

# Power -to-Heat

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Sustainable Electrification of the Chemical Industry

# Power-to-Heat

A business opportunity for you?

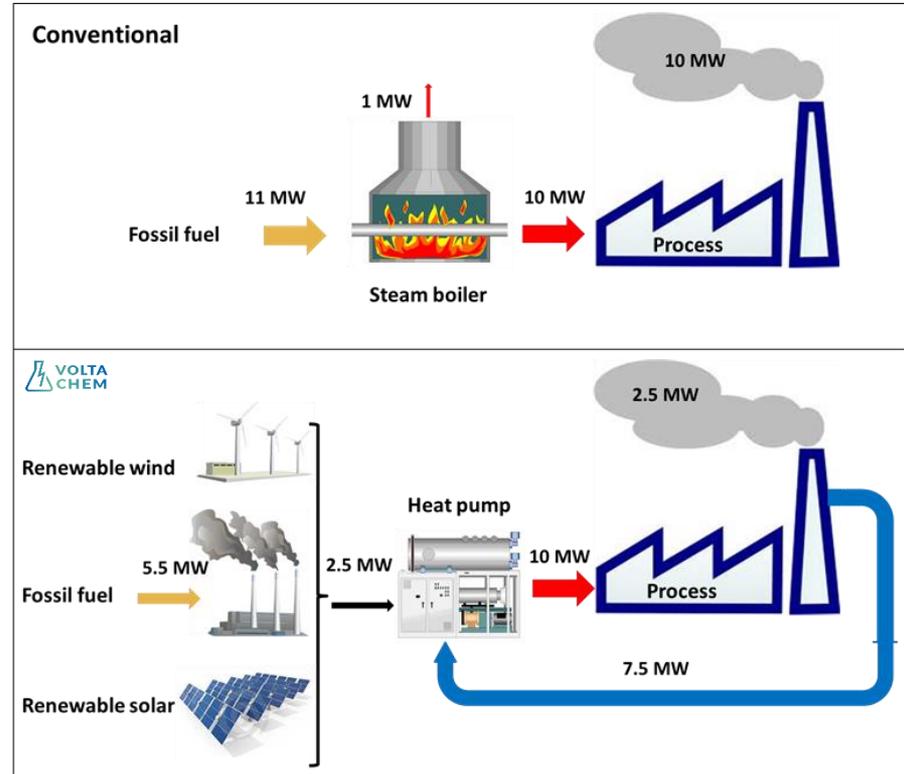
Powered by:



# Why Power-2-Heat?

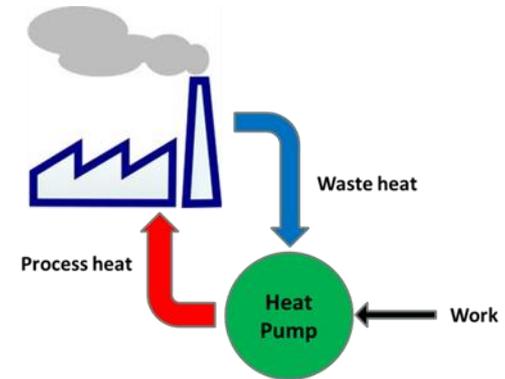
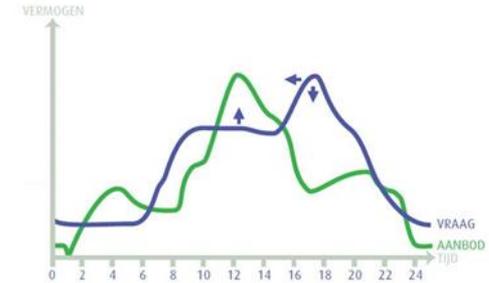
- Use of electrical power to produce heat (steam) to drive industrial processes
- Electrical heat pump provides high efficiency by recovering waste heat
- Typical Coefficient of Performance (COP) of 4 means 4 units of heat for 1 unit of electricity
- Examples

Waste heat (°C)	Process heat (°C)
80	120
90	150
120	180



# Power-to-Heat technology options

- Flexibility
  - Direct electrical heating
  - Heat/cold storage
  - Multifunctional/reversible equipment
- Electrification
  - (Direct electrical heating)
  - Mechanical vapour recompression
  - Electrical heat pumps



# Business opportunity

## Mechanical vapour recompression

- Compression of low pressure vapour or steam (steam recompression) to higher temperature and pressure
- Applications:
  - Distillation processes
  - Evaporization/drying processes: milk powder, salt, sludge
  - Cooking processes; breweries
  - Upgrading surplus LP steam
  - Upgrading flash steam



Savings in energy costs

Payback time 1- 2.5 years



**INDUSTRIAL HEATPUMPS IN THE NETHERLANDS**

**Mechanische damprecompressie waardeert lagedrukstoom op**

De Nederlandse, de grootste...  
 Inmiddels zijn er ongeveer...  
 Het gaat erom dat...  
 Het is belangrijk om...  
 Het is belangrijk om...  
 Het is belangrijk om...



