BECOME A
BUILDING SERVICES ENGINEER

Design, build and innovate with building services engineering

A guide for students thinking about university
Building services transform the way in which we experience buildings. The services – lighting, heating, lifts, escalators and a host of other technologies – are key to making buildings comfortable and safe for people living and working in them.

It is building services engineers who enable buildings, from homes to hospitals, to function efficiently. They design systems to help manage infection risk in operating theatres, crowds in football stadiums and security in airport terminals. It’s their job to ensure these systems operate effectively, sustainably and unobtrusively and fit the architectural design of the building.

Around half of the energy used in the UK goes into buildings to keep their services running. Our buildings have a massive impact on the environment, accounting for almost half of damaging carbon emissions.

Building services engineers therefore have a key role to play in helping us, and our buildings, use natural resources wisely. They design systems to help reduce demand for energy and water in both new and existing buildings, and they integrate environmental systems and technologies, like solar panels. They help buildings and occupants tackle the new and emerging challenges presented by major issues including global urbanisation, our changing climate and cybersecurity.
By becoming a building services engineer, you’ll have the chance to develop a range of skills and talents, realise your potential and pursue career opportunities in the UK and overseas. At the same time, you’ll have the satisfaction of knowing that you’re making a difference to the way people live and work in buildings, and to the environment.

Building services engineers generally work in teams, alongside other built environment consultants, to deliver projects for clients. Those clients may be major industries or businesses, global property companies, local authorities or other building owners, such as universities or NHS trusts. As a building services engineer you could be working for a consultancy, or directly for a client organisation.

Construction is a global industry, so it is fairly commonplace for building services engineers to travel not only UK-wide, but also overseas for business. Opportunities could range from working on skyscrapers in Dubai or the USA, to meetings with manufacturers in Germany or China to discuss innovative environmental technologies for buildings.

The industry has many career paths, progressing through such roles as project engineer to senior manager, director or partner – or you may want to establish your own business. Building services engineering offers you the chance to pursue your career goals.

**TYPICAL SALARY LEVELS**

£26.5k For a new starter

£50k For a Chartered Engineer

£70k+ For a senior manager/project director

*correct at 2017
HOW THEY GOT THERE

Karen Settle
Senior building services engineer (mechanical)

Career path: Studied full-time for a BEng Hons degree at the University of Hertfordshire, and worked part time during vacations with a local engineering consultancy.

Karen says: “I would like to think that my role is to make a difference, and inspire others to also make a difference.”

Louis Fifield
Energy researcher

Career path: Started a degree course in aerospace engineering, but switched to mechanical engineering. Has since carried out research into energy use in hospitals.

Louis says: “The thing I like most about my role is making the regular visits to the hospitals where I can learn first hand how building services are operated in a hospital environment.”

Matthew Kirkham
Consultant

Career path: Traineeship with an engineering consultancy, combining work experience with part-time study. Followed by full time study for a degree.

Matthew says: “I enjoy the day-to-day challenges of solving technical problems, and the variety of project work the job provides.”

Clare Wildfire
Director

Career path: Studied mathematics at university, before going into consultancy. Has remained at the same firm for more than 20 years, rising to director level at the global engineering and management consultancy.

Clare says: “In today’s world, where sustainability and energy saving are so important, the work we do is of increasing importance within the built environment.”

The work of a building services engineer may typically include:

- Scoping out a new building project with its architects
- Solving engineering problems using latest design, modelling and visualisation software
- Presentations to potential and existing clients
- Guiding an installation team on site
- Managing the operation and maintenance of building services in a completed facility
- Site visits to see how designs are working in practice

Become a Building Services Engineer
Building services engineering is a broad field, covering areas including:

- Energy use and technologies
- Daylight and artificial lighting
- Heating, ventilation and air conditioning
- Water, drainage and plumbing
- Escalators and lifts
- Communications technology
- Protective systems – for fire, security and other risks

Building services engineering is a broad field, covering areas including:
An engineering degree is the typical starting point for a career in building services engineering. The basic entry requirements for your chosen course are likely to include good A level (or equivalent) grades in mathematics and sciences.

Degree courses are typically three to five years in duration, with the main study options being:

**Bachelor of Engineering – BEng/BEng (Hons)**
- Three-year course providing full-time learning
- Four-year sandwich course, giving students the chance to take up a placement working in industry for a year.

**Master of Engineering – MEng/MEng (Hons)**
- Four-year course of full-time learning
- Five-year sandwich course, again incorporating a year-long work placement in industry.

