



13 Month Placements for 4 students in Computer Science (CS), Computer Engineering (CE) or Electrical Engineering (EE)

Your future in green energy software!

Recently acquired by Alelion Energy Systems of Sweden, specialists in batteries and renewable energy, Caterva is a young high-tech company in the field of distributed energy storage. We are pioneering a new model of grid stabilization. We are looking for 4 placement students to join our team here in Munich in 2019 as part of our very successful placement program. There are roles for 3 **Junior Full-Stack Developers** and 1 **Power Electronics Engineer**.

About the company

Alelion-Caterva systems have saved thousands of tons of CO₂ already and the future benefits are even greater. Protecting the environment is one of our driving forces and something we want you to love. We occupy a world-leading position selling lithium-ion-based energy storage systems to the largest forklift truck manufacturers in the world.

Additionally, we stabilise the European power grid and have been trading on the European Power Exchange since July 2015, with our algorithms securing an outstanding position in the energy storage industry. Since June 2016, we listed on Nasdaq First North and have an exciting future. Our team is currently 43 employees in Sweden and Germany, and we offer our placement schemes as an opportunity to grow both you as a student, and Alelion-Caterva. If you want to work as an engineer or software developer in a fast-paced environment where you can better the world, this is the place for you!

More information: Caterva: caterva.de/en/ Alelion: alelion.com/en

About our placement program

Proven to offer high-performing, entrepreneurial students the opportunity to enrich their education with a position in a dynamic startup working abroad. We seek students who are at or near the bachelor level in their field of study. During the past 5 years we have drawn students from the UK, Spain, Lithuania, Ireland, Belarus, Greece and Italy, to our base in Munich. Participants not only grow to match the performance of Alelion-Caterva's experienced R&D team, but also actively introduce new technologies as part of their tenure.

During your placement, you will progress through four stages: Introduction, Production, Innovation, and finally Handover to the next generation of interns. In the Innovation stage, you can expect to contribute a useful new project to the Alelion-Caterva system or to introduce an innovative technology to improve an existing solution, and this will become your enduring legacy. You will then help ensure that the next generation of placement students have an excellent start and become effective team members quickly.

Junior Software “Full-Stack” Developer

Job Summary

As a full stack software developer, you will work with the latest technologies and have the freedom to utilize the technologies that are most suitable for the task at hand. Alelion-Caterva’s projects are extremely diverse, ranging from the initial sale through to device maintenance. There is no expectation for you to be an expert at the start of your industrial placement - we take great pride in being able to support you throughout your journey. Anybody with the right passion, desire, and drive can excel at Alelion-Caterva thanks to our inclusive work atmosphere.

At Alelion-Caterva, we endeavor to assign tasks that best fit your particular passion and skill set, and of course there is plenty of scope for you to start your own project should you notice an unfulfilled need!

Skills we are looking for

Some of the skills and technologies that are commonly practiced across all our positions include:

- **Essential**
 - Good knowledge of standard web technologies (HTML5, CSS, JavaScript)
 - Experience working with SQL databases
 - An understanding of object-oriented programming principles
- **Desirable**
 - Confidence with Linux platforms
 - Experience with MEAN Stack development
 - Familiarity with developing Docker-based microservices

Qualities we are looking for

- Have an interest in highly scalable, high availability software
- Ability to work with a high degree of independence
- Excellent team working and communication skills
- Both practical and theoretical problem-solving abilities

Responsibilities may include

- Developing innovative data visualisation tools
- Develop and maintain the High Availability Software responsible for Alelion-Caterva’s distributed storage system
- Creating node.js based servers to retrieve, manipulate, and distribute data
- Support the rest of the Alelion-Caterva team by designing and implementing the business processes driving our internal CRM system
- Design, develop, and maintain new tools to meet the ever-growing needs of Alelion-Caterva
- Design and implement algorithms to support the operations of Alelion-Caterva and its customers

Our Stack:

The diversity of our projects means that it is difficult to isolate any specific software stack. We are always aiming to use the latest and best tools for a task. Here are some of the projects and technologies of importance within our everyday operations:

- Internal Angular-based monitoring tools
- Angular-based graphic interfaces for our customers to monitor their personal power usage and production
- Node.js APIs
- Java automated energy trading system
- Python services
- MongoDB and Cassandra databases
- Docker microservices

Power Electronics Engineer

Job Summary

The power electronics engineer works with a high degree of independence. You take requirements and creatively design solutions to efficiently and safely overcome obstacles. To improve the performance and efficiency of energy storage systems, we are continuously developing novel concepts for combining power converters with batteries at home. The goal is always to improve the system efficiency. The range of tasks includes power switching using relays/contactors controlled by single board computers, and routing electricity generated by solar installations through electronically controlled hardware safely into our battery systems. You will be able to combine your existing academic knowledge with that of our experienced team to innovate new designs as well as improve existing ones. You will gain valuable experience in a rapidly growing field.

