Heat to Fuel

Final event (user-group), Apr. 27th 2022

HtF introduction

- Richard Zweiler

This project has received funding from European Union's Horizon 2020 research and innovation programme under grant agreement n° 764675

HtF Basic Data

Title: *Biorefinery combining HTL and FT to convert wet and solid organic, industrial wastes into 2nd generation biofuels with highest efficiency*
Acronym: Heat-to-Fuel
Budget: € 5.896.987,50
Type of action: RIA
Duration: September 2017 until April 2022
Main Category of the Project: Biofuel, Bioenergy, renewable Fuel, Bioeconomy, sector coupling
TRL: 3-5
Keywords: HTL (hydrothermal liquefaction), APR (aqueous phase reforming), Fischer Tropsch, DFB (dual fluidized bed) gasification, hydrogen, thermochemical conversion, millistructured reactor

Consortium


FROM RESEARCH TO INDUSTRY
cea


IREC
Institut de Recerca en Energia de Catalunya
Catalonia Institute for Energy Research


GET


R2M
RESEARCH TO MARKET
SOLUTION


JM
Johnson Matthey
Inspiring science, enhancing life


KHIMOD
ALCEN


s k u p i n a
FABRIKA


POLITECNICO DI TORINO
1859
1906


TU
WIEN
ICEBE
IMAGINEERING
NATURE

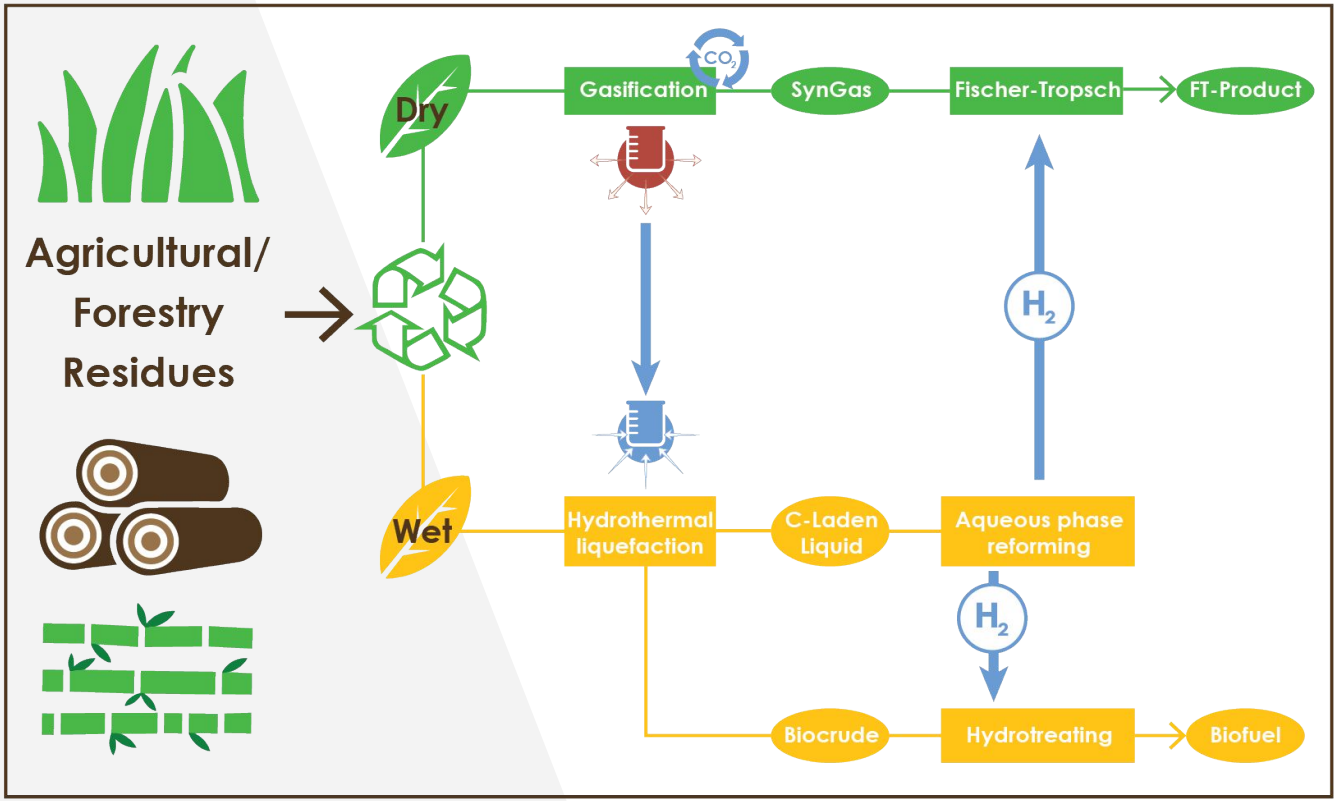

BEST
Bioenergy and
Sustainable Technologies


RE·CORD

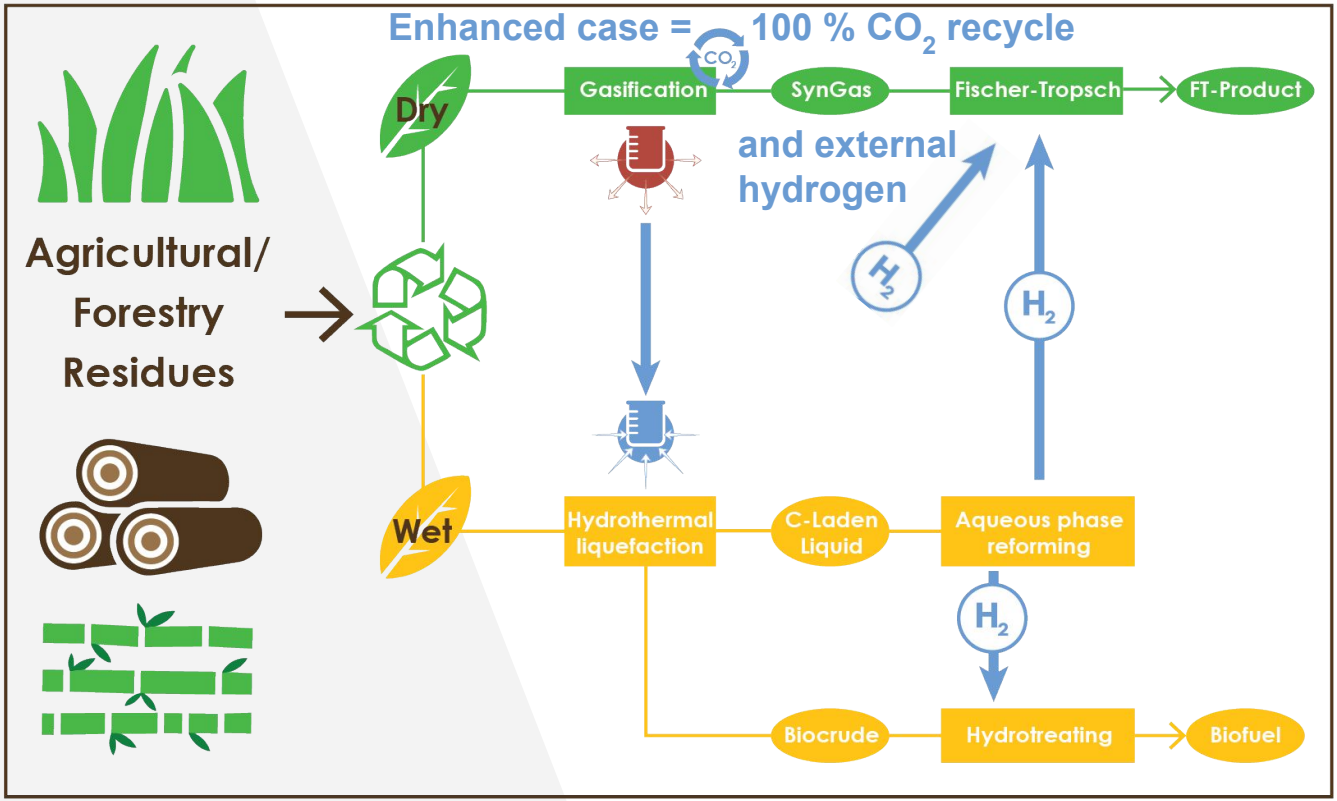

CRF


ichpi

HtF concept – base case



HtF concept – enhanced case

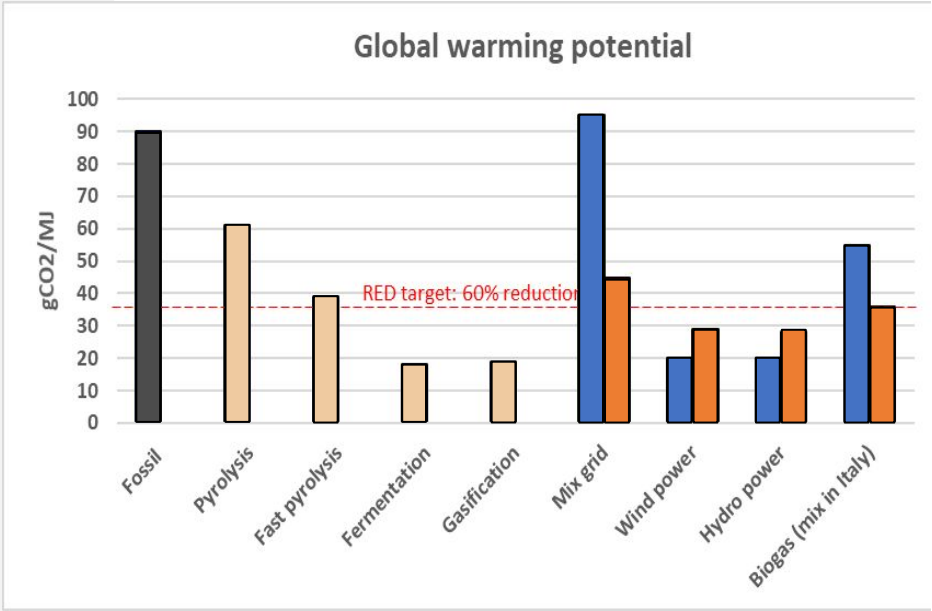


Final results - efficiency

	Enhanced Case	Base Case
$\eta_{chemical} = \frac{Q_{products}}{Q_{biomass} + Q_{H2} + Q_{RME}}$	61%	60%
$\eta_{C\ total} = \frac{\sum(m_{product} * X_{C\ product})}{\sum(m_{feedstock} * X_{C\ feedstock})}$	54%	45%

Global warming potential

Conservative scenario of GWP saving potential



Business cases

	Estonia	Belgium
feedstock	85% bark, 15% straw, lignin	100% bark, lignin
Fuel input power	50 MW	100 MW
Case	base	enhanced
TCI (total capital investment)	131 Mio. EUR	336 Mio. EUR
LCOF (levelized costs of fuel)	81,5 EUR/MWh	91,1 EUR/MWh
IRR (internal rate of return)	29,4%	23,0%
Payback	4,6 years	6,3 years

THANK YOU