

Veldhoven duurzaam

Presentatie: Energie opslag, conversie en transport

Datum: 17-9-2020



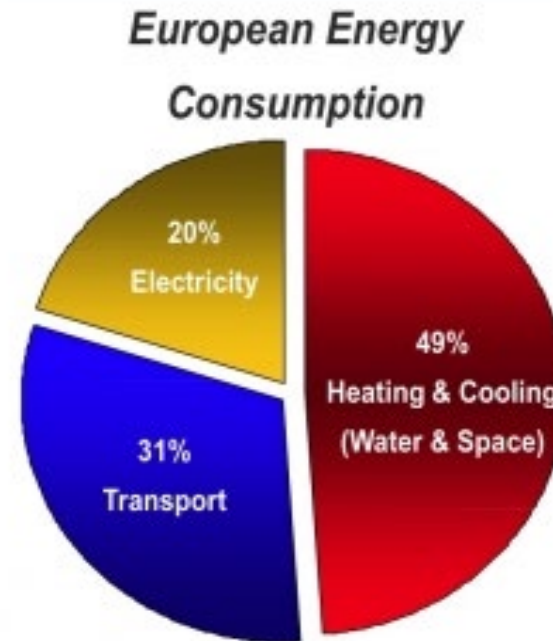
agenda

- ▶ Start met videofragment <https://vimeo.com/220926881>
- ▶ Europese energiemarkt
- ▶ Transport sector zoektocht naar energiedrager
- ▶ Noodzaak tot conversie en opslag
- ▶ Classificering conversie- en opslagtechnieken
- ▶ Toelichtingen verschillende technieken
- ▶ Dag/nacht ritme opslag versus seizoensopslag
- ▶ Vragen ronde?

Europese Energiemarkt

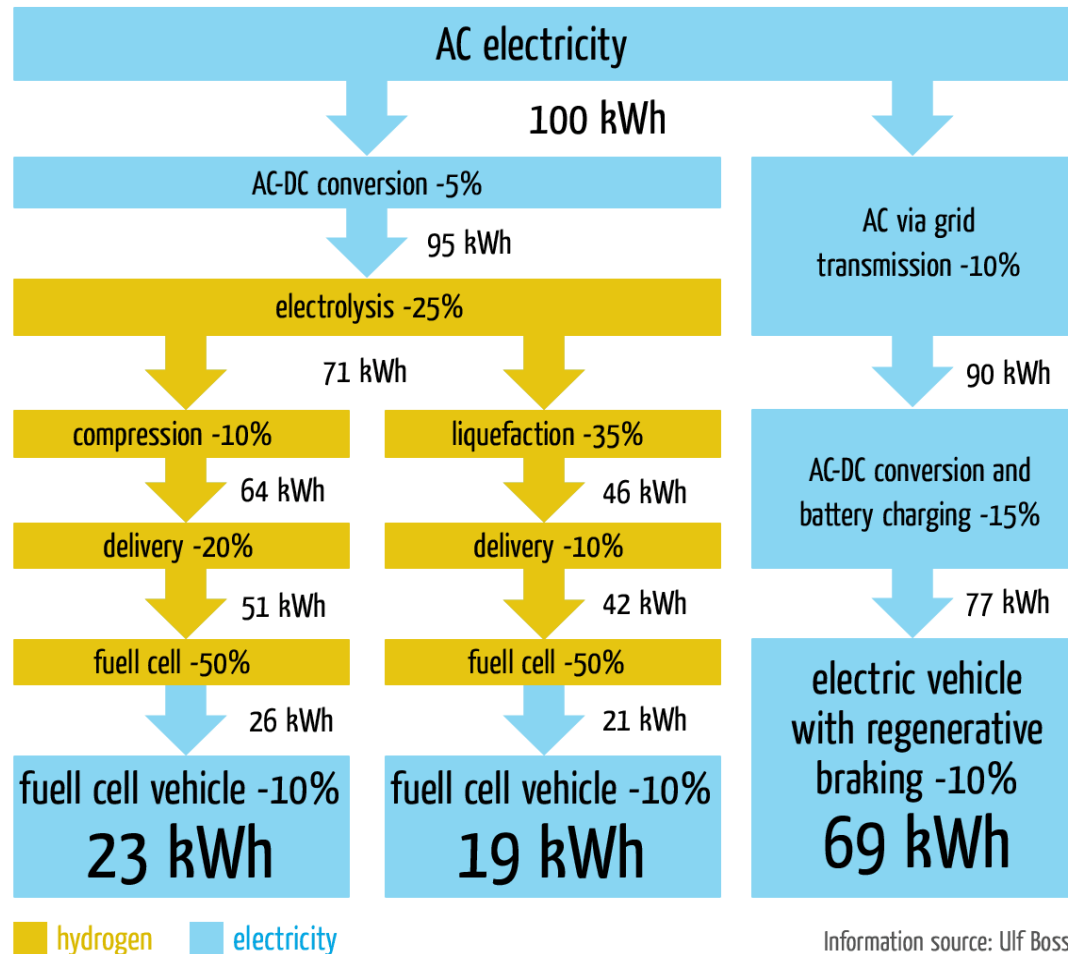
Energy Market - Breakdown of EU Consumption

