



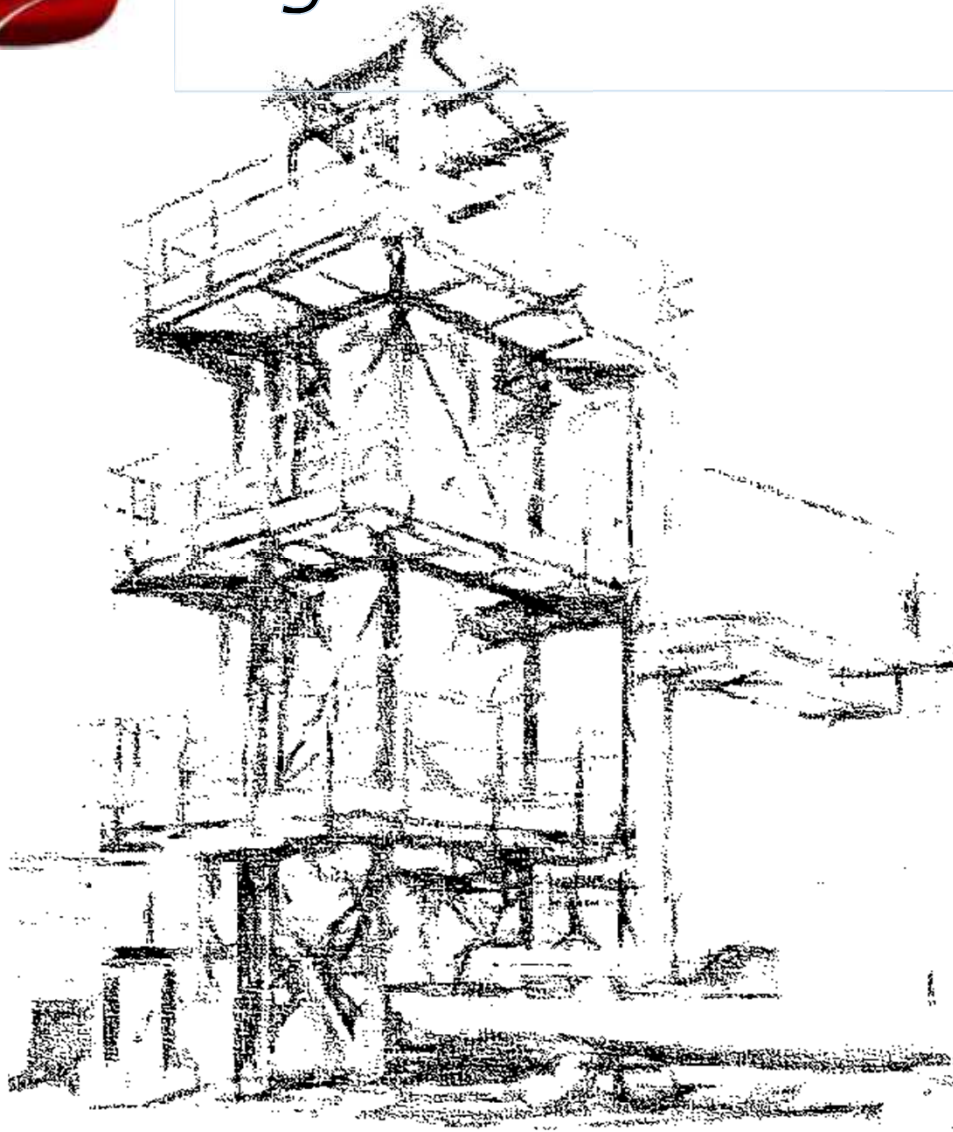
## HTC Technology Developer

Brussels, 18<sup>th</sup> of April, 2018

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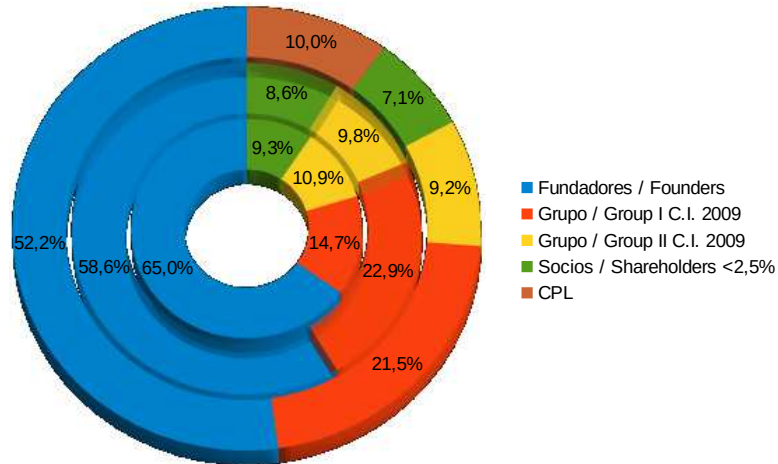
# Ingelia 's Profile



