



**SmartCHP**  
COGENERATING A RENEWABLE FUTURE

# SmartCHP

## Cogenerating a renewable future

---

Presenter name

Name of the event and date



## SmartCHP: aim and impact

- The EU research project SmartCHP will develop a novel, flexible small scale **cogeneration unit** to produce heat and electricity from **sustainable biomass**.
- The main technical novelty is the use of **fast pyrolysis bio-oil** from lignocellulosic biomass in a **converted diesel engine**.
- This will help boost the use of renewables in the electricity and heating & cooling sectors, contributing to the **2030 climate and energy targets**.

With a market potential of **€4 billion**, and an estimated **85 to 95% less GHG emissions** compared to fossil fuels, the installation of the SmartCHP technology in Europe can bring **new jobs**, more **renewables** and help mitigate **climate change**.



# SmartCHP process

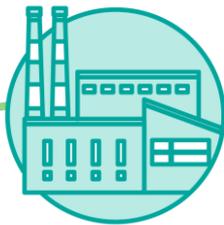
## From Fields...



### Non-food biomass

Three **non-food biomasses** will be considered for the SmartCHP system:

- Agricultural residues,
- Forestry residues and
- Organic waste



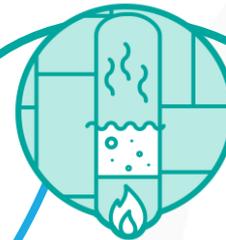
### Pyrolysis plant

The biomass will be **converted into bio-oil** through fast pyrolysis

Fast pyrolysis bio-oil

### SmartCHP System

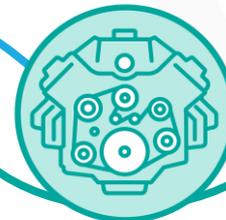
The fast pyrolysis bio-oil will be fed into a modified diesel engine and, depending on heat demand, into a flue gas boiler. A smart control unit will be connected to the SmartCHP system.



Flue gas boiler



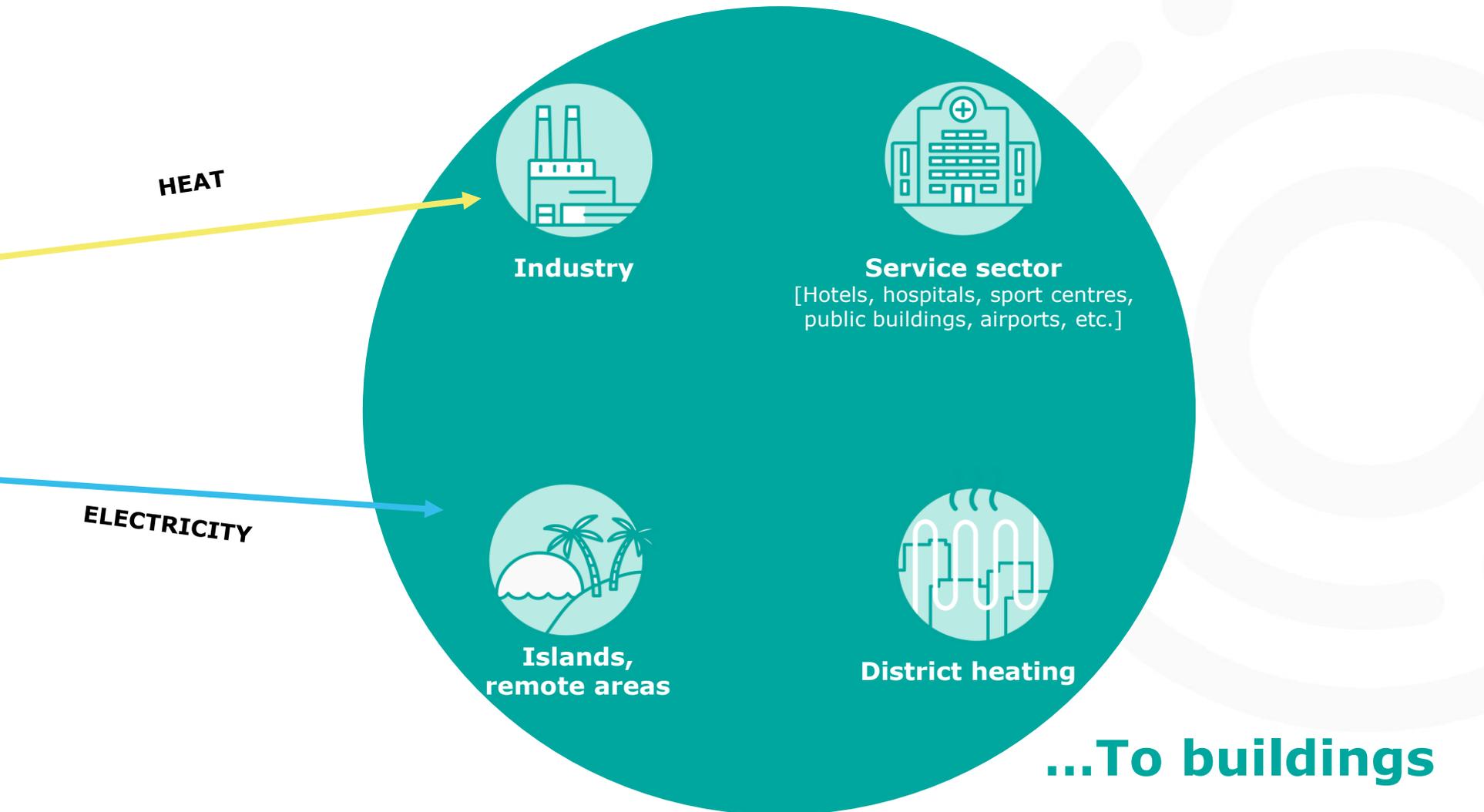
Modified diesel engine



**SMART CONTROL UNIT**

This design makes the **system fully responsive to changes in heat and power** demand, and enables it to adapt to fluctuating renewable sources, like wind and solar

# Future users of the SmartCHP system



# SmartCHP Benefits



## More sustainable biomass

SmartCHP runs on **fast pyrolysis bio-oil** coming from agroforestry residues and organic waste, diversifying the supply of bioenergy for combined heat and power units.



## More efficiency

Due to its **extraordinarily high flexibility**, the system rapidly adjusts the fuel load and produce more electricity or more heat according to changes in demand.



## (Even) more renewables

Thanks to its flexibility, SmartCHP is ideally suited to use in combination with **fluctuating renewables**.



## Less greenhouse gas emissions

The use of SmartCHP for heating and electricity can **save between 85 and 95% greenhouse gas emissions** compared to fossil fuels.

# Project Partners and overview

- SmartCHP brings together European industrial companies, universities and innovation experts, and is coordinated by Biomass Technology Group BTG.



**10 Partners**



**6 Countries**



**June 2019 to  
May 2023**



**4 million**



# Thank you!

Name presenter

Position, Organisation

Email

Tel.