- ❑ **Electricity** represents only a **small share** of the total European Energy Consumption;
- ❑ **Heating & Cooling** accounts for about **half** of the total EU Energy Consumption;
- ❑ From the 49% of Heating, **about 80% uses temperatures below 250°C** that can be provided by solar thermal systems;

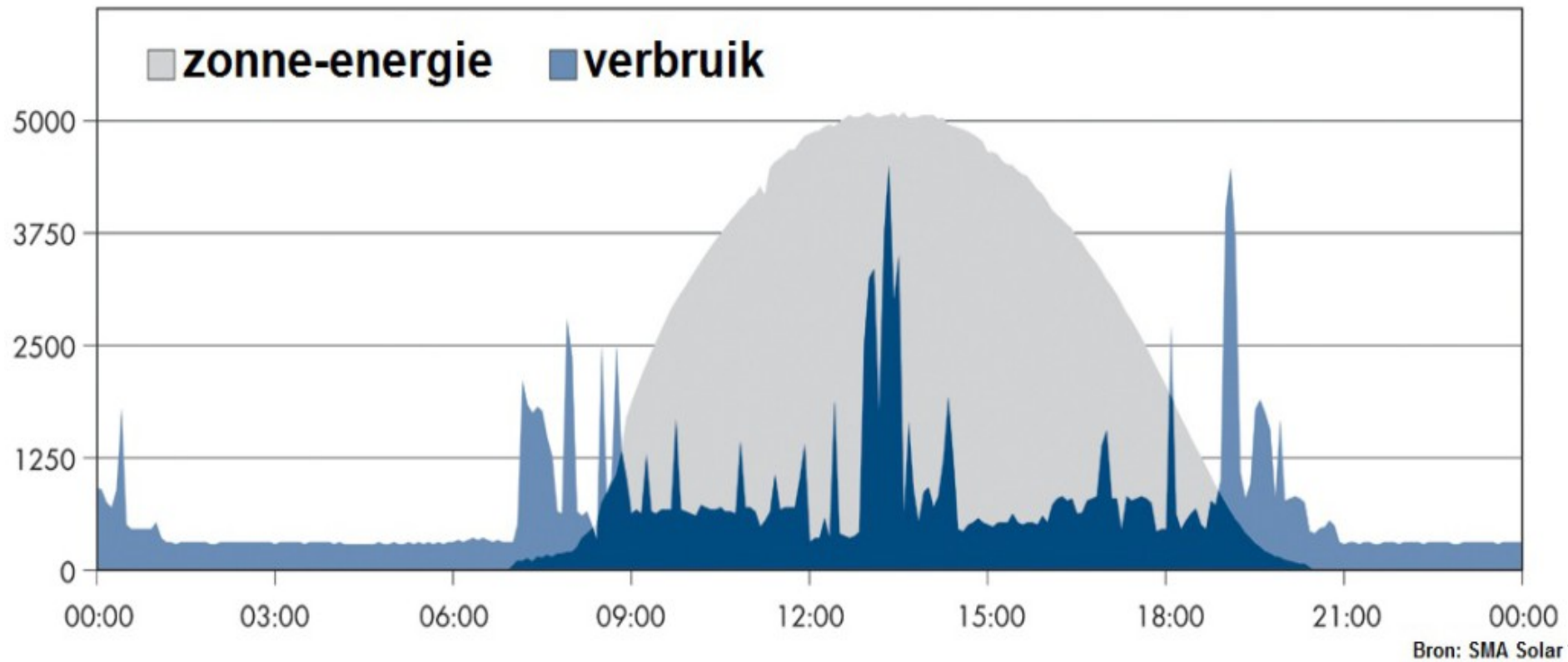


Transport sector H₂ versus elektra

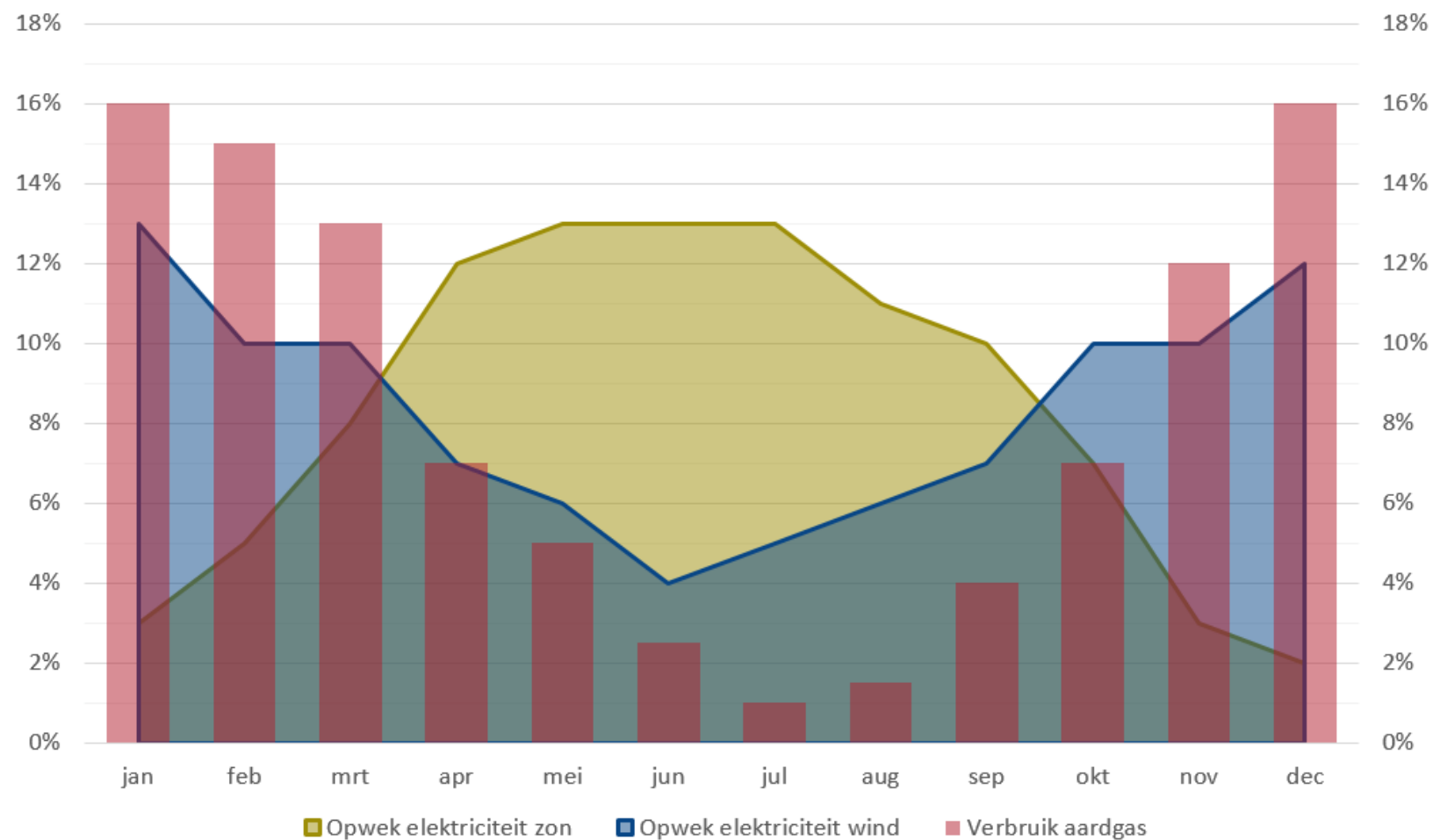
Energy efficiency of hydrogen and electric cars