- Ingelia was established in Spain in 2005. It started to develop HTC technology in 2007.
- The first industrial plant working in continuous process with HTC technology has been commissioned in Valencia in 2010.
- Patents on the process have been granted to Ingelia in Spain, USA, Mexico, Russia, Canada, European Union and they are ongoing in other territories.
- Ingelia has been awarded with several recognitions to innovation and sustainability, among others:
  - Ulyses Prize from UNWTO in 2011 to innovation on tourism sector
  - Perseo Prize (Iberdrola group) in 2011 to Innovation on biomass sector
  - Finalist Clean Tech Open in Spain in 2012
  - El Mundo Prize (Il Corriere della Sera group) in 2013 to innovation
  - EUBIA Award in 2015 for the advancement of biomass industry
- European Commission Support:
  - FP7 Newapp Project: Financing to research of new applications of HTC technology and products in 2013
  - H2020 SME Instrument: EC Seal of Excellence 2015, 2016 and 2017
- UK Energy Research Accelerator Award 2017
- EC Watify Solution Award, 2017



# Ingelia 's Profile



Ingelia is a SME based in Valencia (Spain) owned by multinational shareholders from Spain, Austria, England and Italy. It has developed an industrial process for HTC products and works in the deployment of its technology.

Company's financial structure is 50% capital and 50% long term debt. Founders work in the company and have closed 3 increase capital rounds.

2009. First capital increase for financing the industrial prototype.

2012. Second capital increase for financing HTC product development. 2014. Third capital increase for financing the plant enlargement and commercialization of HTC products.

## Investment on the INNOVATION PROCESS



Industrial process commissioned in 2010

International patents on industrial process development

Awarded by UNWTO (2011), Iberdrola - Perseo award (2011), Finalist in Clean Tech Open Spain (2012), Spanish Journal 'El Mundo' (2014), EUBIA (2015) and UK Energy Research (2017)

Supported by the EC with the Seal of Excellence (2015, 2016 and 2017) and Watify 2017



# Ingelia's process turns biowaste into biomaterials

## RECYCLED CARBON BIOMATERIALS

Biowaste

TRL 9  
HTC Process (8 hours)