Skills we are looking for

- **Essential:**
 - Strong understanding of 3-phase AC systems and high voltage DC
 - Demonstrable project experience, from inception and design through to implementation and testing
 - Experience with PLCs, PCs, or controller boards
 - Confidence with electric measurement instruments (oscilloscope, power meter)
- **Desirable:**
 - Experience with IGBT-based power converters (10-30kW range) and transformers
 - Experience with batteries and BMS
 - Electronic communication methods (RS-232, RS-485, CANBUS)
 - Experience in producing technical drawings using programs such as SPlan
 - Experience with single-board computers, Raspberry Pi etc.
 - Some experience with the command line

Qualities we are looking for

- Both practical and theoretical problem-solving abilities
- Excellent team working and communication skills
- Passion for and understanding of power electronics
- Ability to work with a high degree of independence
- A passion for and understanding of controllers

Responsibilities may include

- Assemble and conduct tests on energy storage system prototypes
- Evaluate electronic components (converters, filters, resistors)
- Analyse device faults and propose countermeasures for serial production
- Improve Alelion-Caterva's electronics laboratory setup
- Physically prototyping concepts using the available workshop

Important Notes

Working Conditions & Remuneration

- Location: Munich, Germany. An international city friendly to students from all over Europe! Excellent public transport, great nightlife, and outstanding sports activities
- Collegiate company environment: everyone working together on common goals
- State-of-the-art development Labs with excellent tools and equipment
- Training: excellent on-the-job training
- Salary: €1600 to €1,750 Euros pre-tax per month, depending on experience
- Salary paid monthly - so you must be able to support yourself during your first month.
- Paid holiday allowance of 25 days per year plus the German/Bavarian public holidays.
- €450 relocation allowance payable in your final month at Alelion-Caterva to assist with relocation costs back to your University.

Individual Requirements

Applicants **MUST** meet the following criteria:

- Be available for a placement of 13 months
- Able to retain their student status throughout the placement because the placement is a required or optional part of their course (not a “Student in suspense”). Your University is required to sign a confirmation with Alelion-Caterva to verify that you are still their Student.
- Be fluent in English, written and spoken
- The drive and motivation to accept new challenges

Nationality

- Most of these positions will be filled by citizens of the European Union or Switzerland
- Non-EU applications from exceptional candidates will also be considered

BREXIT: please do not hesitate to apply. If required, Alelion-Caterva have prior experience of arranging work permits for non-EU Students undertaking an Internship with them.

General skills you should have

- The ability to learn quickly
- A keen sense of responsibility
- The maturity to work with minimal supervision
- The ability to live independently away from home

How to apply

Applications will be assessed as they are received, so applying early increases your chances.

Closing date: 1 April 2019

1. Send your CV and a cover letter in English by email to intern@caterva.de
The cover letter should detail why you are applying for this job, and how you satisfy the criteria required. It should not be more than one side of A4. Please ensure that you specify your nationality.
2. CVs will be assessed shortly after they have been received and selected candidates will be offered a telephone interview.
3. **BREXIT: please do not hesitate to apply. If required, Alelion-Caterva have prior experience of arranging work permits for non-EU Students undertaking an Internship with them.**
4. The first interview will look at your technical skills
5. If your skills match Alelion-Caterva's needs, a second interview will be offered to review your career plan and your motivation for applying. ALL the interviewers in these first two stages have previous experience of completing successful Internships, most in Munich.
6. Prior to attending the second interview, candidates will be asked to provide a copy of their passport or ID card and confirmation in writing by the University of their Student Status. Candidates will progress only once this information has been received.
7. Some of the successful candidates from this process may also be interviewed by Robert Owen who is supervising this process.
8. Candidates that pass these stages will then be shortlisted for interviews by Alelion-Caterva which could involve current students and technical supervisors.
9. Successful candidates will start at Alelion-Caterva around July 2019, on a start date mutually agreed to suit both candidate and Alelion-Caterva.