

# Task33

Gasification of Biomass and Waste



IEA Bioenergy

## Valorization of By-Products from Small Scale Gasification (SSG)

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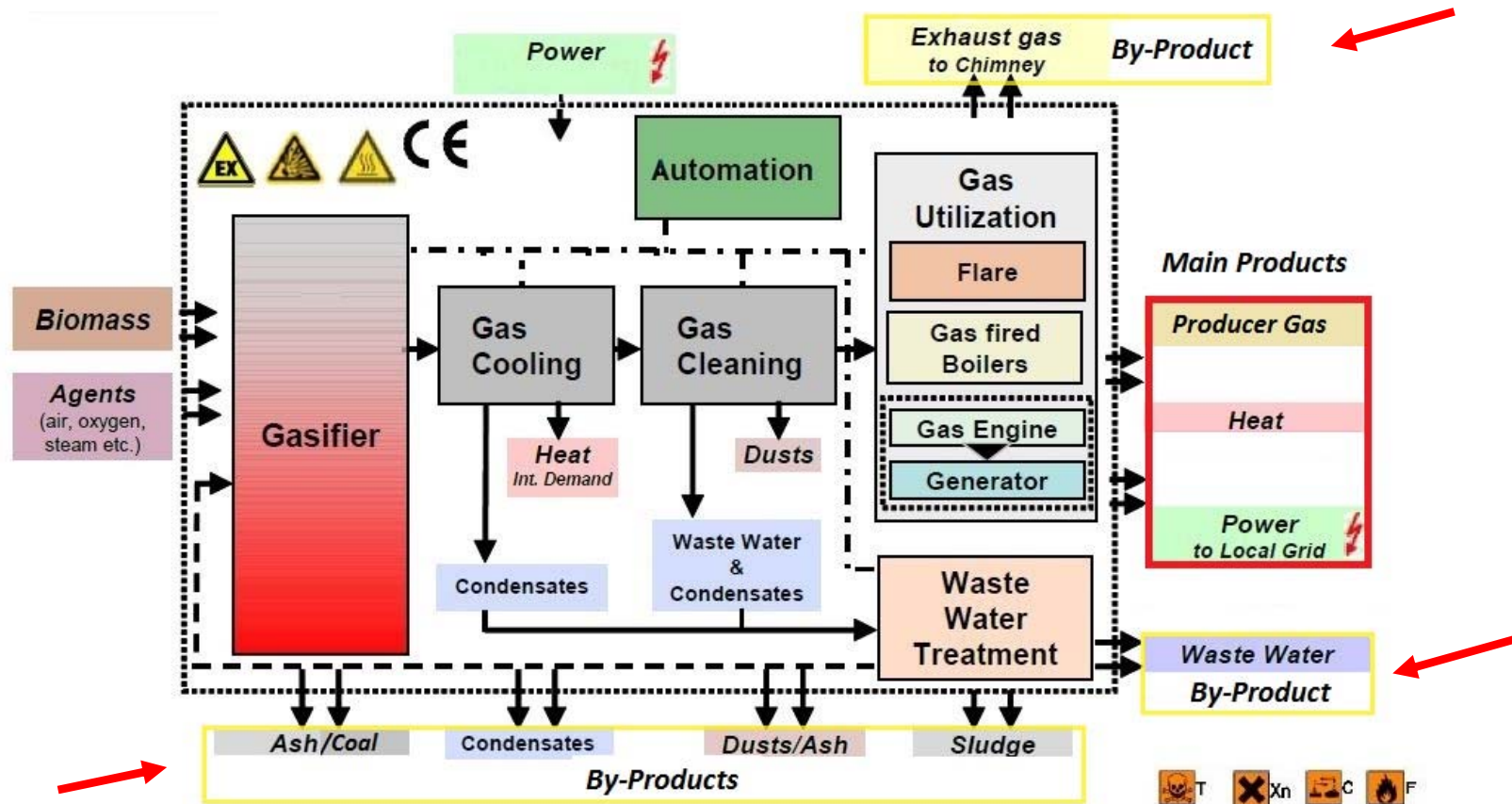
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## Typical small scale gasification CHP units:





## How to run successfully a SSG CHP unit

- Sell heat and power
- Rise overall efficiency
- Lower maintenance cost
- Reduce shutdown time
- Run the plant all year around
- Look for high feed in rates
- Reduce feedstock cost
- Calibrate feedstock
- Reduce any waste out of the plant
- **Valorize the waste (by-product)**
- Etc.. etc..

If you can sell the waste for a good Price:

- Increase the waste?
- Run the plant on max by-products?
- Adapt the process for by-products?
- .....