Noodzaak tot conversie en opslag

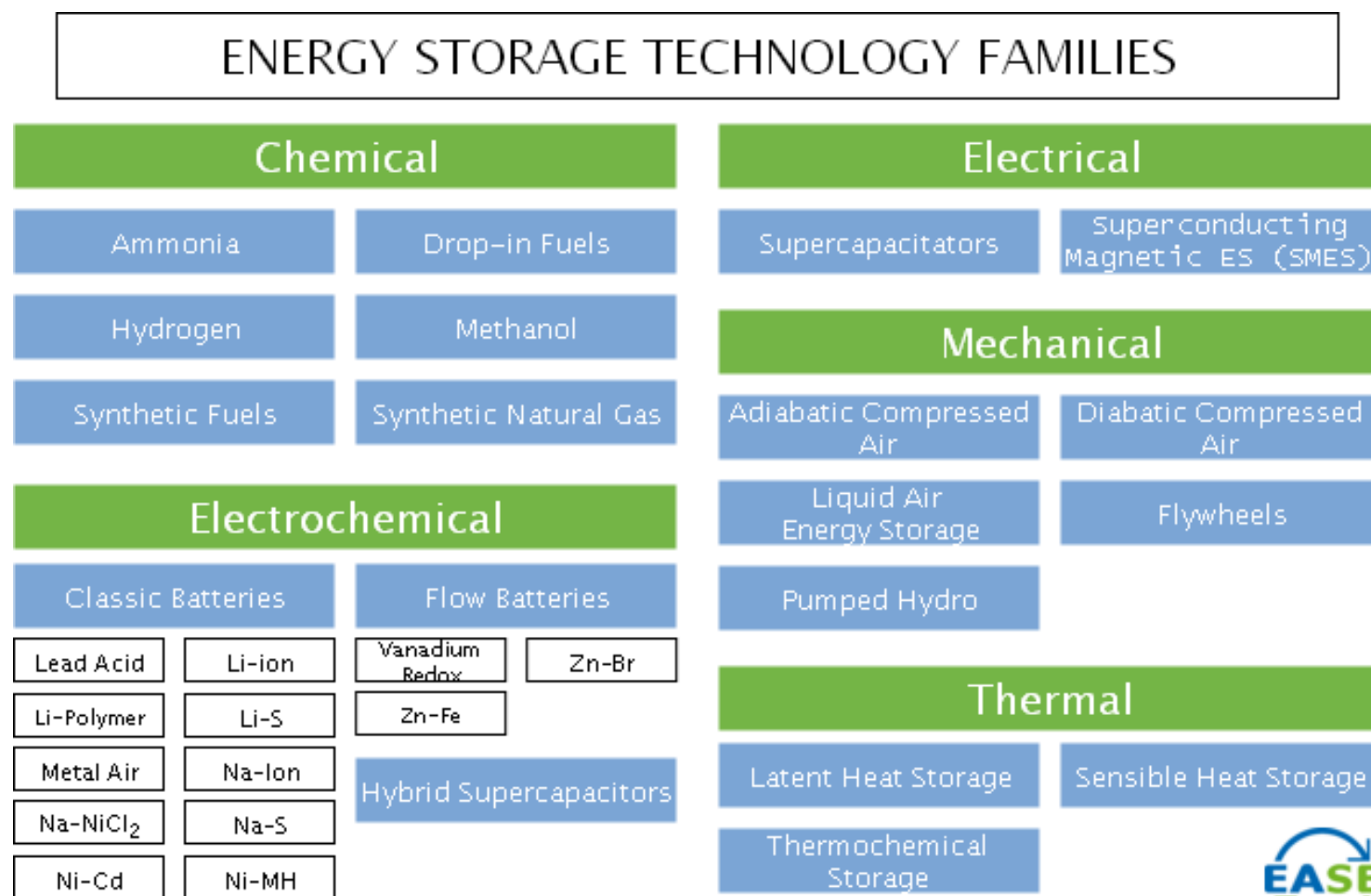


Noodzaak tot conversie en opslag



Classificering conversie- en opslagtechnieken

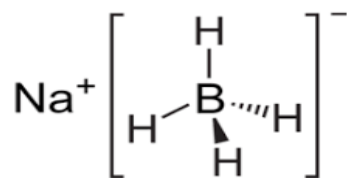
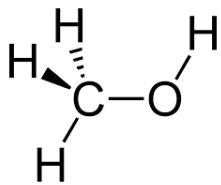
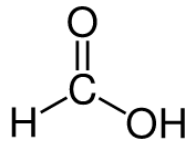
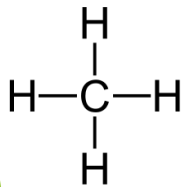
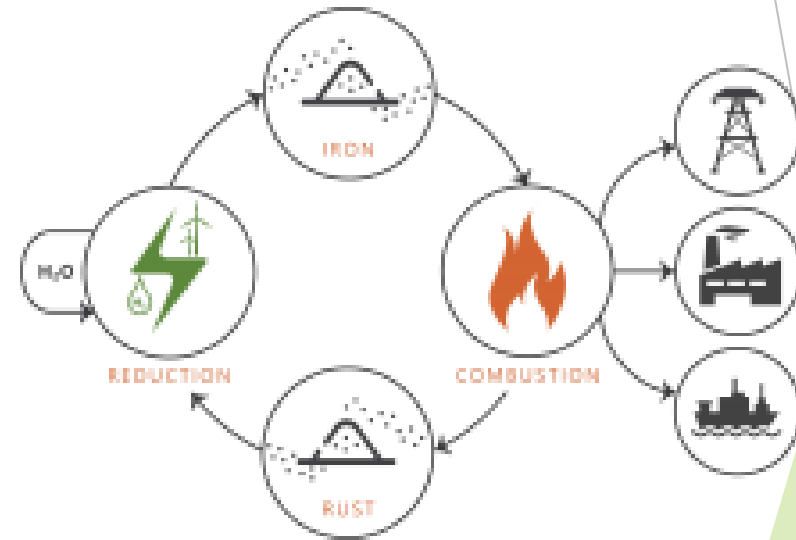
De Europese koepelorganisatie EASE heeft technologiebeschrijvingen ontwikkeld voor de volgende energieopslagtechnieken:



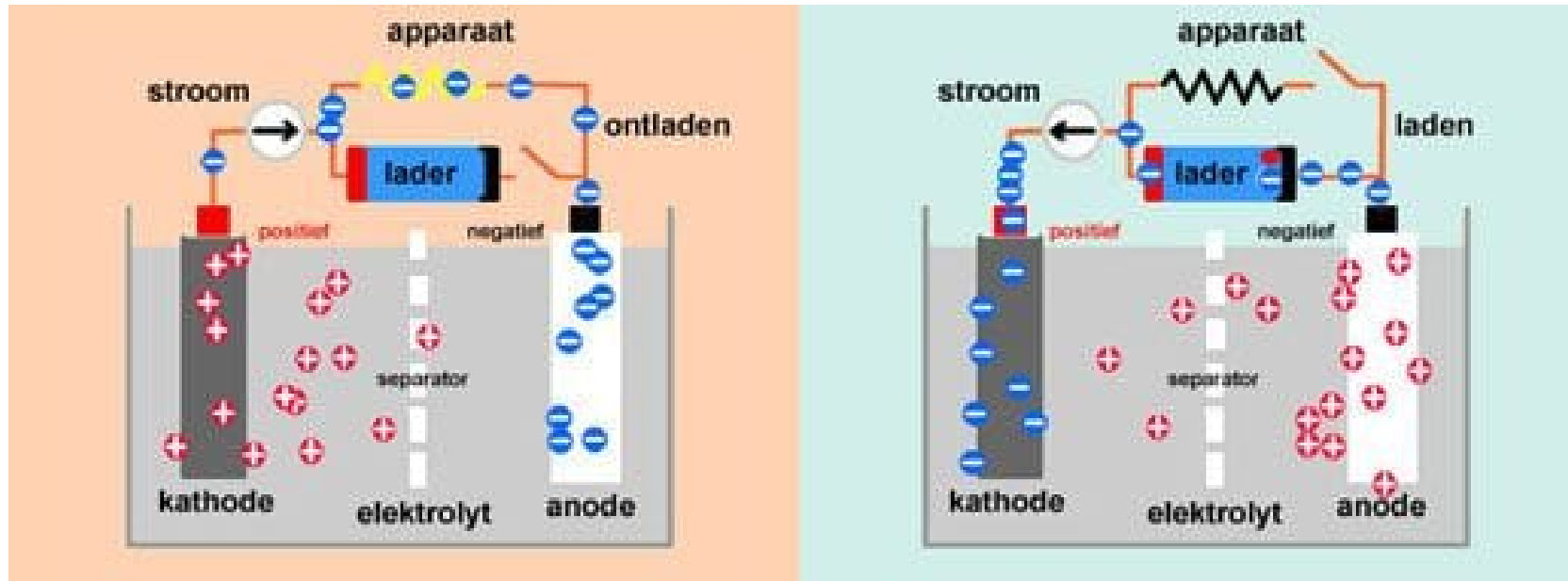
Toelichting opslag in chemische energie



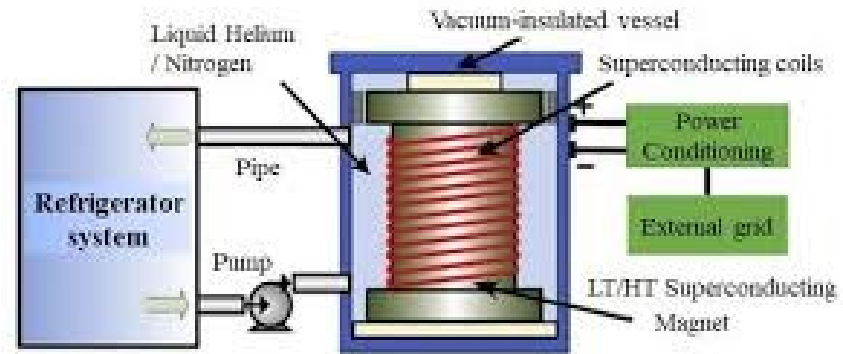
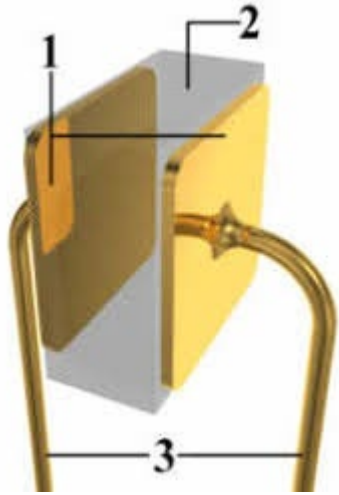
THE CYCLE OF IRON POWDER



