# STUDENT PLACEMENTS
# at Caterva, MUNICH, Germany

caterva
Mit der Sonne im Netz

## 13 MONTH PLACEMENTS FOR STUDENTS IN COMPUTER SCIENCE (CS), COMPUTER ENGINEERING (CE) or ELECTRICAL ENGINEERING (EE)

**These placements start July 2014 and end August 2015**

Caterva is a high-tech start-up company, well-funded, and run by experienced entrepreneurs. Their headquarters are in Pullach, a 15 minute commute from central Munich. The atmosphere of a start-up company is dynamic and exciting. So Caterva are looking for extraordinary, smart people, who relish a challenge and have a can-do attitude. If you have ambitions to run your own business in the future, this may be THE placement for you! www.caterva.de

### Caterva – The first stationary battery system with pay-back

Caterva has developed a networked energy storage system for the German market that combines the local use of solar power with grid services.

There are more than 700,000 photovoltaic systems (PV) installed on the roofs of family homes in Germany. Crucially since 2012, the cost of power from the mains grid is significantly higher than the cost of power harvested from a private PV system. At the same time, the subsidies paid for power fed into the grid have dropped sharply for newly installed PV systems. As a result, families are starting to use their roof generated power rather than sell their power to the grid. But using their own power usually requires people in the home to use it, which is inconvenient as families are often out when the supply of solar power is at its highest. Energy storage can overcome this issue – power can then be consumed independent from the sunshine. Unfortunately battery costs today mean that these systems never recoup the investment. Caterva has solved this issue with combined applications running on the same energy storage system: in addition to supporting the private household with stored energy, the Caterva storage solution offers frequency stabilization services to the grid as well.

### Caterva Technology

The mains power system is moving into a world of decentralized systems, comparable to the move from mainframe computers to personal computers. Decentralized storage systems will play a key role. Caterva is developing the control software running on each storage system as well as the software running on the central control site. Caterva will install the first group of systems in 2014. In the future, hundreds and even thousands of these storage systems will be combined virtually to create the equivalent of a major power plant, with the individual systems centrally controlled through a virtual private network.

## INTERNSHIPS

Successful candidates will work in the development lab of Caterva. Being a small company, they will also have regular involvement with marketing, sales, and manufacturing - offering a good opportunity to gain experience in all areas of the business. These year-long placements will allow the candidates to become fully familiar with Caterva technology and have a real chance to contribute to the development of the organization and the technologies used. As the company grows, it is expected that some of the Interns will return as employees after their graduation.

## Activities you will perform:

### Web and mobile front-end developer

To give its customers access to their energy storage system data at any time and any place, Caterva is developing a web-based interface for smartphones and tablets. Your duties will include:

- ✓ Evaluate alternatives for data presentation on mobile devices
- ✓ Design and implement an attractive front-end along the Caterva design rules
- ✓ Integrate the front-end into multiple mobile platforms (e.g. android / iphone app container or embedded browser)
- ✓ Implement the interface to the server-side data
- ✓ Implement the customer login mechanism
- ✓ Test and document all components

### C++ software developer with focus on communication technology

To provide the power transmission system operator (TSO) with real-time information about the Caterva system through a secure channel, we are developing a software component that sends data from our WinCC/OA-based control center to the TSO counterpart. Your duties will include:

- ✓ Clarify the interface details
- ✓ Establish a secure and robust connection using standard components (SSH tunnel or openVPN)
- ✓ Design and implement a daemon to read, process, and convert data from WinCC/OA, and send data to the TSO control center
- ✓ Integrate the daemon into the live system
- ✓ Test and document all components

### Power electronics engineer with focus on batteries and power conversion

To improve the performance and efficiency of energy storage systems, Caterva is developing novel concepts for combining power converters with batteries in the home. The goal is a transformerless set-up with a minimum of filters. Your duties will include:

- ✓ Assemble and conduct tests on energy storage systems prototypes
- ✓ Appraise electronic components (converters, filters, resistors)
- ✓ Set up and conduct tests on electronic components
- ✓ Improve Caterva's electronics laboratory setup
- ✓ Document all work

## Skills you will acquire during the placement:

### Technical Knowledge:

- Understanding of energy technologies such as batteries, power converters, and the issues surrounding stabilization of the mains power grid.
- Experience with the control software used for the storage systems and the overall control of the network.
- Understanding of secure communications, especially in the energy context
  Full mentoring will be provided at Caterva.

