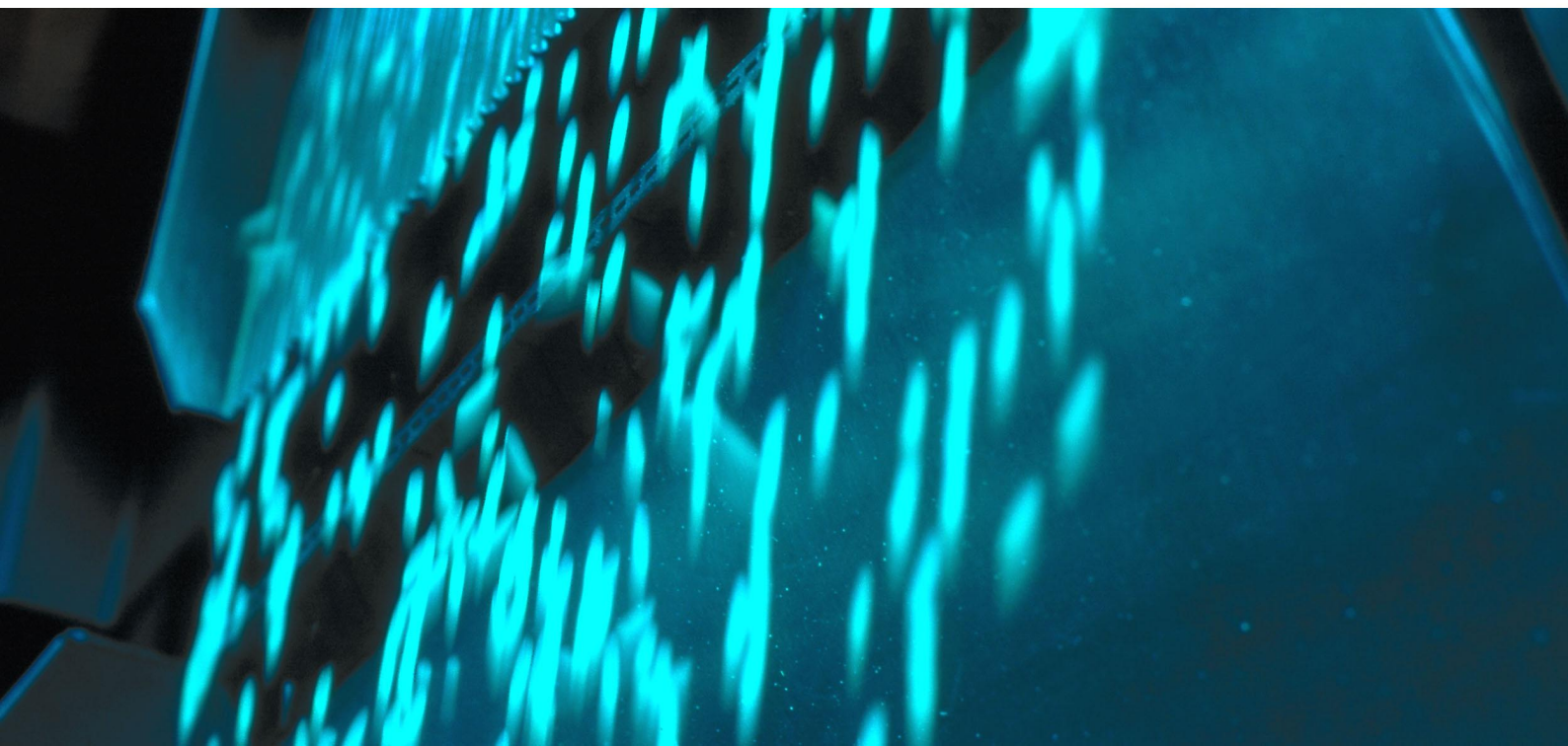


# Bühler Sortex Student Placements 2014-15



# Beer, chocolate and money.

In 1860, a Swiss gent named Adolf Bühler hired two staff and opened an iron foundry in Uzwil, Switzerland. After 16 years of development and refinement, he'd created the very first cast-iron flour rollers, retiring the mighty millstone.

Since then, we've patented over 6,000 inventions, from brewery equipment to cocoa refiners. 80 percent of the world's banknote inks are made using our technology.

With a multi-billion dollar turnover and locations in over 60 countries, Bühler is now a global market leader in manufacturing solutions. And, we're proud to say, still privately owned.