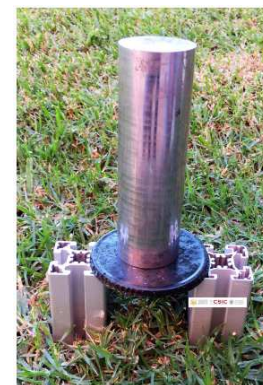
Bioproducts



Hydrochar



Fertilized water



cylinder weight: 2.5 kg

Biopolymer



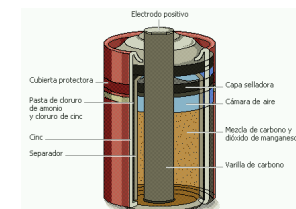
BWF



Soil ammandant



Carbon Black  
Activated carbon



Batteries

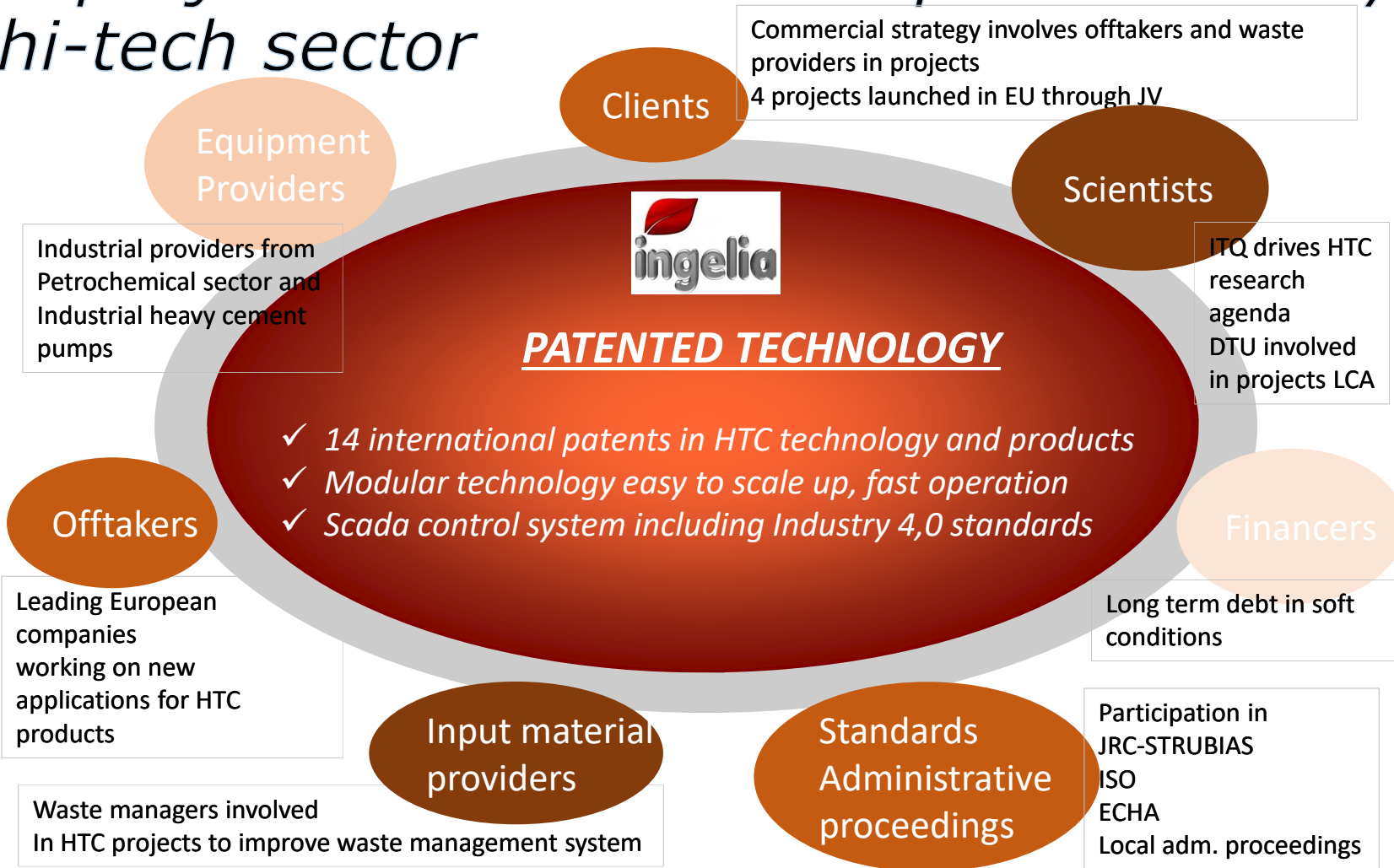
Avoiding GHG emissions  
Reducing waste management costs

Circular Economy



# Ingelia has created a strong knowledge network around its project that boosts European Industry in clean hi-tech sector

Stable, simple process TRL 9





# *The biocoal commercialization*

## Offtakers



## Brokers



**WPS**  
woodpelletservices.com

- Ingelia's strategy to bring HTC technology to commercial stage has led to a partnership with offtakers and brokers, with the aim to promote the use of HTC biocoal as a green and renewable fuel.
- Ingelia works together with them on biocoal commercialization to offer our clients offtake contracts for their HTC Plants. CPL is the largest manufacturer of solid fuel and is the leading distributor of solid fuel products in the UK, delivering more than 1 million tonnes/year in the European Market.
- WPS is a Brokerage Agency and Consultancy firm with an annual portfolio of over 2.5 Million ton of wood pellet supply under management. It has expanded its consultancy work to the Americas extending its brokerage activities there in 2012, successfully building an annual portfolio of over 2 Million ton in the region.
- A number of HTC plants are being established with offtakers providing offtake agreements for the biocoal produced.
- CPL Industries is also minority shareholder of Ingelia and is promoting Ingelia's HTC technology in the UK and Ireland, working together with UKTi support.



# *Byproducts: Fertilized water*

Water production comes from biomass humidity. It contains soluble elements present in the biomass which act as biofertilizers and reduce the need of chemical fertilizers preserving groundwater's quality.

Process water is suitable for biogas production.

First trials made by HAWK (Hochschule für Angewandte Wissenschaft und Kunst) in Göttingen in 2013 with Ingelia's process water.

Organic matter extraction by water gasification

After 3-7 days the organic matter content is reduced between 70-90% a gas containing 60% of methane approx. is obtained.