Relevant course titles, and content, may vary and cover such areas as:
- building services engineering
- mechanical engineering
- electrical engineering
- architectural engineering
- environmental engineering.

If you want to become an Incorporated or Chartered Engineer, you could enter a graduate trainee scheme with an employer and continue your studies on a part-time basis. Graduate trainee schemes are offered by many organisations, including major construction firms, multi-disciplinary consultancies and dedicated building services consultancies.

**WHAT TO EXPECT FROM A DEGREE COURSE**

Degree courses use a variety of learning approaches, including lectures, laboratory work, one-to-one tutorials and design studios, where students may work together in teams to solve real-world engineering problems. Students are likely to be using advanced design and modelling software, and perhaps even familiar tools, like SketchUp.

There could also be the opportunity to use technologies such as thermal imaging cameras, which highlight the heat loss from buildings, or 3D printing to produce building components. Study visits to construction sites and opportunities to travel overseas for exchange visits and events could also be part of your course.
Attending college or university open days is a good way to find out about your options and explore individual teaching approaches and facilities. This will give you an opportunity to quiz tutors about the course, and to find out first hand from students about the experience of university life.

As courses vary significantly in content and practical experience, it pays to do your research before you make your application. Look at the focus and strengths of available courses, and at your own abilities and interests, to find the best possible fit for you. Some points to think about include:

Preparing an application gives you the opportunity to think about your interests, skills and why you want to take your chosen course.

When writing your personal statement, make sure that you include any experience or interests that could be relevant to your studies. You may have volunteered or undertaken work experience with an environmental, energy saving or building-related charity or local group for a school project, a Duke of Edinburgh Award or out of your own personal interest.

If you are going for an interview at a prospective university, it pays to give some thought to the subject and the reasons why you want to study it.
The Chartered Institution of Building Services Engineers (CIBSE) is the professional body for building services engineers and accredits some degree courses. By following a CIBSE accredited course you may gain a head start in your career, and in working towards CIBSE membership and, ultimately, Chartered Engineer status. Incorporated and Chartered Engineer status are a demonstration of competence and are recognised by employers in the UK and overseas, and so can enable you to make progress in your career.

An accredited BEng/BEng (Hons) university degree is the benchmark qualification if you want to gain Incorporated Engineer status. CIBSE provides recognition at associate membership level (IEng ACIBSE) or member level (IEng MCIBSE).

The degree may meet part of the academic requirement to become a Chartered Engineer, so if you follow this route, you’ll need to undertake further study to Masters level. You should be able to do this on a part-time basis while at work, through an employer’s graduate training scheme.

An accredited MEng/MEng (Hons) degree meets the academic requirements to become a Chartered Engineer.

CIBSE’s website features a list of the courses that it accredits. The list can be found at: www.cibse.org/membership/accredited-courses/list-of-accredited-courses/accredited-for-ceng

CIBSE’s history dates back to this year, when the Institution of Heating and Ventilating Engineers was founded.

20,000
Members of the Chartered Institution of Building Services Engineers

94
Countries around the world where CIBSE members can be found

19
Knowledge sharing groups that CIBSE hosts for members or non-members. They include the Young Energy Performance Group

1897
CIBSE’s history dates back to this year, when the Institution of Heating and Ventilating Engineers was founded

Become a Building Services Engineer
WOMEN IN BUILDING SERVICES ENGINEERING (WIBSE)

CIBSE’s WiBSE network has been established to support and encourage women who are joining, working and progressing in the building services sector. Membership is free, and you don’t have to be a CIBSE member in order to join. The network is open to men as well as women.

CIBSE YOUNG ENGINEERS NETWORK (YEN)

The CIBSE Young Engineers Network (YEN) is a network of regional centres aimed at young professionals. There are no costs or strings attached to membership, and you don’t have to be a CIBSE member to join – although you can begin your CIBSE membership as a Student Affiliate. CIBSE YEN has its own LinkedIn networking group, while its regional centres organise a range of activities including technical tours and social events. CIBSE YEN has regional centres across the UK as well as overseas.

Check out: www.cibse.org/networks/young-engineers-network-(yen)

CHARTERED INSTITUTION OF BUILDING SERVICES ENGINEERS

The Chartered Institution of Building Services (CIBSE) is the professional body for building services engineers. CIBSE approves courses and work-based training programmes, providing routes to professional registration and membership. It is a global network, providing professional support to building services engineers, and sets the criteria for best practice in the profession.

Check out: www.cibse.org

WANT TO KNOW MORE?

Check out: www.cibse.org/networks/young-engineers-network-(yen)