In 1994 we joined forces with Sortex, world leaders in optical sorting equipment. Coffee, nuts, spices, pulses, berries: you name it, they'd sorted it. Today, our Bühler Sortex machines use custom built line-scan cameras and ultra high-speed valves to remove defects from food before it's packaged.

We're looking for engineers and managers of the future to join the Research and Development department of Bühler Sortex. You'll be working with 50 professional engineers to design the next generation of optical sorting machines. You'll have a salary of £18,000 plus 25 days holiday and flexi-time working.

In 2014-15 we're offering five placement schemes, one in each of the following disciplines: Image Processing, Software Engineering, Electronic Engineering, Mechanical Engineering and Applications Engineering.

We take our placement programme seriously: as a member of the department, your contribution will be as important as anyone else's and our students are viewed as valuable engineering resources.

For details of each placement, read on.



# Bühler Sortex Mechanical Engineer Placement

## *Job Description*

You'll be fully integrated into a team of 14 mechanical engineers, working in a multi-disciplinary R&D department. You'll experience a wide range of practices; design and development of small projects, evaluation of concept and proof of principle testing, engineering change orders and legal/patent analysis. You'll get to know our CAD software, design parts and build 3D assemblies, prepare drawings for manufacture, and communicate with our in-house workshop and external suppliers.

## *Previous Student Projects*

- Completing a comprehensive thermal modelling project of an electronics enclosure. This included preparing a power and thermal budget for the enclosure; assessing airflow paths and identifying 'hotspots'; assessing cooling options based on space/cost/performance criteria; building a prototype enclosure for evaluation; testing the prototype in an in-house environmental chamber; presenting results to the management team; and preparing recommendations for further improvements.
- Creating and developing a new method for aligning camera sensors and lens. This included identifying the failure modes in the existing design; preparing a test concept and associated mechanical test rig; completing a stress analysis of the rig structure; liaising with external consultants; producing detailed part drawings for external manufacture; assembling the test rig and verifying performance; and managing the introduction of the test rig and test procedure to manufacturing teams in-house and abroad.

## *Skills and Requirements*

You'll be studying for a degree (or equivalent qualification) in Mechanical Engineering or Product Design.

The size of the projects you'll tackle will vary, so you'll need to be able to work both independently and as part of a team. You'll need to be able to plan your work, estimate time-scales and work to deadlines. You'll also need to manage multiple projects simultaneously.

## *How to apply*

Email your CV and a covering letter outlining why you're perfect for the job to [hrukrecruitment@buhlersortex.com](mailto:hrukrecruitment@buhlersortex.com) with "Mechanical Engineer Student Placement" in the subject line. The deadline for applications is Wednesday 20<sup>th</sup> November 2013.



# Bühler Sortex Applications Engineer Placement

## *Job Description*

You'll be fully integrated into a team of mechanical, software and electronic engineers, working in a multi-disciplinary R&D department. You'll develop a wide range of engineering and business skills and gain an understanding of the fundamentals of sorting machinery. You'll be involved in development of new applications for current machines; acceptance testing of new machine parts; Completing sort trials with client samples, analysing results and improving machine performance.

## *Typical Student Projects*

- Working with a team of test engineers to evaluate new products being released by the R&D department. Testing covers software functionality, software stability, and sorting performance at ambient temperature extremities.
- Using a commercial spectrophotometer and hyperspectral imager to analyse the spectral response of customer commodity samples. Designing an optical sorting configuration based on these analyses. Modifying test sorting machinery to new configuration and running trials with actual customer products.

## *Skills and Requirements*

You'll be studying for a degree (or equivalent qualification) in an engineering discipline.

You'll be methodical, practical and inquisitive, with a scientific approach to problem solving. An interest in systems design would be advantageous.

The size of the projects you'll tackle will vary, so you'll need to be able to work both independently and as part of a team. You'll need to be able to plan your work, estimate time-scales and work to deadlines. You'll also need to manage multiple projects simultaneously.

## *How to apply*

Email your CV and a covering letter outlining why you're perfect for the job to [hrukrecruitment@buhlersortex.com](mailto:hrukrecruitment@buhlersortex.com) with "Applications Engineer Student Placement" in the subject line. The deadline for applications is Wednesday 20<sup>th</sup> November 2013.



