

Potential of Integrated Steam Cracking of Pyrolytic Oil

Internship assignment description

The steam cracking process is one of the most important in the petrochemical industry, and it has been thoroughly reviewed in engineering encyclopaedias. The production of ethylene and propylene from naphtha via thermal cracking is a cornerstone of the chemical industry. This process is carried out in furnaces operating at high temperature. At Waste4ME, we operate and work on improving our demonstration pyrolysis plant located in Moerdijk, The Netherlands, by thriving to optimize our pyrolysis system as well as the output yielded. One of these outputs is a pyrolytic crude oil which is unrefined.

Just like in an olefin plant, in which the cracking furnace is a core component, Waste4ME aims at researching about the possibilities to crack the lower-value feedstocks into higher-value products. The optimal operation of these units is a key factor in maintaining safety, efficiency and profitability of olefins.

A previous Intern developed a steam cracking module that was applied to Waste4ME's small scale test batch reactor and successfully cracked oil into smaller, higher value components. Waste4ME is therefore looking at taking this project a step further with the potential development of a steam cracking module that could be connected to our demonstration plant in Moerdijk.

Graduation tasks:

- Research and potentially develop, based on the small scale work done previously, an integrated system in our demo-plant.
- The study of the steam cracking process is of most importance in order to be able to develop predictive models for cracking furnaces.
- Review of the cracking reaction, giving a brief overview on the reaction types that occur, and suggest further improvements of our pyrolytic system by potentially integrating steam cracking.
- Testing and validating the design and implementation of the steam cracking module.
- The implementation of a shut off/turn on procedure including control procedure and safety measures.

About Waste4ME BV

The company Waste4ME positions itself at the intersection of different industries. Waste4ME is pioneering the plastic recycling industry by giving previously incinerated plastic waste a second life. Our company turns a global environmental problem into low-carbon products and valuable petrochemical products. Our solution also allows implementing sustainable waste disposal techniques and bridge intermittent energy supply in remote locations. WER unit (waste reducer energy generator) is a mobile waste management tool based on pyrolysis technology. It is designed for tackling waste, where recycling is not feasible and where waste disposal is an issue. Thanks to its mobile nature, WER allows to avoid transport costs, electricity cost, gas boiler cost and gas for a boiler.

Working at Waste4ME

As you gain knowledge and experience in different sectors you can grow within the company. Our team mentality is straightforward and product oriented. You have the freedom to plan your work and set your own milestones in line with the company goals. Additionally, if you want to suggest a different topic and you think you can add value: make a proposal including milestones and catch our attention. We are a growing company and are looking for people with ideas and the mentality to execute selected ideas.

Position requirements

For the position are we looking for the following background:

- Bachelor degree in chemical engineering, chemical process engineering or equivalent
- Preferably knowledge of chemical modelling and practical solution seeking
- Ability to work result oriented with given boundaries (time, budget, quality) in a team
- Ability to deal with technical uncertainties and form vision
- Good knowledge of the English language

Good to have

For the practical execution of the work and filling in with the team, we have additional wishes that can give you a higher probability of being selected:

- Entrepreneurial mindset
- Long-term personal vision

Reimbursement

Reimbursement is € 400 per month (excluding expenses) depending on candidate's qualifications.

Working Hours

40 hours per week (Negotiable)

Contact

If you are interested, send your application with cv and motivation or even better with your first idea how to approach to Valentin Contin on v.contin@waste4me.com or by phone on 0614321871.