**IEA Heat Pump Programme Annex 35**

**zeeuving**

Deze tank wordt gebruikt...  
 Het is belangrijk om...  
 Het is belangrijk om...  
 Het is belangrijk om...

# Power-to-Heat

## A business opportunity for you!

Contact us for:

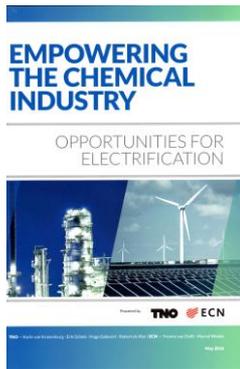
- Process scans with experts
- Business case assesment
- Calls for participation



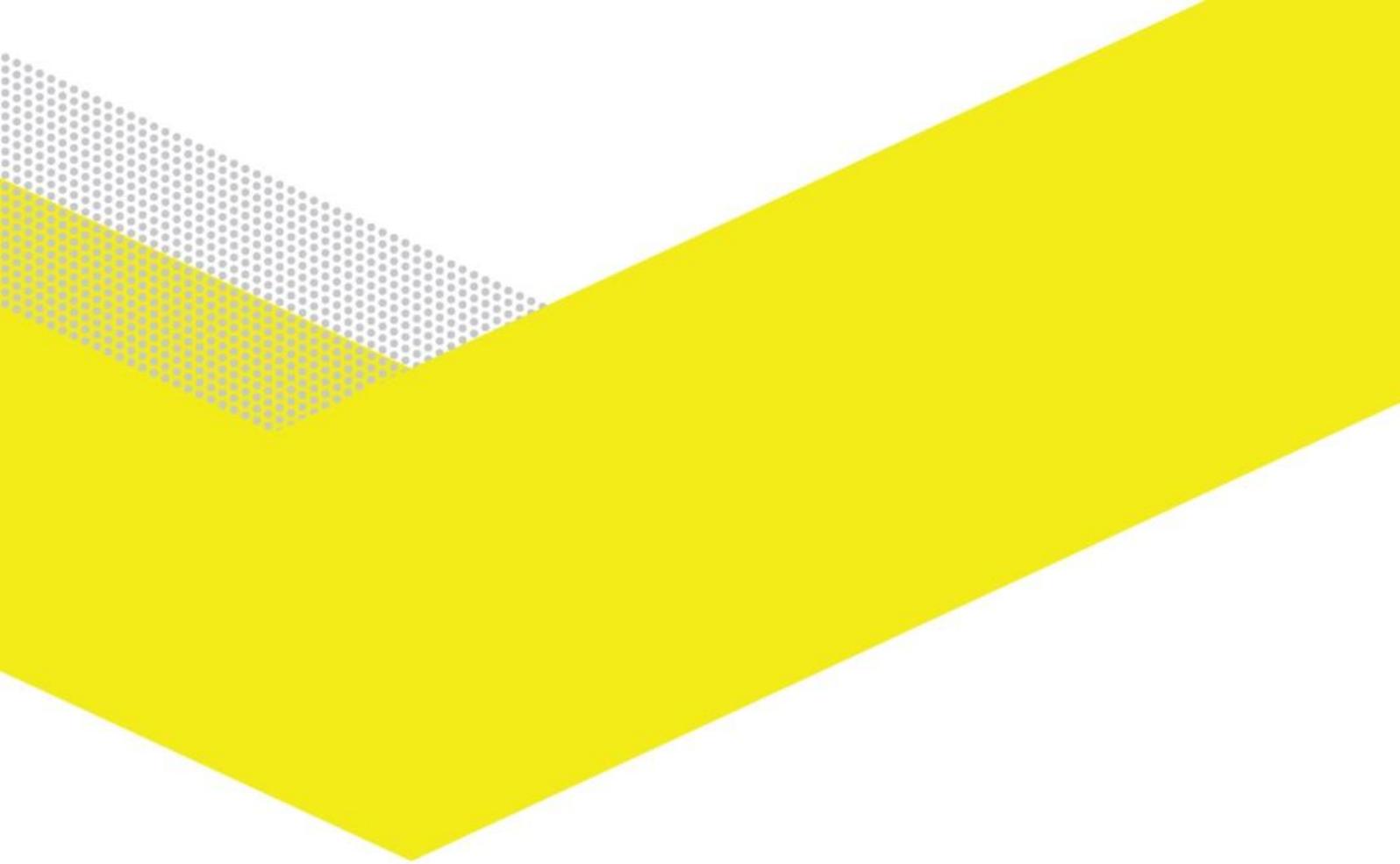
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E-Match Process Scan									
Somaria's									
Case	Process	Energy	CO2	CH4	CH2O	CH3OH	CH3COOH	CH3COCH3	CH3CHO
1	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...



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