

# THE PIVOTAL ROLE OF THE INDUSTRY IN THE ENERGY TRANSITION

## Chemelot as best practice of carbon neutral sector integration

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# The products we make at Chemelot ...

SABIC: plastics for the packaging and automotive industry



Sekisui: safety glass for cars, trains, buses and planes.



Fibrant & AnQore: technical plastics, nylon, Legoblocks



Arlanxco: synthetic rubber  
Automotive



OCI Nitrogen: ammonia and fertilizers



OCI Nitrogen: Melamine laminate, banknotes



Borealis: artificial turf, Plastic foil, corks

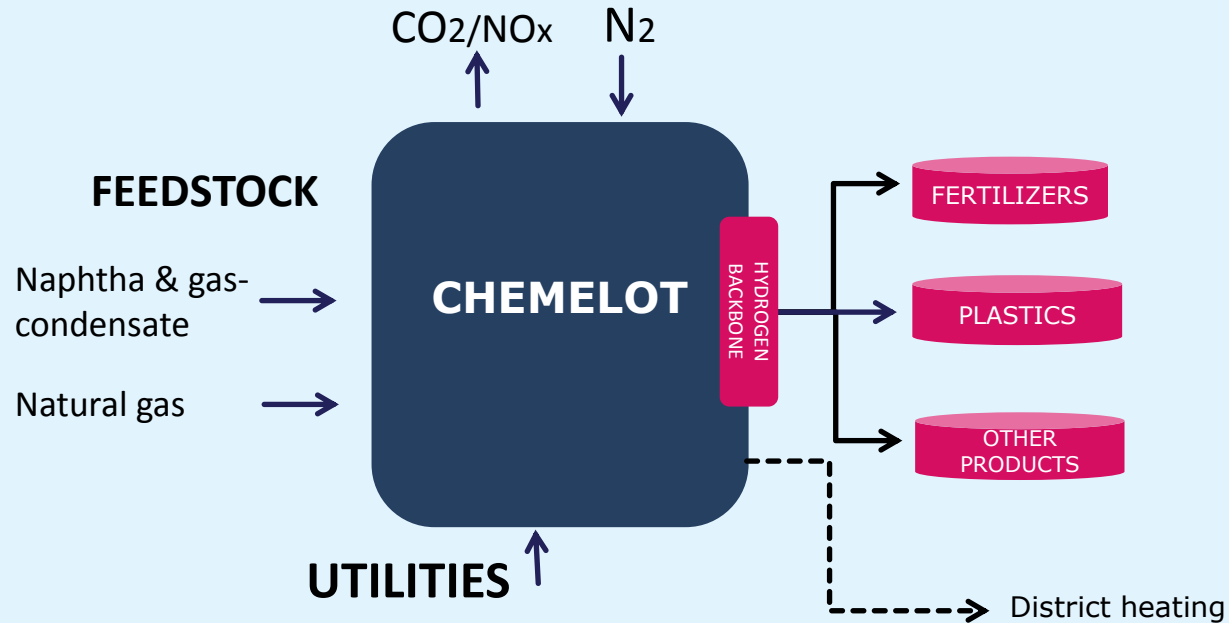


DSM Stanyl: tubes, plates, breathable film



.....will also be needed in the future

# Chemelot produces high quality products from hydrocarbons and air



Process- and system integration is one of our core competences

# Energy and industry transition are going hand in hand

## Chemelot good example of best practice

European green challenges energy industry have a lot in common with ours:

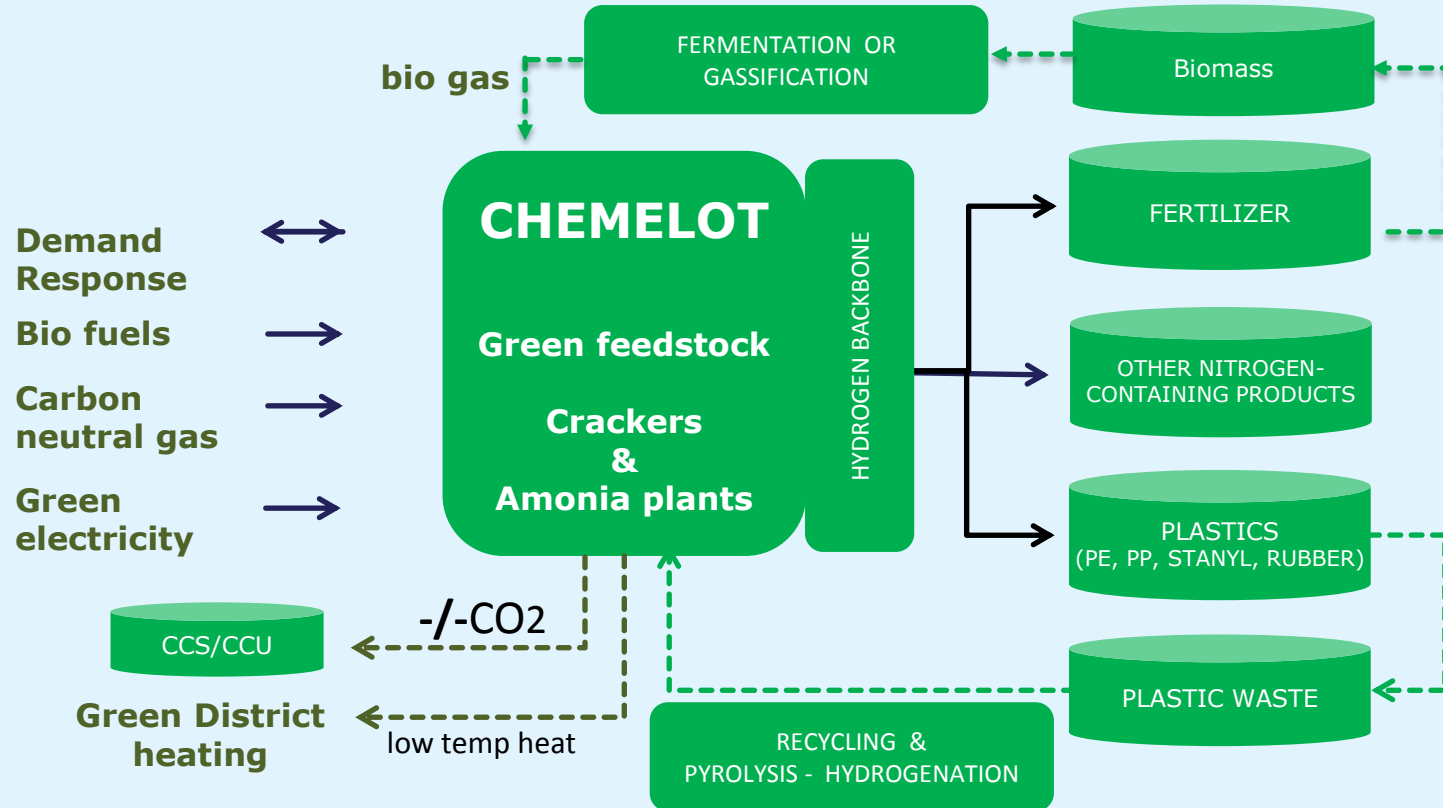
- We optimise and balancing our current and future energy system
- Interlinkage of green power, gases, heat and products will carry the common future of our customers
- Local and regional cross sector interlinkages of processes and products
- Highly integrated infrastructure prerequisite for security of supply and synergy
- Hydrogen is a bridging molecule on the Chemelot site
- Circular