## Why a Project “Valorization of By-Products”

- By Products are often waste, but waste can be valuable
- By Products are better recycled then dumped
- Closed loop are advised
- Feed in rates are under thread
- Extra income on small scale gasification units are highly wished
  
- So as a conclusion:  
Valorization of By-Products from small scale gasifier is tempting

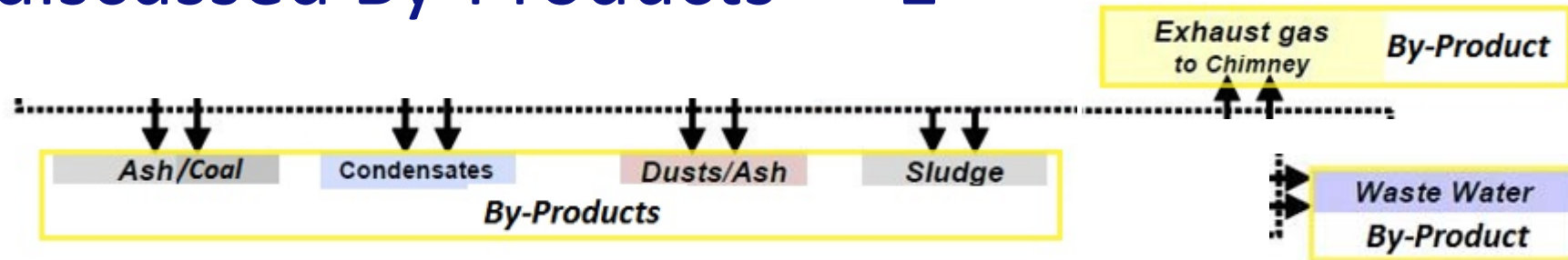


## Aim of the T33 Project “Valorization of By-Products from SSG”

- Showing possible pathways of valorization
- Outline:
  - Obstacles
  - Environmental impact
  - Show legal framework
  - Economical chances
- The output and conclusions are addressed to:
  - Project developers, -owners, -operators
  - Decisionmakers, researchers



## discussed By-Products 1



- C-containing Reactor ashes
- Condensates
- Filter fly dust, -cakes and -ashes
- Sludges
- Waste water
- CO<sub>2</sub> containing Exhaust gas



## discussed By-Products 2

By Product	Interesting	Unwished	Potential use for	Unlikely use for
High C-containing Reactor ash	C Minerals	Tars, VOC, BTEX, PFT, Tox Metals	Char coal, Energy Agriculture, Animal, Fertilizer	Active coal Medical coal
Low C-containing reactor ash	Metals Minerals	Tars, VOC, BTEX, PFT, Tox Metals	Fertilizer	Energy
Filter fly dust, -cakes and -ash	Metals Minerals	Tars, VOC, BTEX, PFT, Tox Metals	Fertilizer	Energy
Condensates	Tars	H <sub>2</sub> O, Tox Metals	Energy, chemicals	
Sludges	Tars	H <sub>2</sub> O, Tox Metals	Energy, chemicals	
Exhaust	CO <sub>2</sub> , N no dusts		Energy, PTG, CCS	
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## For Char and Coal => Biochar Organizations

IBI



- <http://www.biochar-international.org/>



- <http://www.european-biochar.org/en/>



- <http://biochar-science.net/>

ökozentrum  
forschen | entwickeln | bilden

- <http://www.oekozentrum.ch/322-0-Gruendung-des-Pflanzenkohle-Netzwerks-Charnetch.html>

Char-up & Decarbonize!

- <http://Charnet.ch>



- <http://www.ithaka-institut.org/en/>





## For Char and Coal => on the market

- Name the Product, declare the use
- Specifications of the Product is needed to be proved
- On EU regulations is to take care about but
- For authorizations Germany ≠ Austria ≠ Switzerland ...
- Even in within the country different provincial procedures
  
- Guidelines and standard procedures needed



## Project VBP SSG Collaboration wished:

- FEE - collaboration committed
- EU Research institutes
  - Collaboration discussed
- Labs for tests, analytics and measurements
  - Collaboration discussed
- Plant owner/operators/builder
  - One CHP Builder wishes tests
  - Owner of CHP unit gives Infos over neg. EBC report
  - Gasifier Engineering company collaboration discussed
- Official's/authorities for Legal Infos:
  - Who is Who lists EU, Germany, Austria, Switzerland ....
  - no contacts established so far



## Synergies expected for

- Same treated objects in different places and institutions
- Cost shearing on analytics
- Shearing conclusions and advises
- Common free knowhow platform on T33 (hosting the reports)
- Support for plant owners and operators

Our opinion is:

- What has been learned is not needed to be reexperienced (see also upcoming T33 object “lessens learned”)



## Project BP SSG whats next:

- Project work
- First draft of “White Paper” February 2018
- Discussion during first Task 33 meeting in 2018
- November 2018 on T33 website

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## Questions and Suggestions?