

Topic for diploma or master thesis

Development of a Cryogenic Magnetic Air Separation Unit

In the context of the publicly subsidized project 'Development of a Cryogenic Magnetic Air Separation Unit', a thesis (master or diploma) about 'Measurement and Optimisation of a Cryogenic Magnetic Air Separation Unit' can be written.

<https://www.ilkdresden.de/en/service/research-and-development/project/air-separation>



The thesis focusses on accurate measurements of the influence of different process parameters on the cryogenic magnetic enrichment of oxygen from air. Based on the gained experimental data, correlations between parameters shall be identified and heuristically–analytically described by using physical, thermodynamical and fluid-dynamical models. Using these findings, suitable options for optimising the cryogenic magnetic air separation shall be determined.

All measurements will be performed at the in-house-built experimental setup for experimental magnetic air separation.

Further information:

- The work to be done can be adapted according to individual abilities and interests.
- The thesis can be written in English or in German.
- Work on the topic can start on March 2023 at the earliest; later dates are possible without problems

Your main tasks include:

- Experimental work on a cryogenic setup for magnetic air separation (this includes, among other things, parameter adjustment, measurements, change of magnetic modules, assistance in fault repairs).
- Evaluation, analysis, and interpretation of measurement data.
- Creation of heuristic-analytical models, which describe the observed correlations.

Your qualifications are:

- Studies in the fields of cryogenics, process engineering, chemistry, physics, or similar.
- Interest in low-temperature processes or phenomena is required (preferably in the fields of gas separation, gas purification, or low-temperature physics); knowledge in these fields is desirable.
- Knowledge in using software for data analysis (e.g. Origin, QtiPlot) is required.
- Knowledge in using Microsoft Office (especially Word and Excel) or similar office packages (e.g. LibreOffice) is required.
- Knowledge in the fields of vacuum technology, in handling cryogenic media, and in oxygen applications would be an asset.
- Knowledge in the fields of magnetostatics and fluid dynamics would be an asset.
- Good knowledge in English or German is required.



- Reliable and responsible way of working is of essential importance (especially with respect to safety measurements).
- Ability to work proactive, self-reliant, and goal oriented is expected.
- Ability to communicate factual and goal oriented in writing and speaking is expected.

Contact:

Please send your application, stating the topic, to:

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Technical questions to:

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