

Hot Water Storage is Energy Storage

A hot water storage tank (or cylinder) is a form of energy storage. It stores hot water for space heating or domestic use. It is usually made of metal and insulated to keep water warm.

Why use water for storage? Because **water stores energy very well, in the form of heat** and releases it very slowly. How does it work? Think of a summer night by the sea: water is often warmer than the air around, because it has stored heat from the sun, the whole day.

Storage tanks are usually heated by an external boiler or heat pump or solar thermal system. In addition, many cylinders are equipped with a **backup electrical resistance** heater.

There are about **30 million hot water storage tanks** in Europe's buildings. Many of us use them daily, when we heat our homes or when we run hot water from our tap.

Why Hot Water Storage is good for comfort



Today, the main reason why people decide to install a hot water storage tank is comfort.

Water cylinders allow for almost immediate flow of hot water from a tap – exactly at the desired temperature. And storage allows to run several hot water taps at a time, while keeping the hot water flow constant. Moreover, hot water cylinders can be used to support space heating systems and optimise their functioning.

Why Hot Water Storage is good for the electricity grid



Tomorrow, Europeans may use hot water storage for demand response: to save on their electricity bill, use more electricity from renewables and help balance the grid.

How so? Water cylinders are great to store energy and provide demand response. For example, a well-insulated hot water storage tank can be connected to an electric heat pump or an electric backup resistance. When electricity from solar and wind farms is abundant, the cylinder would use it, to heat water. It would then store the hot water, ready for use when needed.

How about those savings? In a future with **demand response at retail level and hot water cylinders acknowledged as means to store energy**, people may access lower electricity prices when the supply of wind and solar electricity is abundant.

What's more, a hot water storage tank is an inexpensive way to provide demand response: millions of households already have a hot water cylinder installed! They just need to add a smart control to make it responsive to the grid.

Hot Water Storage tanks have **great potential for demand response:**

- ❖ **190 GWh/ day:** energy that already installed storage tanks with backup electrical resistance could store in the EU.
- ❖ **60 GW:** total peak flexible power available, enough to absorb **more than half of all wind power in the EU.**