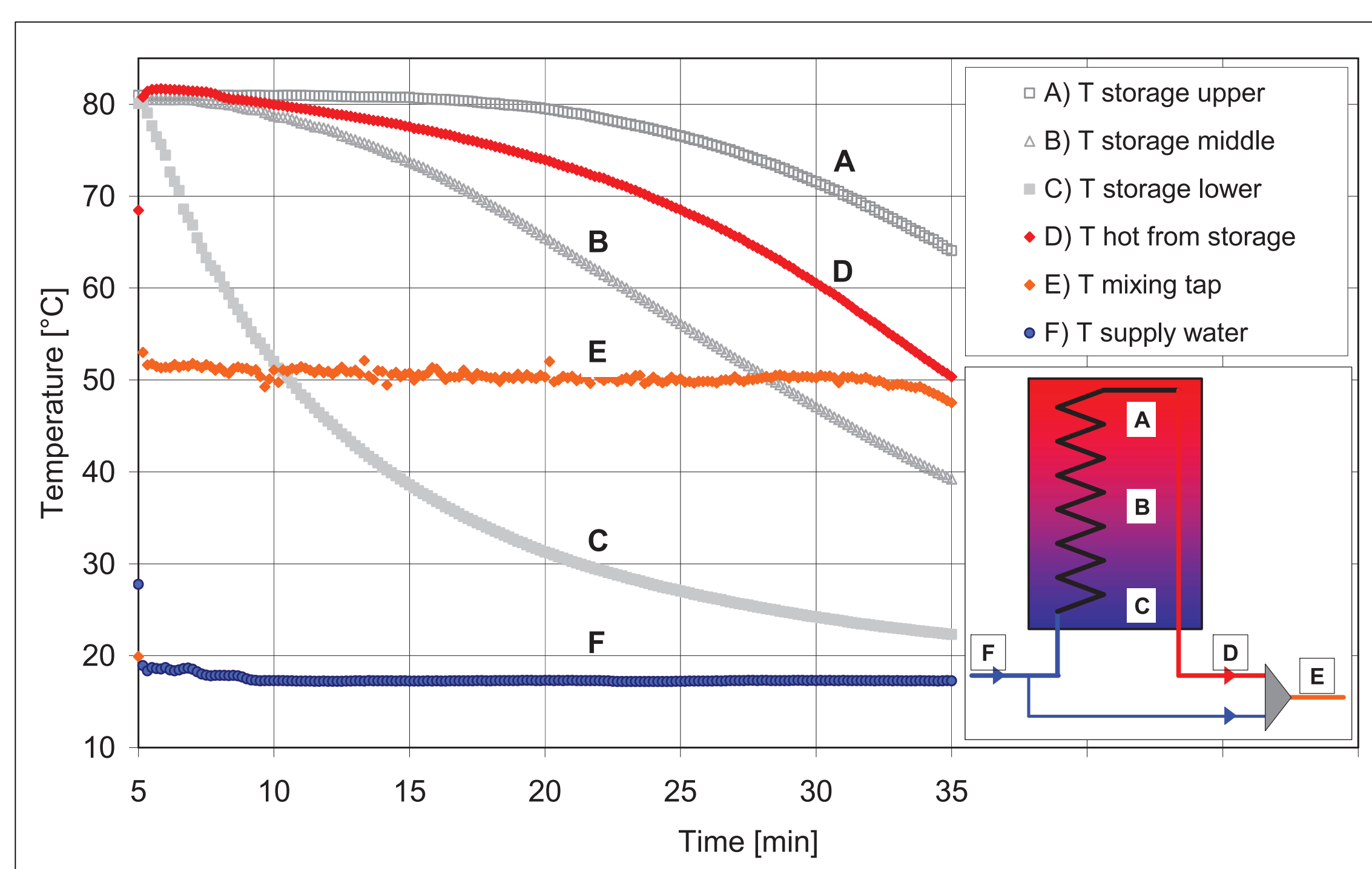
- pressure less cubic vessel
- heat exchanger for domestic hot water
- use of vacuum insulating panels

Performance

Heat losses: 0.7 W/K
Maximum power output: 48.8 kW
Bath filling: 150 liter within 10 minutes

Future activities

Application of plastics and other low weight and low cost materials.
Redesign to optimize the compact heat storage for low cost mass production.
Partner search for commercial development of the storage concept.



Measurements

Left: Domestic hot water performance

Storage fully loaded to 80°C

Tapping of domestic hot water: 50.5°C and 7.8 ltr/min

This tap lasts 28 minutes = 2 shower turns = 31.1 MJ

Below left: Heat losses

Storage fully loaded to 82°C

It takes 5 days to cool down from 80°C to 60°C at an average ambient temperature of 21°C.

Below right: IR photo

IR photograph shows a very uniform temperature over the body. The outside wall is only 5°C above room-temperature while the storage is filled with 80°C water.

