Sensing the Process: Electrochemical Sensors for Metal Recovery

2 Open Student Projects with NitroVolt & Coco Sense - Special Course / Semester Project / Internship / BSc-MSc Thesis

Valuable metals are sitting in industrial waste liquids, and the conditions there are tough: hot, strongly acidic or alkaline, loaded with dissolved metals. Conventional pH probes, with their glass membrane and reference electrode, drift, need regular calibration and wear out quickly there, so the process is hard to watch in real time. Join two Danish startups to put a new kind of sensor in the bath and close the loop, from an electrochemical fingerprint, to a machine-learning prediction, to the PLC that runs the process.

1. The Companies and the Technology

- **NitroVolt** develops and scales novel sustainable processes for industrial applications. As part of its continued growth, it is broadening its technology platform into new application areas, including the recovery of metals from industrial waste and side-streams.
- **Coco Sense** is a Danish startup, founded in 2026, that develops electrochemical sensors for monitoring liquids in industrial processes. Today's pH probes rely on a glass membrane and a reference electrode that drift, need regular calibration and wear out quickly in hot, acidic or alkaline liquids. The Coco Sense sensor has no classic reference electrode. It references itself.

A small sensing chip records the liquid's electrochemical fingerprint, and machine-learning models turn that fingerprint into process information: pH today, and more of what's in the liquid next (e.g. ion concentration and conductivity). It has already been demonstrated live with industrial users in strongly alkaline liquids.

2. Why Join

- **New technology, real process:** you work with a sensor that has no classic reference electrode, on real industrial feedstocks rather than textbook solutions.
- **Your work gets used:** your datasets and models go straight into NitroVolt's process control.
- **Two startups, one team:** you work day-to-day with the founders and engineers of both companies and see deep tech move from lab to industry.
- **Chemistry meets data:** the two projects work side by side, so you see both the liquid and the model.

3. Sensor in the Bath: Metals, pH and Conductivity in Process Liquids

You will put the Coco Sense sensor into NitroVolt's metal recovery liquids and find out what it can see. Tasks include preparing synthetic feedstocks and testing on real industrial feedstocks, measuring pH, conductivity and metal content against reference methods, and building training datasets with the "Sensor in the Loop" student. The project suits a student in chemistry, chemical engineering, electrochemistry or a related field who enjoys experimental work.

4. Sensor in the Loop: Sensor Data and Machine Learning for Process Control

You will turn the sensor's raw fingerprint into numbers the process can act on, by integrating Coco Sense data into NitroVolt's PLC-based process control. Tasks include data acquisition and handling, building training datasets in synthetic and real feedstocks (together with the "Sensor in the Bath" student), and developing and validating machine-learning models that predict process-relevant quantities such as pH and conductivity. The project suits a student in chemical engineering, data science or a related field with an interest in sensors and process control.

5. What We Offer and Organization

- **Formats:** special courses / semester projects of 10 ECTS or more; unpaid internships of at least 2 days per week for 3–4 months (exceptions case by case); BSc and MSc theses.
- **Location and start:** based at NitroVolt, with time at the university as needed; start as soon as possible.
- **Supervision:** day-to-day by NitroVolt, with Coco Sense co-supervising the sensor and data side, plus an academic supervisor from your university.

6. Who We Are Looking For and How to Apply

We are looking for curious and ambitious students who want to build sustainable technology at the interface between science, engineering and industry. An average grade of 10 or above on the Danish 7-point scale (B or above on the ECTS scale, or equivalent) is preferred, but relevant experience (lab work, data science, modelling, projects or industry) is valued highly and can outweigh grades alone.

To apply, send your CV, a cover letter and your BSc and MSc transcripts (current one if your MSc is ongoing) to jobs@nitrovolt.com (Mattia and Suzanne, NitroVolt co-founders), stating the position and format you are interested in.