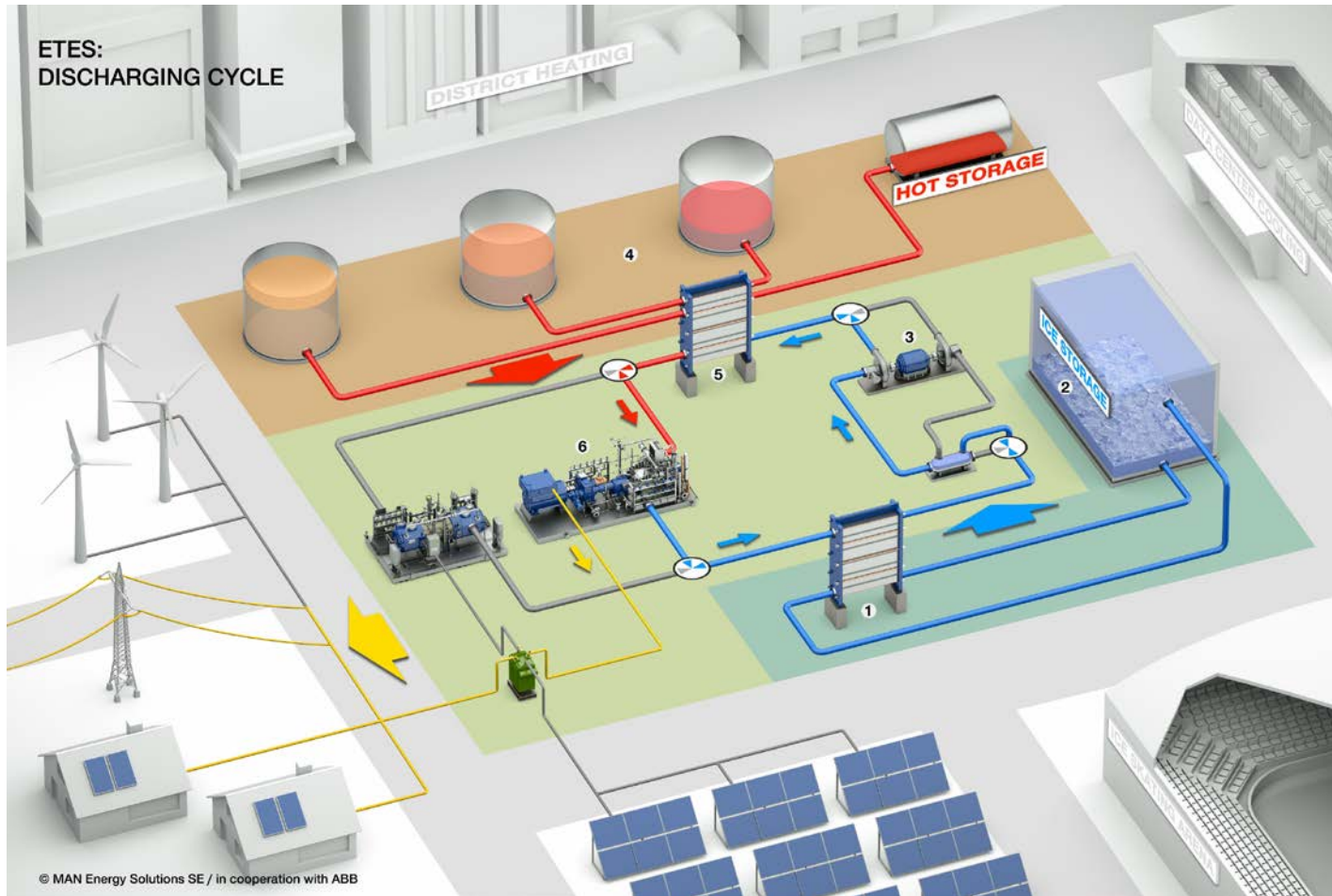


### Charging Cycle:

- (1) The HOFIM™ turbo-compressor runs on surplus energy from renewable resources, compressing CO<sub>2</sub> in the cycle, which is heated to 120°C.
- (2) The CO<sub>2</sub> is fed into a heat exchanger and heats the water.
- (3) The hot water is stored in isolated tanks, each one at a separately-defined temperature level.
- (4) Still under high pressure, the CO<sub>2</sub> is fed into an expander, which reduces the pressure – the CO<sub>2</sub> is liquefied and cooled.
- (5/6) The liquefied CO<sub>2</sub> is again pumped through a heat-exchange system, this time on the cold side of the system. Heat is taken from the surrounding water and ice is formed in the ice storage tank.

There are numerous uses for the stored heat, for instance within the food-processing industry or for district heating. Among other possible applications, the cold can be used to cool data centers, for cold storage or the air-conditioning of buildings.



### Discharging Cycle:

- (1/2) Gaseous CO<sub>2</sub> enters the heat exchanger on the cold side of the system where it condenses because of the cold from the ice-storage tank. The ice in the tank melts.
- (3) The pump increases the pressure of the CO<sub>2</sub> again.
- (4/5) The CO<sub>2</sub> passes through the heat exchanger and is heated by the water in the hot-water storage tanks.
- (6) The heat from the heated CO<sub>2</sub> is fed into the power turbine where it is converted back into electrical energy via a coupled generator. The electricity flows into the grid and is distributed to consumers.