1. Nutrient concentration by osmosis process Destination to biofertilizers market
2. Soil amelioration (content of organic matter and nutrients)

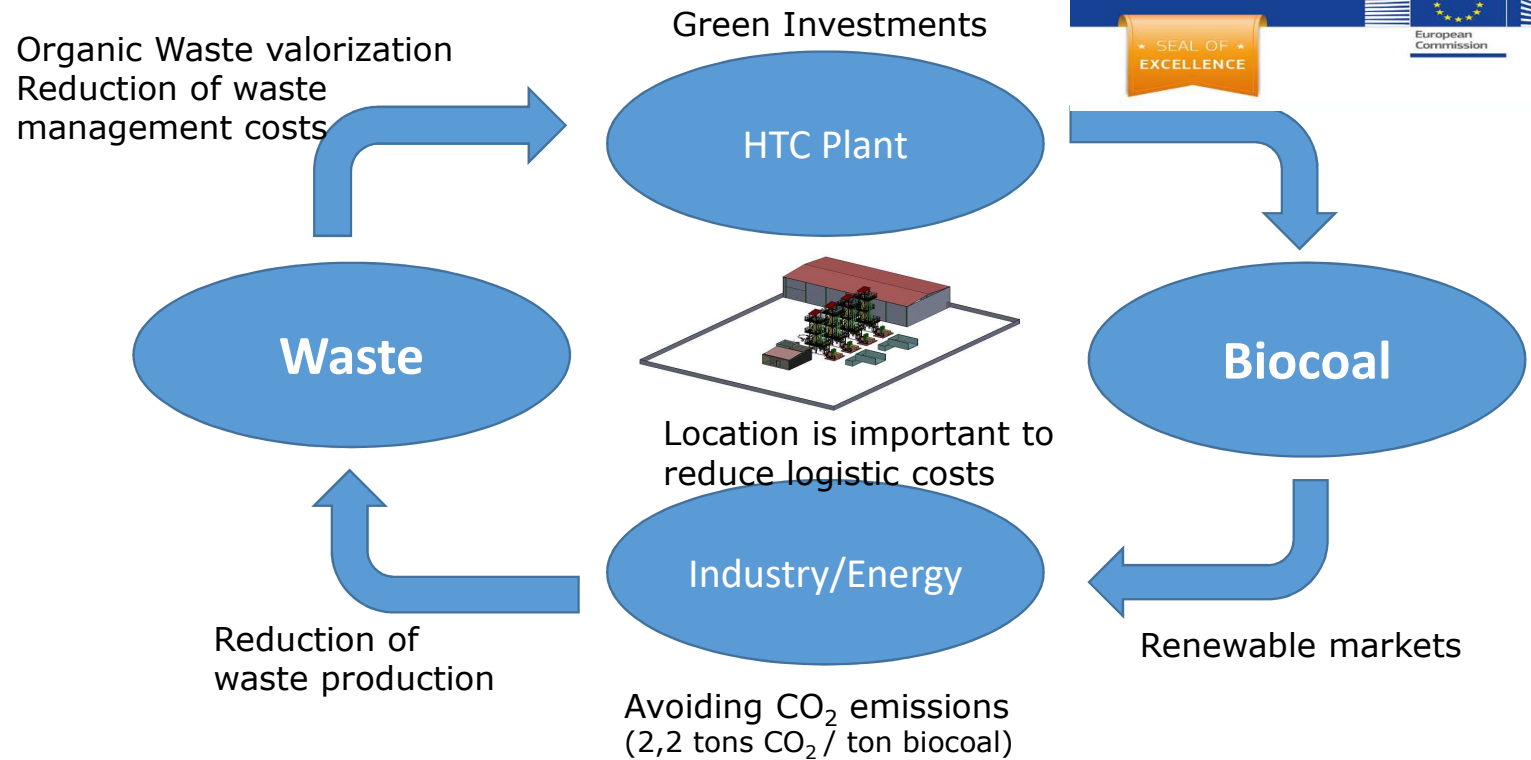




# The Project sustainability.

*Ingelia's Biorefinery concept awarded with the EC Seal of Excellence*

Ingelia's technology allow to scale up each plant in relation to the amount of available wet biomass in an area (municipality, industrial area or agritech industry), reducing logistic costs and creating local value by installing local biorefineries.



**Local Circular Economy**





# HTC Pilot trials for organic waste streams

- FP7 Project finished in 2016. The Project objective was the valorization of different organic waste streams by means of Ingelia's technology.
- Biowaste, sewage sludge, food waste, green waste and digestate from AD plants were tested in Ingelia's HTC Plant
- Research of market applications for HTC products
- Life cycle analysis
- 120-140 million tons/year organic residues in Europe
- Waste to energy policy encouraged by the EC
- Existing solid fuel market to place the hydrochar and other more valuable applications under research



**NEWAPP**

Further information on  
<http://www.newapp-project.eu>

- Organic waste trials for Public administrations in Valencia, England, Tuscany and País Vasco
- Sludge trials for public and private companies in Valencia, Flanders and Rome
- Food waste trials for private companies in Valencia and Germany



HTC Plants deployment



150 million tons OFMSW

50 million tons hydrochar

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# Acknowledgments



*Thank you for this opportunity!*

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Fondo Europeo de Desarrollo Regional  
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