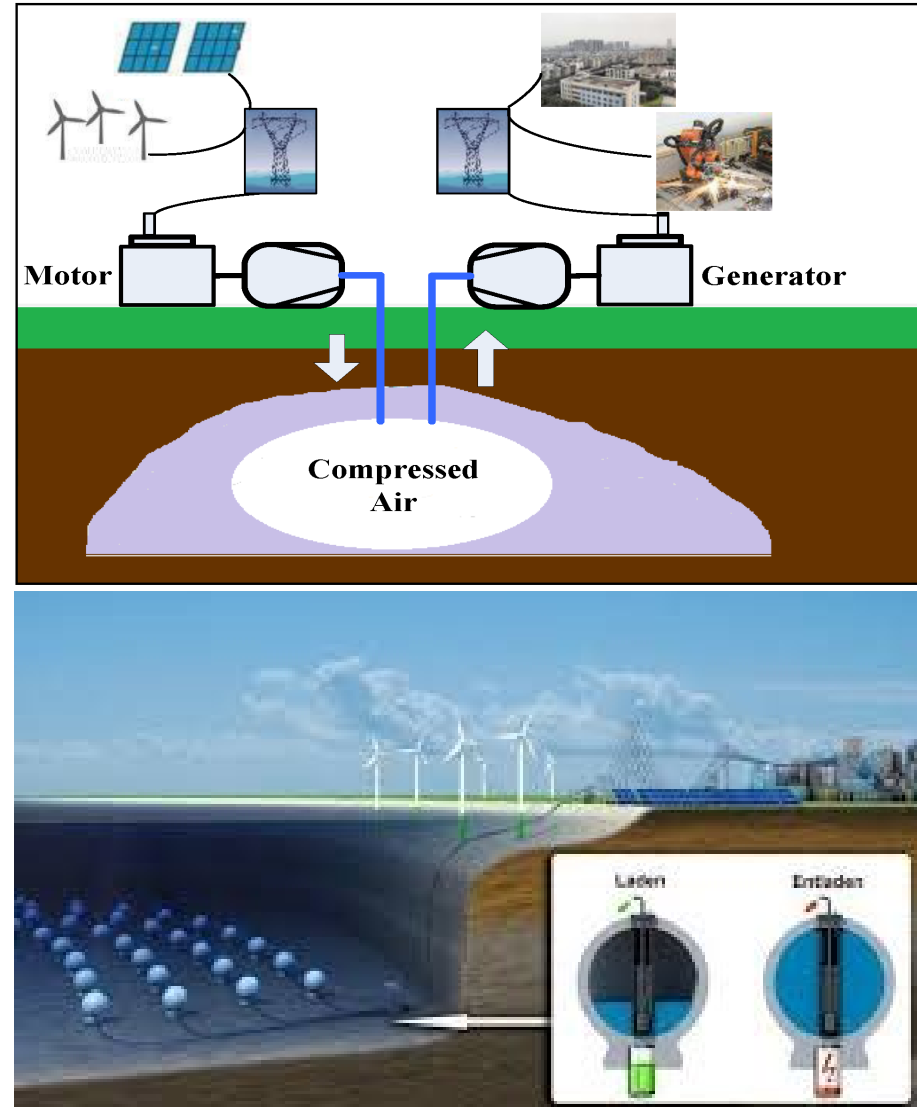
Toelichting elektrochemische opslag



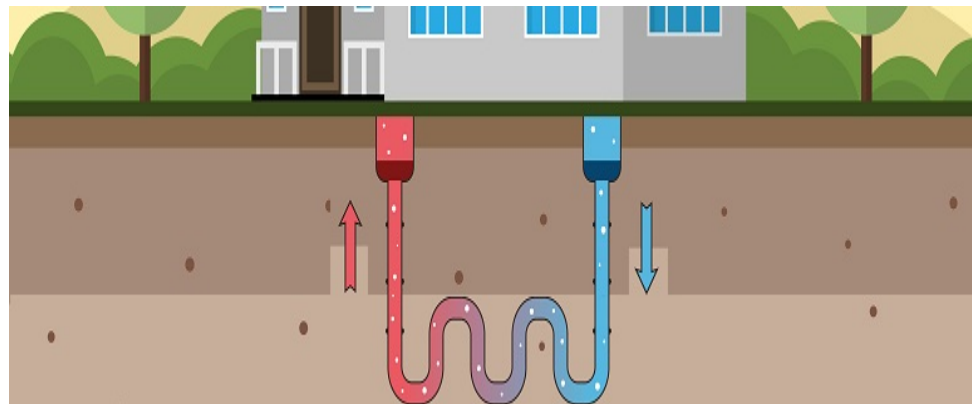
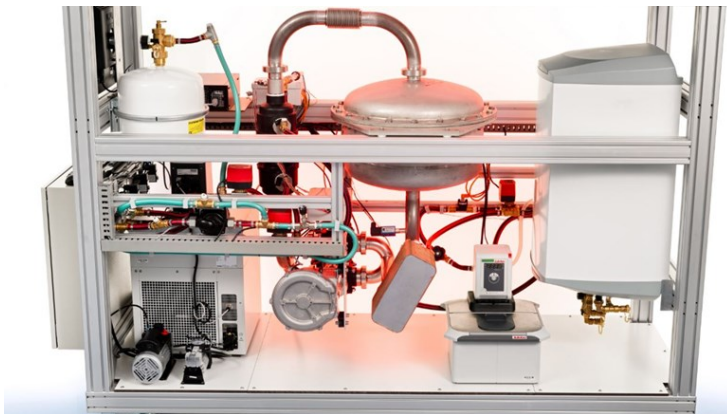
Toelichting elektrische opslag



