

BioMates



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3rd report on IPR

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1. Introducing BioMates

1.1. The BioMates Project

The BioMates project aspires in combining innovative 2nd generation biomass conversion technologies for the cost-effective production of *bio*-based intermediates (BioMates) that can be further upgraded in existing oil refineries as renewable and reliable co-feedstocks. The resulting approach will allow minimisation of fossil energy requirements and therefore operating expense, minimization of capital expense as it will partially rely on underlying refinery conversion capacity, and increased bio-content of final transportation fuels.

The BioMates approach encompasses innovative non-food/non-feed biomass conversion technologies, including **ablative fast pyrolysis (AFP)** and single-stage **mild catalytic hydroprocessing (mild-HDT)** as main processes. Fast pyrolysis in-line-catalysis and fine-tuning of BioMates-properties are additional innovative steps that improve the conversion efficiency and cost of BioMates technology, as well as its quality, reliability and competitiveness. Incorporating **electrochemical H₂-compression** and the state-of-the-art **renewable H₂-production** technology as well as **optimal energy integration** completes the sustainable technical approach leading to improved sustainability and decreased fossil energy dependency. The overall BioMates-Concept is illustrated in Figure 1.

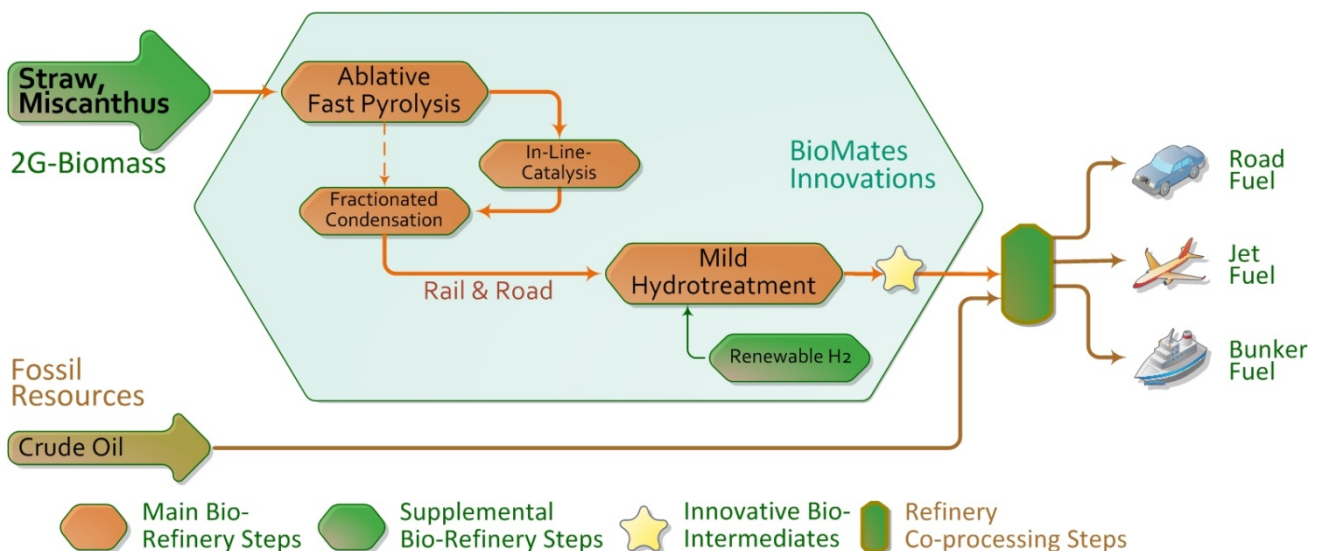


Figure 1: The BioMates-concept

The proposed technology aims to effectively convert residues and non-food/feed plants or commonly referred to as 2nd Generation (straw and short rotating coppice like miscanthus) biomass into high-quality bio-based intermediates (BioMates), of compatible characteristics with conventional refinery conversion units, allowing their direct and risk-free integration to any refinery towards the production of hybrid fuels.

1.2. European Commission support

The current framework strategy for a Resilient Energy European Union demands energy security and solidarity, a decarbonized economy and a fully-integrated and competitive pan-European energy market, intending to meet the ambitious 2020 and 2030 energy and climate targets /EC-2014a/ EC-2014b/. Towards this goal, the European Commission is supporting the BioMates project for validating the proposed innovative technological pathway, in line with the objectives of the LCE-08-2016-2017 call /EC-2015/. This project has received funding

from the European Union's Horizon 2020 research and innovation programme under grant agreement No 727463.