60 plants	> 100 organizations
> 80 nationalities	8000 employees



# For 2050 we have more than a plan to be carbon neutral and circular



## Chemelot plants will close the green loop of processes and products....

- Bio fuel as feedstock
- Biogas: 700 kton digesting manure producing 40 mln m<sup>3</sup> biogas + solving manure surplus in the Netherlands (Zitta<sup>®</sup>Biogas Chemelot)
- Electrification e.g. cracking
- Methane splitting (carbon black route; H<sub>2</sub> and C<sub>x</sub>)
- Chemical recycling of plastics by pyrolysis – hydrogenation
- Waste heat for district heating (“the green grid”)
- CCS and CCU/valorisation (e.g. melamine or synthetic fuels)

.... and is a catalyst in the triangle region to develop disruptive innovations to meet our sustainable goals



# Steam, electricity and gases are strongly interlinked demand (side) respond is a key driver by nature

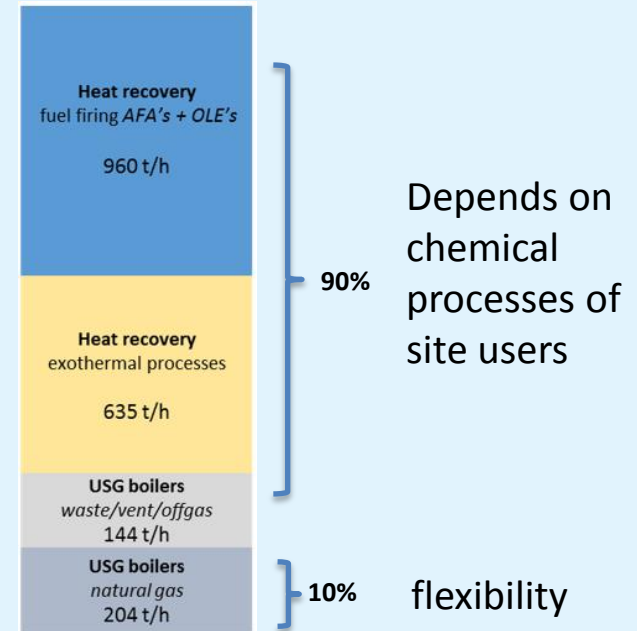
## Current:

- On site CHP flexible provider steam and electricity
- Steam balance is currently covered by gas boilers

## Future:

- Steam balancing via hybrid steam turbines/ electrical drive could be an option creating:
  - Room for energy projects resulting in CO<sub>2</sub>-reduction
  - Providing spinning reserve capacity
  - On site flexibility via Demand Side Response
- Smart grids on Chemelot

## Steam generation on Chemelot



We can only play our role in energy transition if the proper conditions are met

- A level playing field for a compatible and sustainable development
  - European measures like ETS instead of national measures like carbon taxes
- Infrastructure is a key condition. Chemelot need to be connected to
  - Ample capacity and stable high voltage electricity grid
  - Dedicated Hydrogen grid (max share H2 transported via nat gas grid is limited)
  - CO2 infrastructure via pipeline (or barges after adjustment ETS regulations)
- Eliminate all possible regulatory barriers that could hinder the energy transition
  - No regulatory limitations and caps for renewable energy consumptions
  - Foster high energy efficiency and flexible technologies like CHP's
- regulatory requirements also creates obligations for regulatory authorities
  - We need support to bridge the valleys of death of crucial new technologies

Only with a resilient energy AND industry policy we can  
make our future carbon neutral