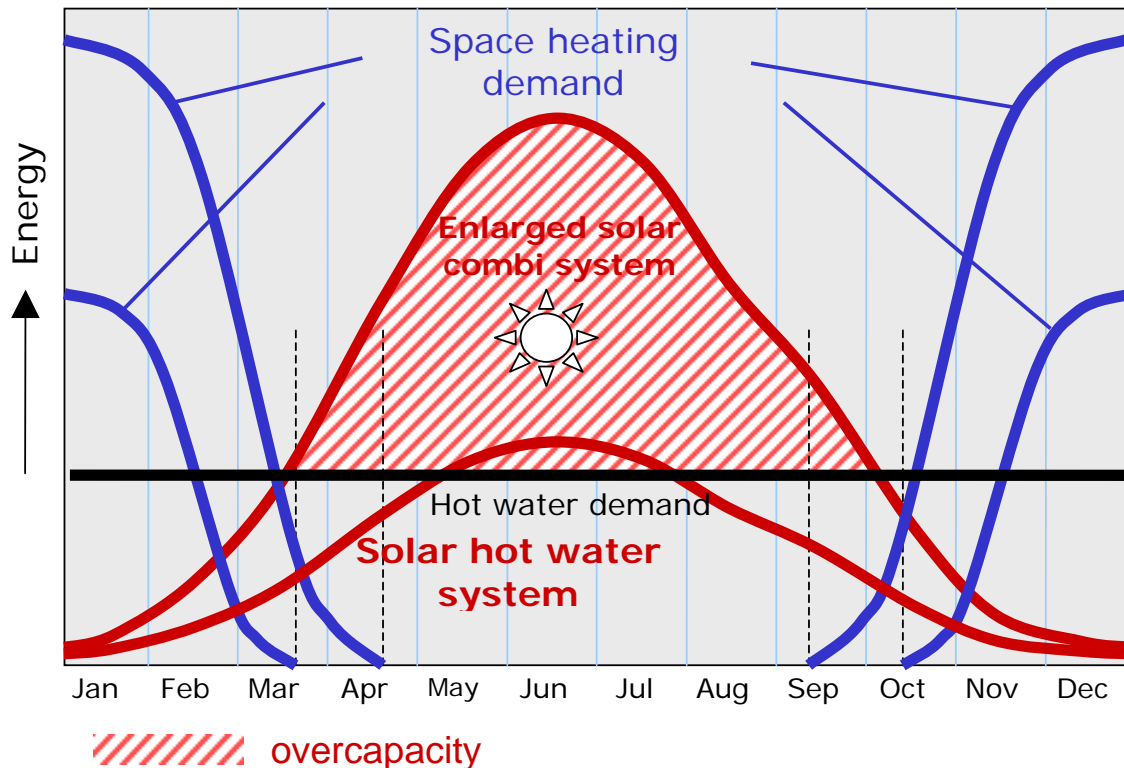


SYSTEM: Drain-back, designed for Western European climate conditions



**SOLAR SPACE HEATING:** A combined solar water and space heating system is larger than a standard domestic solar water heating system and is designed to provide extra energy into the space heating system. Space heating with solar energy is possible in spring and autumn as shown in the graph. Although there is no demand for space heating in summer time, the larger collector field will supply the extra available solar energy to the hot water system.

**DESIGN RULES:** *Collector area:*  
 Minimum area : 2 x collector area of a standard solar hot water system  
 Maximum area: 1/8 floor heating area

**SOLAR FRACTION:** On average a combined solar system will provide a solar fraction of 60-75%. Which means that 60-75% of the yearly hot water usage will be heated by solar energy. To ensure a hot shower for the user the rest will be heated by an auxiliary heating source. (boiler, electrical element, etc.) In summer time stretching from March to October the solar fraction will be 98%. During a short winter time the solar fraction will drop to 30%.

The solar fraction for the heating part is highly dependent on the energy losses of the house and the used heat dissipating system (Low temperature systems like floor heating are best). The better insulated the building is, the higher the solar fraction, but the lower the savings.

**PRICE PERFORMANCE:** The price performance of a combined solar system is lower compared to a standard hot water system. Some of the collected solar energy can not be used due to over capacity in the summer.

**APPLICATIONS:** Combined domestic hot water and space heating systems. These solar systems are preferably connected to low temperature heating systems such as floor- or wall heating.