

Report on Research Project under the IDEA League Student Grant

Personal Information			
Full Name		D'Angelo, Sebastiano Carlo	
Field of study		Chemistry	
Degree pursued		Chemical and Bioengineering MSc	Current year of studies 4
Home university		ETH Zurich	
Sponsoring professor at home university	Name	Prof. Dr. Javier Pérez Ramírez	
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Information about the research stay			
Host university		Chalmers tekniska högskola (Chalmers University of Technology) - Göteborg	
Research topic		Techno-economic analysis of a glycerol biorefinery	
Dates of research stay		From 02.04.2018	To 29.06.2018
Sponsoring professor at host university	Name	Ass. Prof. Dr. Stavros Papadokonstantakis	
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Summary of research project (200 words max.)	
<p>Biodiesel is an environmentally friendly alternative to fossil fuels, with a growing market size in recent years. Since the most common biodiesel production technology is based on the transesterification of triglycerides, a burgeoning amount of glycerol byproduct is obtained. Several processes have been developed to exploit this compound to feed the market with added-value products in order to address this economic and ecologic drawback of biodiesel production. In a previous study, an environmental and economic assessment of a glycerol biorefinery built on selected valorization pathways has been performed, only taking into account the operating costs in relation to the economic aspects. This study has the aim to further evaluate the investment opportunities for such network of glycerol valorization processes by unraveling the impact of the associated capital costs. In order to achieve realistic estimations, heat integration is performed on the individual processes, and profitability on the single lines is assessed taking into account two indexes, the annualized net profit and the payout time. The results obtained for the non-integrated chemicals production routes provide a solid basis to finalize a complete economic evaluation of the glycerol biorefinery, which is expected to lead to higher profitability than the individual processes.</p>	

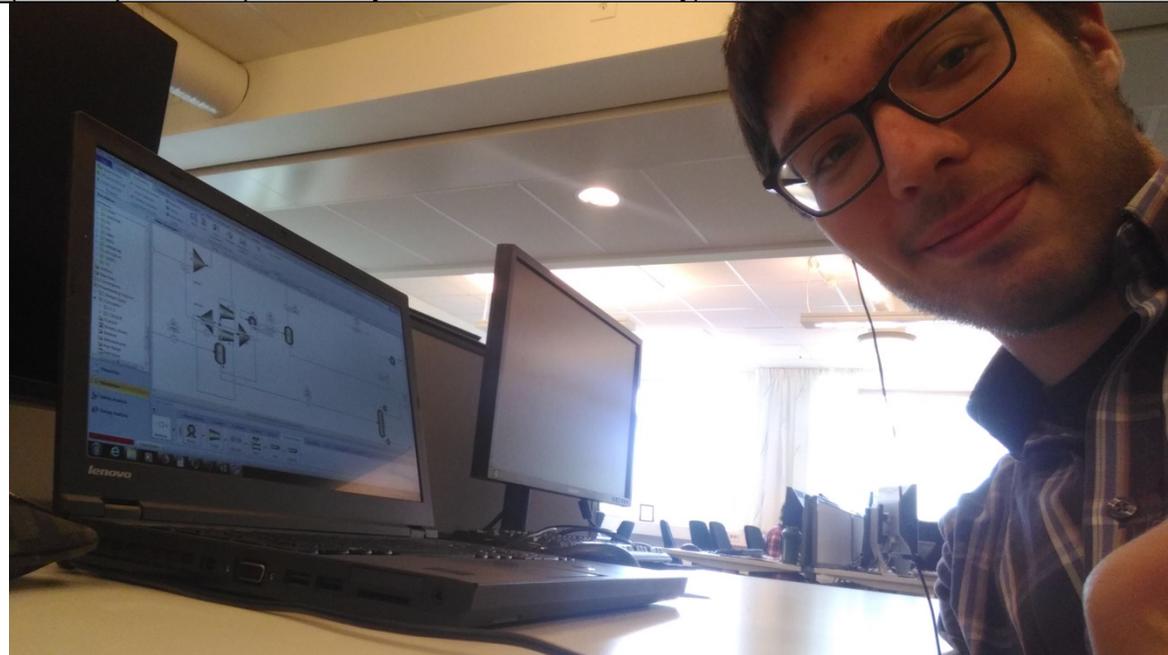
Experience Report

(Please tell us about your personal experience at the host university and give us an evaluation of the benefits of the research stay for the course of your studies)

My stay at Chalmers Technical University was extremely enjoyable, both from an academic and a personal perspective. A very internationalized research group welcomed me at Gothenburg at the Energy Technology division, where relevant research in the field of renewables and energy valorization of both old and new processes is the main focus. Here people gather from all over the world to come in contact with new ideas, in an environment where academia and local industry work exceptionally closely together. In fact, the narrow relationship of Swedish and in general Scandinavian industry with Chalmers is one of the main aspects that is almost immediately highlighted, visiting the division; even a special degree close to a doctoral one, but more related to industry, the "licentiate", a title of value in the whole Scandinavia, testifies this relationship, along with research topics strictly based on challenges directly present on the territory. This very practical feeling that research has at Chalmers, as well as the possibility to work in direct contact with my supervisor, Ass. Prof, Stavros Papadokonstantakis, which had large previous experience on the topic I was going to investigate, was a very precious element in the direction of my thesis; it helped me to constantly keep an eye on the most practical side of my investigation, the potential applications of my study in a near future, steering away from theoretical dissertations and remaining focused on the key elements that could assure a true feasibility of the project. This aspects, combined with the kindness and liveliness of Swedish people, made my experience at Chalmers a very valuable feature in the course of my studies, conferring me an additional motivation to deepen my knowledge of the studied topics in my future.

Picture

(Please provide a picture of you at the host university)



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The report should be signed by both professors involved. The signatures will be deleted when the template is published on the IDEA League webpage.

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