BUTANEXT
Next Generation Biobutanol

Novel processes to produce bio-butanol from sustainable biomass

DATE: 12 April 2018

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The ButaNexT project has received funding from the European Union Horizon 2020 Research and innovation Programme under grant agreement n° 640462

ButaNexT

Optimising the biobutanol production value chain

- Sustainable Feedstock
  - wheat straw, miscanthus, municipal solid waste
- Biomass Pre-treatment
  - mechanical and thermo-chemical processing
  - Enzymatic optimization
- Fermentation
  - optimizing the biocatalyst and redesigning the manufacturing process
- Downstream Processing
  - Separation of biobutanol by pervaporation
- Fuel Blending Performance and Emissions
  - combinations with gasoline, diesel and ethanol
- Environmental, Resource, Techno-economic and Socia Impacts
  - investigating waste reduction, environmental benefits and wealth creation

GreenBiologics COORDINATOR

C-Tech INNOVATION

METGEN The Art of Biocatalysis

E4tech

zabala innovation consulting

Greenovate!

TECNICAS REUNIDAS

CENER ADItech

vito

UCLM

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Technical Advances Through ButaNexT

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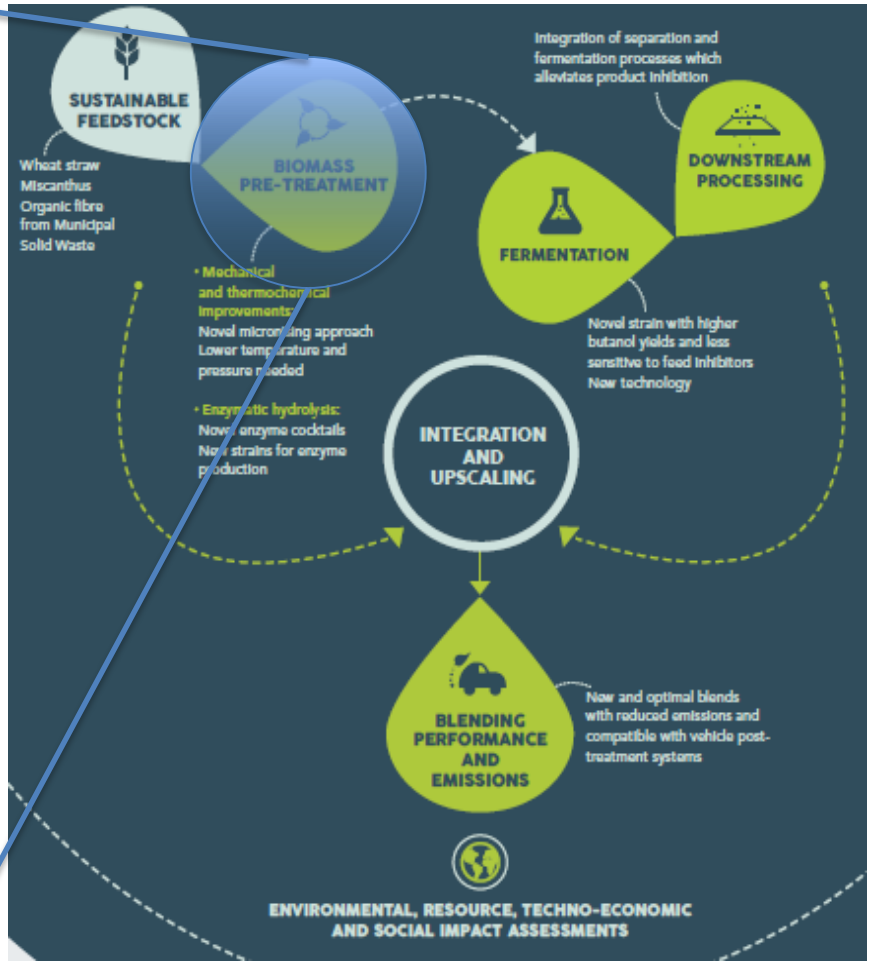
Technical Advances Through ButaNexT

- TR developed thermal and mechanical methods for biomass pre-treatment
- MetGen was able to improve the hydrolysis efficiency of its enzyme cocktail significantly compared to the initial offering, resulting 80-90% recovery of sugars already after 24-48h of hydrolysis.