# Bühler Sortex Software Engineer Placement

## *Job Description*

As part of the R&D software team you'll work on a range of software, from C code on micro-controllers to large scale object-orientated C++ on 64-bit desktop PCs. You'll gain experience in all phases of software development including requirements gathering, specification, design, prototyping, implementation and testing. You'll be involved in interfacing to hardware, diagnostic tools, network communications, real-time operating systems and UX interfaces.

## *Previous Student Projects*

- Designing and implementing software for a production test rig. This included writing C code for an AVR microcontroller to control an LED array; monitoring light levels using SPI sensors; and providing a communications protocol allowing production test software to interface with hardware.
- Designing and implementing a high-speed camera image acquisition system. This included developing a custom high throughput file system; configuring a RAID disk array optimised for write performance; interfacing and designing input for custom capture hardware; implementing sorting algorithms for analysis; and creation of post-processing tools for image viewing and statistics generation.

## *Skills and Requirements*

You'll have an interest in developing software for embedded systems, with an understanding of software that controls and interacts with hi-tech equipment.

The size of the projects you'll tackle will vary, so you'll need to be able to work both independently and as part of a team. You'll need to be able to plan your work, estimate time-scales and work to deadlines. You'll also need to manage multiple projects simultaneously.

## *How to apply*

Email your CV and a covering letter outlining why you're perfect for the job to [hrukrecruitment@buhlersortex.com](mailto:hrukrecruitment@buhlersortex.com) with "Software Engineer Student Placement" in the subject line. The deadline for applications is Wednesday 20<sup>th</sup> November 2013.



# Bühler Sortex Electronic Engineer Placement

## *Job Description*

You'll be working in the Bühler Sortex Test Development department of R&D, developing and building equipment for testing PCBs/assemblies. You'll develop a wide range of skills, from designing hardware to writing software and building prototype systems. You'll be involved in all aspects of electronic and electro-mechanical design, from concept to final build.

## *Previous Student Projects*

- Designing and building a functional test box for our PCB suppliers to test “sorting” boards before they are shipped into Bühler and fitted to machines. Designing a multi-layer test board to simulate camera inputs and check ejector outputs.
- Designing the electronics for a product simulator and working closely with the Mechanical and Software placement students. Developing a closed loop stepper motor controller circuit to control the cycling of multiple rice test patterns in front of machine cameras to simulate plant operation.

## *Skills and Requirements*

You'll be studying for a degree in an Electronics-related degree.

You'll have a keen interest in electronics and computing, with a practical aptitude. You'll need to be able to liaise with the Production test team to prepare project specifications, and deliver robust, usable solutions for the Manufacturing team.

The size of the projects you'll tackle will vary, so you'll need to be able to work both independently and as part of a team. You'll need to be able to plan your work, estimate time-scales and work to deadlines. You'll also need to manage multiple projects simultaneously.

## *How to apply*

Email your CV and a covering letter outlining why you're perfect for the job to [hrukrecruitment@buhlersortex.com](mailto:hrukrecruitment@buhlersortex.com) with “Electronic Engineer Student Placement” in the subject line. The deadline for applications is Wednesday 20<sup>th</sup> November 2013.



# Bühler Sortex Image Processing Placement

## *Job Description*

As a member of the Research team, your main focus will be to investigate machine-vision algorithms including image processing, computer vision and pattern recognition. You'll undertake experiments, write Matlab code, solve maths problems and adapt algorithms for specific applications.

## *Previous Student Projects*

- Pioneering a new method for sorting food products. This involved implementing and evaluating the performance of several machine learning algorithms and selecting the most suitable solution for a specific application.
- Investigating the factors affecting how grains flow down a chute. This involved capturing image data and analysing this data to develop a suitable algorithm; then coding this algorithm in Matlab to produce a software utility for use by other engineers.

## *Skills and Requirements*

You'll have ability in computing, mathematics & engineering, combined with an enthusiasm for using computers to process images. (You don't need previous experience in machine-vision or Matlab code.)

The size of the projects will vary, for some projects you'll work independently and for others as part of a team.

## *How to apply*

Email your CV and a covering letter outlining why you're perfect for the job to [hrukrecruitment@buhlersortex.com](mailto:hrukrecruitment@buhlersortex.com) with "Image Processing Student Placement" in the subject line. The deadline for applications is Wednesday 20<sup>th</sup> November 2013.

