

From Waste to Value: Electrochemical Metal Recovery

Open Student Projects - Special Course / Semester Project / Internship / BSc Thesis / MSc Thesis - October 2026

1. Background

NitroVolt develops and scales electrochemical 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 whose metal content is currently unrecovered and unvalued. By extracting these metals, the process keeps valuable resources in the loop, supporting a more circular economy.

Projects are offered in collaboration with the student's home university. In the past 4 years we have worked with tens of students from Danish and foreign universities. The collaboration combines academic expertise in electrochemistry, materials characterization and process modelling with NitroVolt's industrial electrochemistry lab and hands-on scale-up experience, giving the student exposure to both academic rigour and industrial relevance.

2. Objective

The student will contribute to the development of NitroVolt's electrochemical and hydrometallurgical metal recovery processes, working on a well-defined sub-problem that fits their interests and background. The exact scope is defined together with the student and the supervisors at project start, and can range from experimental to computational, or a combination of both.

3. What We Offer

- **Special courses / semester projects:** 10 ECTS or more, scope adjusted to the number of ECTS.
- **Internships:** unpaid, at least 2 days per week for 3–4 months. Exceptions can be discussed case by case.
- **BSc and MSc theses:** scope adjusted to the thesis requirements.

4. Open Areas

We currently have openings in the areas below. The final scope is agreed with each student.

- **Life Cycle Assessment (LCA):** environmental assessment of metal recovery from industrial side-streams using OpenLCA and ecoinvent, including choosing the right comparison baseline.
- **Techno-economic analysis (TEA) and feasibility studies:** extending our in-house TEA code base from lab and pilot scale to full-scale plant operation, including component sizing and sensitivity analysis, and assessing the technical and economic feasibility of new waste streams and applications.
- **Digital twin, software:** developing and extending our digital twin of electrometallurgical and hydrometallurgical processes (e.g. physics-informed bath models, code structure, data handling).
- **Digital twin, experimental validation:** designing and running experiments to validate the electro- and hydrometallurgical models against lab data, using Design of Experiments (DoE) and Bayesian optimal experimental design, and building reusable validation methods.
- **PLC / process control:** automation and control of our pilot setup (temperature, pH, stirring), and using the controlled system to optimize process performance.

Other directions aligned with the topic of electrochemical metal recovery can also be discussed and proposed by the student.

5. Organization

- **Location:** the project can be based mostly at the university, mostly at NitroVolt, or split roughly 50/50 between the two, depending on the chosen direction and the facilities required.
- **Supervision:** joint day-to-day supervision from NitroVolt staff and an academic supervisor from the student's home university, with the split following the project's location.
- **Start:** flexible, by agreement with the supervisors.

6. Who We Are Looking For

We are looking for curious and ambitious students who want to develop sustainable solutions and are motivated to work at the interface between science, engineering and industrial process development. Relevant backgrounds include chemistry, materials science, chemical/mechanical engineering, electrochemistry, process modelling, software engineering, control and automation, and sustainability/LCA or techno-economics.

An average grade of 10 or above on the Danish 7-point scale (B or above on the ECTS scale, or the equivalent at your university) is preferred, but relevant prior experience (lab work, modelling, software, projects, or industry) will be valued highly and can outweigh grades alone.

7. How to Apply

Please send the following to the contact below, stating which area and which format (special course/semester project, internship, BSc or MSc thesis) you are interested in:

- **Resume (CV)**
- **Cover letter**
- **Transcripts of records** for your BSc and MSc (if your MSc is ongoing, send your current transcript).

Contact: Mattia and Suzanne, co-founders - jobs@nitrovolt.com