



Master's Thesis Project Proposal

Assessing the Use of Biofuels for Data Center Power Backup – An LCA Study

Background

We are living in the age of information. All the modern tools like mobiles, laptops, cars etc. used by the present civilization are powered by information. All this information used by individuals or companies over the internet is stored at data centers. It is estimated that the global data center energy consumption is around 400 TWH¹, which is in order of total energy consumed by Sweden. The increasing internet users and the greater demand for digital services are therefore propelling demand for data centers and specially hyperscale data centers. A typical hyperscale data center can consume 200 MW of power.

These data centers can be classified as critical infrastructure serving our digital society. They have power backup systems in case of a power grid outage. Although such outages are infrequent still there is a need to find more sustainable solutions for power backup to achieve the deep decarbonization of the technology sector and reduce the climate impact of hyperscale data centers. Advanced biofuels like hydrotreated vegetable oil (HVO) can be one of the green alternatives which will be evaluated and benchmarked with other upcoming sustainable solutions for power backup.

Scope

1. Review life cycle assessment (LCA) of carbon emissions from the operation of a model hyper-scale data center
2. Develop an environmental impact comparison model of other sustainable solutions in addition to HVO biofuels for the given application
3. Perform a case study on a typical-size hyperscale data center for Swedish and/or EU electricity grid scenarios

Do you fit the profile?

We are looking for master students that have a great interest in the area of sustainability. Candidates should have the ability to gather and assess a wide variety of abstract information then analyze and extract key findings and conclusions. If you feel that you are from a relevant area of education with some background in life cycle assessment (LCA) methodology and tools like SimaPro, GaBi etc. then this is an opportunity to put your skills and knowledge to the test and contribute to the climate action.



Other details

Duration Start in Jan/Feb 2022

30 points ECTS in agreement with thesis advisor in university

Number of students: 2 (single applications can be paired with other applicants)

Location: Flexible (for the right candidate remote option is possible). It is also possible if you'd like to work 1-2 days/week work from our offices.

How to learn more and apply

Selection will be ongoing during the application period, so do not hesitate to send in your application. Send your personal letter, CV and grades/references for relevant courses/projects.

We want your application at the latest **2021-11-26**

If you have any additional questions regarding the position, you are welcome to contact:

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Prakhar Arora, Environment Specialist (CO2) prakhar.arora@preem.se

About Preem

Preem is the largest fuel company in Sweden, with a refining capacity of more than 18 million m³ of crude oil every year. We refine and sell gasoline, diesel, heating oil and renewable fuels to companies and consumers in Sweden and abroad. Preem is an important player in the conversion to renewable fuels. Our vision is to lead the transition towards a sustainable society. This means that we consider the future as our most important market and the journey to a sustainable society as one of our most important issues.