

**EU Framework Programme for Research and Innovation
H2020-Competitive Low-Carbon Energy
Call topic 11-2014**



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Photofuel - Biocatalytic solar fuels for sustainable mobility in Europe

Deliverable D1.13

Presentation of Photofuel results to European stakeholders



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 640720

Editorial	
Deliverable N°:	D1.13
Title	Presentation of Photofuel results to European stakeholders
Workpackage:	WP1
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Version:	vers. 1.0
Due date of deliverable:	30/06/2020
Version date:	08/05/2020
Contact:	s.kuehner@syn-com.com
Dissemination level:	PU-Public
Nature:	Report
Review status	WP-leader accepted 17/06/2020
	SC accepted 30/07/2020
	Coordinator submitted 01/07/2020

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1. Introduction

The core target of the Photofuel-project is to advance the biocatalytic production of solar fuels over the entire value chain of biocatalyst development, production upscaling, fuel blending and fuel testing.

Communication and dissemination were an integral part of the proposal from the first stage proposal on and is included in three tasks:

- 1.3 Project website and general public dissemination
- 1.4 Contribution to conferences on renewable fuels, algae and biotechnology
- 1.5 Workshops on specific topics and final results

This report shows how the project results were disseminated to European stakeholders on two events. Accordingly, all project partners were involved in the preparation of the content, discussion of strategy and selection of event in a process which started already in the first Period.

2. Objectives and expected results

The aims of the Photofuel stakeholder event are a wide-reaching communication of chances and challenges of biocatalytic solar fuel production and a focused impact, uptake and use of the results. This is deemed important for the further advancement of the technology and eventual commercialisation with regard to required support but also community perception and consumer acceptance.

Specific Objectives

More specifically, dissemination aims to:

- Inform stakeholders involved in the area of biocatalysts/phototrophs/biofuel about the main results of the project
- Promote the use of results through presentation and discussion, but also through drafting targeted recommendations to the various stakeholders with a view to future action;
- Help stakeholders to evaluate the achieved progress and actions necessary for further commercialisation of biocatalytic solar fuel production.
- Give information about biocatalysts and solar fuels to everybody accessible for free

Expected results

As outcome of disseminating the results, the following should be achieved:

- European stakeholders involved in the field of biocatalysts/phototrophs/biofuel are aware of the results of the project;
- Stakeholders of solar fuels will consider the findings for usage;
- The recommendations derived from the research project are targeted to the various stakeholders and considered for usage.
- Comprehensive information on the topic for science and public

Justification of funding

The Photofuel project receives a considerable amount of public funding, which makes it very important to show taxpayers what results are achieved. All publications and dissemination activities acknowledge the funding received from the European Community by reference to the Grant Agreement and possibly display of the EU-emblem.

3. Selection of format and venue

The aim of the final stakeholder event is to inform EU-level policy- and industry-stakeholders on results and potential of biocatalytic production. The contract names Brussels as proposed venue. To increase the critical mass to attract stakeholders, cooperation with other bioenergy projects was sought but not successful.

Alternatively, several conferences and events towards the end of the project duration were checked. The AlgaeEurope-conference attracted in 2017 more than 240 attendees from industry, science and policy and seems to be the most suitable opportunity. In 2018 the venue was Amsterdam, which is close to Brussels, the site proposed in the GA. Already in the last year, the project had a high visibility in the oral presentations, posters and podium discussion, showing that the subject fits very well to the event. It is envisaged to try to get a separate session for the presentation of the Photofuel results, around the topics:

- Biocatalytic fuel production pathways
- Layout and operation of production plants
- Upgrading and application of biocatalytic fuel blends
- Economics and environmental properties
- Status and potential for upscaling

If this does not fit to the policy of the organisers, it is envisaged to try to further extend the presence in the respective scientific sessions and give an integrative stakeholder presentation in the industrial session, which typically includes a panel discussion. Further to that key results of the project will be displayed in the project booth. Eventually a car might be fuelled and demonstrated with one of the tested blends. Generally, dissemination seems to be better in large conference with all stakeholders and together with many other projects and activities. It is a more effective use of resources and targeting more and more relevant stakeholders than project-individual workshops or events happening in Brussels as one of several side events of a major event. To complete the spectrum, it is intended to specifically invite stakeholders from industry and policy to the conference. This is expected to effectively reach a large number of relevant stakeholders from industry, science and policy from the member states, the EC and abroad.

4. First stakeholder event – AlgaEurope 2018

At the AlgaEurope-conference it was not possible to get the envisaged separate session for the presentation of the Photofuel results, nor to have a show car. However, several proposals for presentations were accepted and space for a booth was offered so that the aims were reached with a booth and several presentations at the AlgEurope 2018 on Dec 4 to 6 in Amsterdam:

- Olaf Kruse (UniBi): Engineering microalgae and cyanobacteria as green cell factories for direct bio-catalytic synthesis of carbon-based fuels
- Tiago Guerra (A4F): Phototrophic cultivation of gm cyanobacteria excreting fuel precursor compounds to the medium at lab and pilot scale
- Michael Bippes (VW)¹: The H2020-project photofuel: Biocatalytic solar fuels for sustainable mobility in Europe.
- Jessica Varela Villarreal (KIT): Public acceptance of genetically modified microalgae for biofuel production

To facilitate getting into contact with the project an exhibition booth was set up, which had posters on the walls behind and chairs and a table made from oil drums inviting visitors to stay and discuss. 180 project brochures were distributed and visitors, which stayed for discussion of results, were given a mug with the project logo and funding disclaimer as keepsake. The posters displayed the pathways for 1-butanol, iso-butanol, 1-octanol and bisabolene production as well as their application and assessment results.



The conference was attended by 295 persons from 171 organisations coming from 41 countries. A further 252 persons watched the live stream. The programme had 56 oral presentations and 120 posters.

¹ Given by Simon Kühner (SYNCOM) due to illness

5. Second stakeholder event – AlgaEurope 2019

As the Photofuel-contract was extended the opportunity of a second stakeholder event was used by participation in the AlgaEurope conference 2019 from Dec 3 to 5 in Paris. Photofuel results were shown in several presentations:

- Tiago Guerra (A4F): Autotrophic 1-Butanol production from a GM strain of *Synechocystis* sp. PCC 6803 and its accumulation in the medium
- Hilke Heinke (VW): The H2020-project Photofuel: Biocatalytic solar fuels for sustainable mobility in Europe.
- Jessica Varela Villarreal (KIT): Public acceptance of genetically modified microalgae for biofuel production

The Photofuel booth was set up again, showing posters on the overall project results, 1-butanol and 1-octanol value chains.

The conference was attended by 350 persons from 205 organisations. The programme had 72 oral presentations and 110 posters.

6. Discussion

AlgaEurope in Amsterdam had a very good resonance with many valuable stakeholder discussions, somewhat less at Paris due to the general strike of the public service, which made many attendants leave earlier. Main interest was in new production pathways, how they can be further tuned in productivity and if related substances might be more valuable or easier to produce. Upscaling of production was also an important topic discussed with suppliers of PBR systems and companies with interest in CO₂ utilisation. Respective information was taken into account in the development of the business case.