Toelichting mechanische opslag

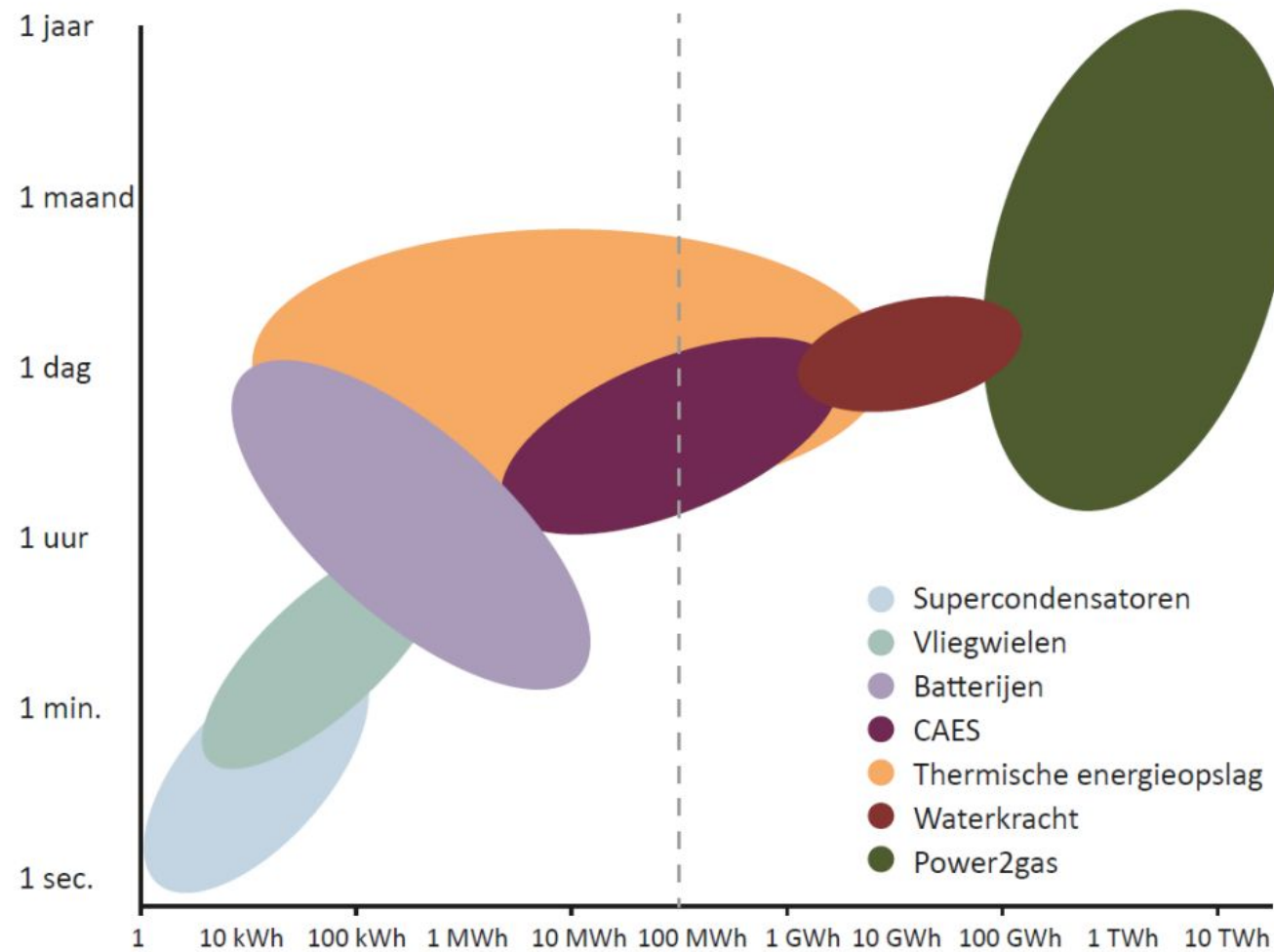


Toelichting thermische opslag

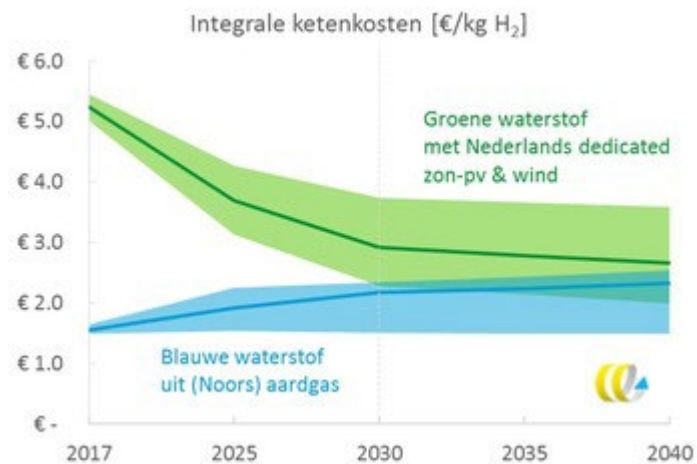
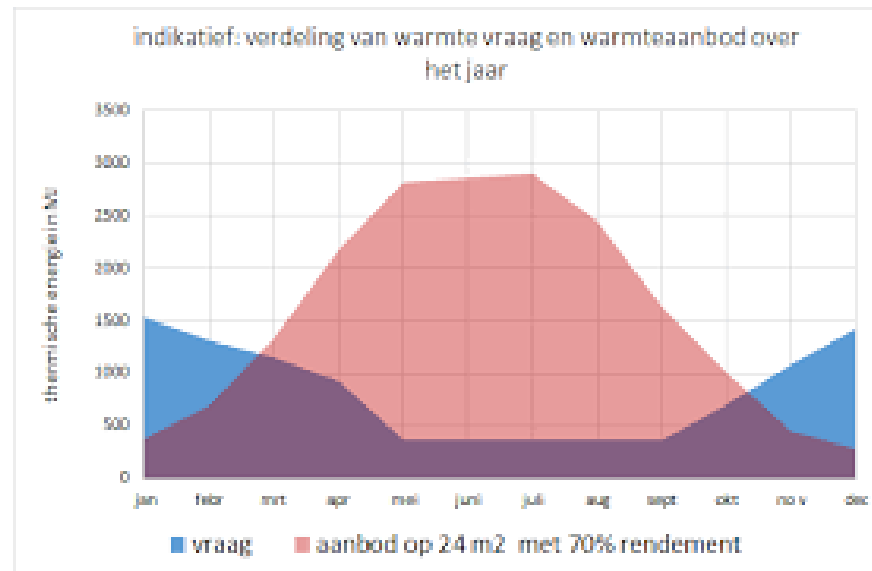
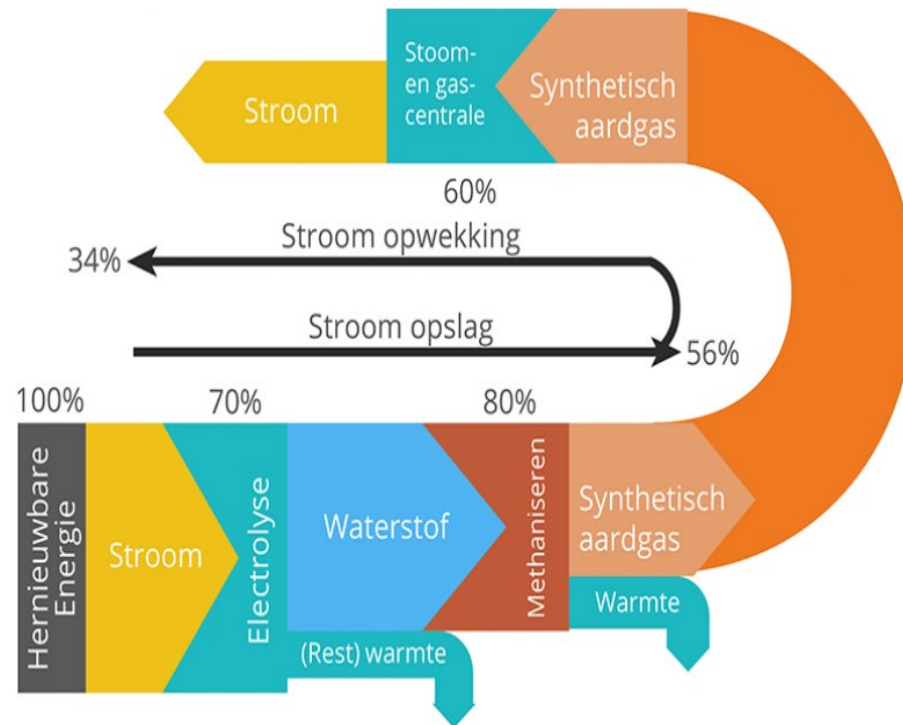


Dag/nacht ritme opslag versus seizoensopslag

bron: docplayer.nl



Vragen ronde



Vragen ronde

- ▶ **Nederlands** huishouden gemiddeld 1.470 m^3 gas en 3.034 kWh **elektriciteit** per jaar
- ▶ Een huishouden met een verbruik van 10 kWh per dag dag en nacht ritme (verschil dag en nacht kan een factor 3 schelen zie hieronder) $8,31 \times 3/4 = 6,23 \text{ kWh}$ opslagcapaciteit.
- ▶ Gemiddeld huishouden: $3034/4 = 758,5 \text{ kWh}$ per kwartaal. In de winter 15 % meer dan in de zomer betekent $758,5 \times 1.075 = 815 \text{ kWh}$ opslag voor winterkwartaal (ervan uitgaande dat zonnepanelen nauwelijks iets opleveren).
- ▶ Middenklasse elektrische auto 17 kWh per $100 \text{ km} = 5,9 \text{ km}$ per kWh . Rendement verbrandingsmotor 30 % en van een elektromotor 90 %. Capaciteit accu 60-70 kWh