**Work Skills:** working efficiently and effectively, being responsive, understanding organisations and team working.

**Communication Skills:** the communications skills needed to work in a dynamic company: face-to-face, telephone, web meeting, and e-mail. Good proficiency in English, particularly when applied to technical subjects, to enable clear and effective communications.

**Marketing:** Understanding the growing market for Caterva technologies, and gaining a genuine appreciation of the market trends from an insider's point of view.

**Relationships:** Working in a multi-cultural environment with regular management interaction.

**Recruitment:** a unique element in these placements is that in 2015, the current Student Interns will be responsible for initiating the recruitment process for their successor and running the initial selection process. They will then give training to their successors during a handover period (hence a 12 month placement plus one month handover).

## Working Conditions & Remuneration:

- Location – Munich, Germany. An international city friendly to students from all over Europe! Excellent public transport, buzzing nightlife, outstanding sports activities – in short "a cool destination"
- 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 Euros pre-tax per month
- 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 Caterva to assist with relocation costs back to your University.

## Individual Requirements

**Applicants MUST meet the following criteria:**

- Be available for a placement of at least 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")
- Be citizens of the European Union or Switzerland
- Be genuinely fluent in English, written and spoken.

**General skills you should have:**

- All Students:
  - Proficient using a PC and the Internet
  - The drive and motivation to accept new challenges
  - 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

**Specific skills desirable for the three positions:**

| Web and Mobile Front-End Developer | Communications Developer | Power Electronics Engineer |
|---|---|---|
| Experience of web design or mobile development | Confident with Linux platforms | Passion for and understanding of power electronics |
| Experience with HTML5, CSS and JavaScript | Experience with C++ programming | Confident with electric measurement instruments (oscilloscope, power meter) |
| Good knowledge of Java is very useful | Application level knowledge of open VPN and SSH | Experience with IGBT-based power converters (10-30kW range) and transformers is useful |
| | Knowledge of Java also useful | Experience with batteries useful |

**Other skills we value, but which are not essential:**

- Additional language skills (apart from English). German is especially useful socially.
- Previous work experience.
- An appreciation of different cultures

## Applications

**The deadline for applications is the 17th March 2014.**

**APPLICATIONS:**

1. Send your CV and a cover letter in English by email to: **caterva@theofficeonthenet.co.uk,**
   - 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.
   - The deadline for applications is **March 17th 2014.**
2. Between March 18th and April 7th, selected candidates will be given two informal telephone interviews conducted by Daniel Duchna and Sergio Ortega. They are former Students who completed 13 month technical internships in Munich between 2010 and 2012.
   - We ask that you are as flexible as possible over the timing of these interviews.
3. Between April 14th and 21st, Robert Owen will conduct further telephone interviews with a shortlist of candidates.
4. A shortlist of about 6 candidates will then be submitted to Caterva by April 23rd.
5. Caterva's team will conduct the final telephone interviews, and offers will be made to 3 candidates by May 6th.
6. Successful candidates will start at Caterva in July – exact date to be mutually agreed.

**For more information:**

Essaimage Associates (www.essaimage.com) are running this recruitment process for Caterva. They have nearly 20 years' experience running 13 month placements across Texas Instruments Europe and at EnOcean GmbH.

You can address your questions to Robert Owen, Director: e-mail: rcwo@compuserve.com