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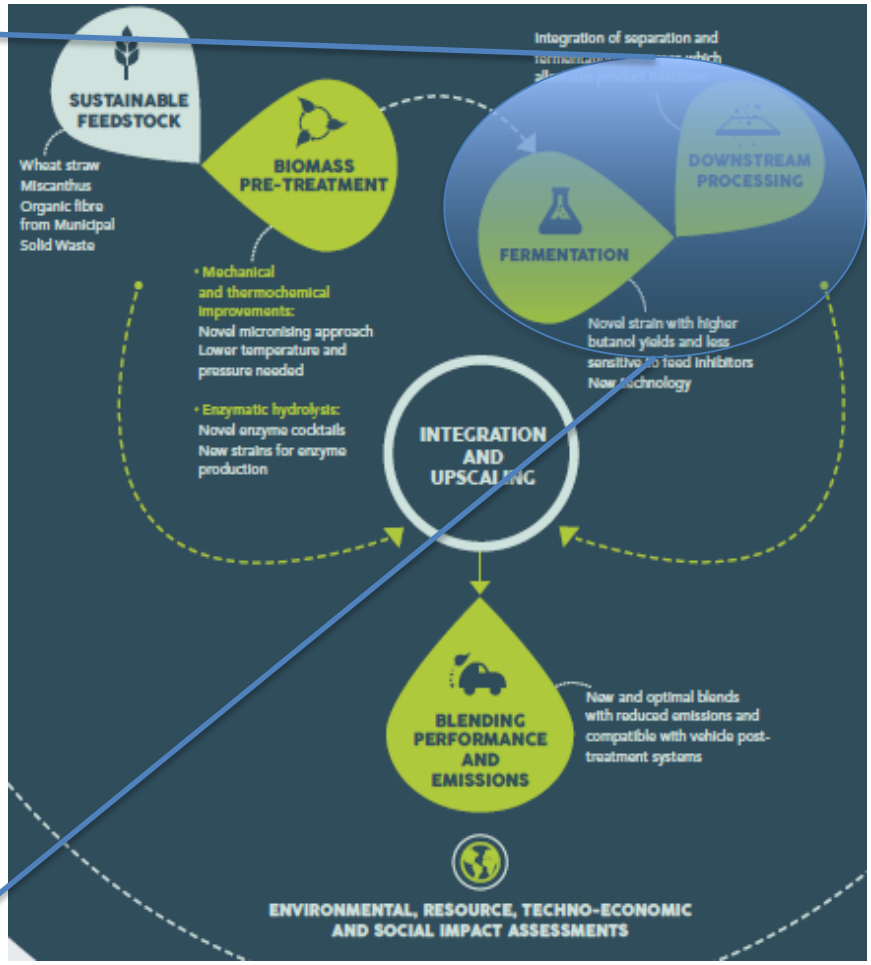
Technical Advances Through ButaNexT

- GBL evolved strains that were able to better cope with inhibitors in the biomass sugar solutions
- Vito developed pervaporation technology for in-situ solvent removal
  - POMS composite membranes are an alternative for PDMS composite membranes
  - Pervaporation proven under industrial conditions
  - 1 patent filed & 1 patent pending



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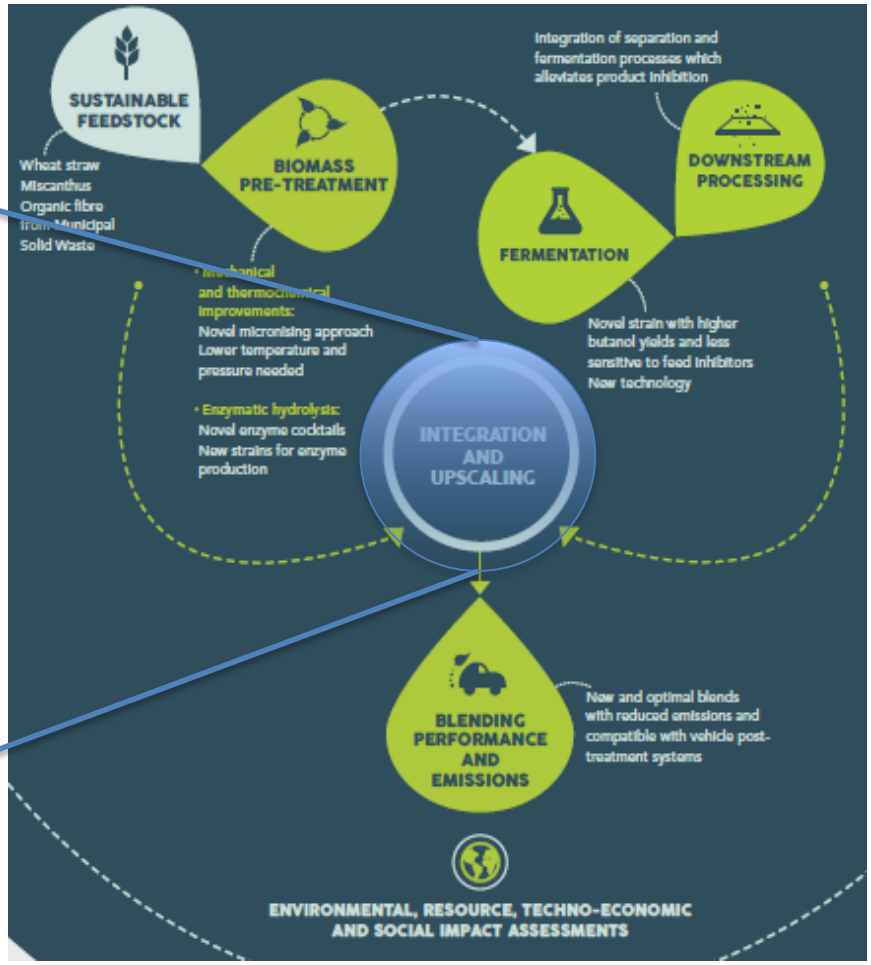
Technical Advances Through ButaNexT

- All project advances transferred to CENER for scale up
- More than 500kg of sugar rich hydrolysate produced from wheat straw
- Fermentation and pervaporation proven at 100L scale



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Technical Advances Through ButaNexT

- UCLM generated 3 research papers on butanol blends with gasoline, diesel, biodiesel and ethanol
- Blending butanol with diesel is beneficial for performance and emissions
- Bu10D and Bu10B10D blends would be desirable commercial blends

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Key Advancements

Progressing the state of the art

Commercial 1st generation biobutanol production is a reality

Advancements in key technical challenges – feedstock utilization and conversion, biocatalyst tolerance, in-situ product recovery

Biobutanol fuel blends shown to have performance and environmental benefits

Introducing biobutanol to the fuel supply chain will have positive environmental and societal benefits

BUT

Economics are still a challenge

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