1.3. The BioMates team

The BioMates team comprises eight partners from industry, academia and research centres:

- Fraunhofer Institute for Environmental, Safety, and Energy Technology UMSICHT, Germany (Project Coordination) - www.umsicht.fraunhofer.de
- Centre for Research & Technology Hellas / CERTH - Chemical Process & Energy Resources Institute / CPERI, Greece - <http://www.cperi.certh.gr/>
- University of Chemistry and Technology Prague, Czech Republic - <http://www.vscht.cz>
- Imperial College London, United Kingdom
www.imperial.ac.uk
- Institut für Energie und Umweltforschung Heidelberg GmbH / ifeu, Germany - www.ifeu.de
- HyET Hydrogen B.V. / HyET, Netherlands - www.hyethydrogen.com
- RANIDO, s.r.o., Czech Republic
<http://www.ranido.cz/>
- BP Europa SE, Germany
www.bp.com/en/bp-europa-se.html

For additional information and contact details, please visit www.biomates.eu.

2. Preface

This deliverable was prepared according to Task 7.1 to update information related to intellectual property right connected to research topics covered by individual members of Consortium cooperating under BioMates (Reliable Bio-based Refinery Intermediates) project.

With increasing pressure from not only a legislative basis, but also public, potential ways to replace fossil fuels with alternatives based on biomass are sought with unabated effort in recent years. Simultaneously, with the development of new technologies, their commercialization is on the agenda of research and industrial organizations and companies. Successful application of new technology in an industrial scale is necessarily connected with the protection of respective know-how and intellectual property.

For the purpose of the report, Intellectual Property (IP) refers to inventions, designs, and other knowledge achieved by individual parties during the project. Intellectual Property Rights (IPR) are the legally recognized exclusive rights to exploit or trade such knowledge by a party that created it. IP protection primarily in form of patents was taken into account in this phase.

The report was prepared with contribution and on behalf of following Consortium members: Fraunhofer Institute for Environmental, Safety, and Energy Technology UMSICHT, Germany (Fraunhofer), Centre for Research & Technology Hellas - Chemical Process & Energy Resources Institute, Greece (CERTH), HyET Hydrogen B.V., The Netherlands (HyET), RANIDO, s.r.o., Czech Republic (Ranido), and University of Chemistry and Technology Prague, Czech Republic (UCTP).

3. IPR management activities

The main goal of this document is to update patent search and provide present status of filed/granted patents in areas covered by individual tasks of BioMates project, or research/technology areas potentially related to these tasks. Prospective risk could be therefore identified arising from interferences between third party IPR and project activities. The need to protect results or know-how attained in the framework of BioMates project was also assessed.

Patent search was the main tool for identification changes in state of the art connected with BioMates project. Espacenet and national IPR databases, as well as scientific literature search tools and the commercial patent search tool PatBase were used to assess current status of background and IPR. Updated results of patent search is given in tables attached in Annex A for respective areas of research conducted in the frame of BioMates project.

Following research areas are covered:

- fast pyrolysis
- catalytic vapour phase upgrading for pyrolysis of biomass
- hydrogenation / mild hydrotreatment
- electrochemical compression and purification
- catalysts for hydrotreatment
- Co-processing of bio-oil in conventional refineries

Each party of the consortium is organising future protection of results once it is necessary before dissemination phase. The identification of results which would enable/necessitate any form of IP is continuously carried out by dedicated staff members or parties have access to professional knowledge staff which gives advice on legal, financial, commercial or IP protection issues (knowledge transfer offices etc.) in order to protect the results from early disclosure. Dissemination of results is carried out consistently with respect to their IPR status regardless the communication channel used (scientific journals, conferences, workshops, public communication), aiming at maximum impact whilst understanding the intellectual property value of the results.

4. Disclaimer

This Deliverable report reflects only the authors' view; the European Commission and its responsible executive agency INEA are not responsible for any use that may be made of the information it contains.

This report was compiled to the best knowledge of the authors. Nevertheless, it may contain errors. The authors do not take any liability for any legal consequences of the use or for the completeness of the provided information.

5. Literature

EC-2014a European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - A policy framework for climate and energy in the period from 2020 to 2030, COM(2014) 15 final, Brussels, 22.1.2014, http://www.europarl.europa.eu/meetdocs/2009_2014/documents/nest/dv/depa_20140212_06/depa_20140212_06en.pdf; <http://bit.ly/1LUcJKL>

- EC-2014b European Commission, Energy Union Package - Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions and the European Investment Bank - A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy, COM(2015) 80 final, Brussels, 22.1.2014, http://eur-lex.europa.eu/resource.html?uri=cellar:1bd46c90-bdd4-11e4-bbe1-01aa75ed71a1.0001.03/DOC_1&format=PDF, <http://bit.ly/198SAUf>
- EC-2015 European Commission, LCE-08-2016-2017 “Development of next generation biofuel technologies”, Publication date: 14 October 2015, <https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lce-08-2016-2017.html>, <http://bit.ly/2ndtvPc>