

GOOD  
Day®

# MAKING AN IMPACT.



[Technician and graduate  
careers information](#)

Summit SKILLS

Building  
Services  
Engineering  
Bringing Buildings to Life

So, when was the last time you had a really Good Day? This week? Last week? Last month? Can't remember? You can find your ideal job within building services engineering, one that you actually enjoy... Imagine that!

In this booklet you'll find out about the wide range of options available to you and how you can have a Good Day, every day, in your new career.

Also, for information on the different industries within building services engineering see our separate booklet on career opportunities at skilled worker level.

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## 01 What is building services engineering?

Building services engineering is hugely important. It has a direct impact on everything we do.

Without it, buildings would be too cold in winter and too hot in summer. There'd be no electricity to power our lights and computers; running water would be unheard of; and nipping down to the local shop to grab something for dinner would be impossible as there would be no fridges or freezers – we'd have to buy fresh food every day and eat it in our cold, dark, toilet-less homes.

### Sounds bleak without it, doesn't it?

Not only is building services engineering vital to the way we live, as a career path it offers hundreds of exciting and challenging opportunities in these industries:

- air conditioning and refrigeration
- electrotechnical
- heating and ventilating
- plumbing

It is the job of people working in building services engineering to design, install and maintain the facilities that allow all of us to live and work in comfort and safety.

The sector needs a constant supply of highly skilled and professional people with an environmental conscience, willing to undertake the world-class training and qualifications that are on offer.

But it doesn't stop there: employers make a real commitment to their workforces and spend a lot of time and money on professional development and short courses to teach the skills needed to meet fresh challenges.

There are over 60,000 building services engineering businesses. Between them they employ over half a million people and have an annual turnover of £19.3 billion. They range from multi-million pound companies to small organisations and sole proprietors.

### The sector of the future

Building services engineering never stands still and right now it's taking the lead in environmentally-friendly technology. Climate change is affecting our everyday lives now and it's the people working in building services engineering that are tackling these challenges head-on. The sector is at the forefront of developing environmental technologies such as solar water heating, photovoltaics or micro-wind turbines.



“I love the fact that there's a new challenge every day – plus the opportunity to help the environment by implementing new energy-efficient technologies.”

Mary-Ann Wright  
Senior Engineer at FaberMaunsell





## 02 Building services engineering and the environment

Climate change is really having an effect on our everyday lives now. Most of us know that we can do little things to reduce our carbon emissions, like turning the thermostat down a couple of degrees or switching our lights off, which add up and make a positive impact.

But imagine how much of a difference all these small things could make if they were happening on a large scale in hospitals, schools, office blocks and supermarkets. Think of the difference that would make to our environmental impact on the planet.

That's where building services engineering comes in. The sector is designing and installing energy efficient heating, lighting, ventilation, plumbing, and refrigeration and air conditioning systems. In fact, engineers are already making real and significant differences to our environment, while ensuring we still have comfortable and safe buildings.

And it doesn't stop at reducing carbon emissions. Building services engineers are at the forefront of developing other environmental systems that harvest rainfall, or recycle water from wash hand basins and many other eco-friendly innovations.

So if you're up for the challenge, you could be at the front line of designing and managing the installation, maintenance and servicing of cutting-edge technology. You will be integrating these new technologies into systems we take for granted, and improving the environment in the process. Think of the difference you could make!

Here's just some of the technologies and systems you'd be involved with:

- Solar Water and Heating
- Photovoltaics for Microgeneration
- Combined Heat and Power
- Micro Wind Energy
- Ground Source Heat Pumps
- Biomass
- Micro Hydro Generation Systems
- Rainwater Harvesting
- Low Energy Lighting



“There's great emphasis on energy efficiency... it's fascinating to learn how design procedures can ensure that it's built into every project from the outset.”

Kieran Lacey  
Technician, Hotchkiss



## 03 Technician careers

Building services engineering technician is the collective term that is used to broadly describe a diverse range of jobs. There are various career routes you could follow under this banner, including:

- Design Engineer
- Computer Aided Design Technician
- Commissioning Engineer
- Service and Maintenance Engineer
- Estimator
- Quantity Surveyor
- Contract or Project Engineer
- Site Supervisor

This list is not exhaustive, and you will have plenty of opportunities to progress your career and develop into other roles. Take a look at page 10 to read more about all of the careers available.

Depending upon the actual job, you'll enjoy a lot of contact with clients, design teams and people such as architects and structural engineers. Good communication skills are a must. Building services technicians are also required to have a good awareness of safety legislation and risk assessment processes.

You'll find that every project is different, with its own problems and solutions. But all of them will present you with the ultimate challenge – to create the right solution for a building, to complete the project at the right time and at the right cost to the client.

By designing, selecting and installing equipment and systems you'll be bringing the visions of architects and building owners to life. As the project gets underway you'll check on progress; ensure everyone knows what's expected from them; and use your diplomacy, problem solving and people skills to keep the job on budget and on schedule.

The challenges will be vast and you'll need to be a special kind of person in order to meet them. Right now the industry wants male and female technicians from all backgrounds who've got what it takes to be a technician in building services engineering.

## Technician qualifications

Here's an overview of what qualifications or training you should undertake, depending on what stage you are at in your career. Then underneath there's some more detail on the various qualification options.

Entry point	Typical route
New entrant	Throughout the UK you can do a National Certificate and progress to a Higher National Certificate. If you study in England you can also progress to a Foundation Degree. In England and Wales you can do an Advanced Apprenticeship.
Mature new entrant, career changer or career progression	Across the UK you can undertake further education to gain a National Certificate, Higher National Certificate or, if you study in England, a Foundation Degree. In England and Wales you can also do an NVQ Level 3 and 4.
Experienced worker	People already working in the sector should look at gaining a formal qualification if they don't have one already; gaining a City & Guilds Licentiateship award or Higher Professional Diploma, or registering via a professional body as an Engineering Technician.

## Qualifications

Throughout the UK there's a variety of qualification options:

- National Certificate in Building Services Engineering
- Higher National Certificate in Building Services Engineering
- Foundation Degree in Building Services Engineering

In England and Wales, you can also do:

- EAL Building Services Engineering Technology & Project Management NVQ Level 3
- EAL Building Services Engineering Technology & Project Management NVQ Level 4
- Advanced Apprenticeship in Building Services Engineering

## Advanced Apprenticeship training: England and Wales

As part of an advanced apprenticeship in Building Services Engineering you will study:

NVQ:	EAL Building Services Engineering Technology & Project Management NVQ Level 3
Technical Certificate:	National Certificate in Building Services Engineering
Other core components:	Key Skills – Communication Key Skills – Application of Number Key Skills – Information Technology

## Registering as an Engineering Technician

Widely recognised in the UK and abroad, if you gain 'Engineering Technician' status it provides recognition of your skills, experience and understanding of engineering principles, and allows you to use 'EngTech' after your name. To register as an Engineering Technician, you must be a member of one of the institutions or societies that the Engineering Council (UK) has licensed.

Being a registered Engineering Technician shows that you have skills and competence that employers value, and also shows how well you measure up with standards across the world. For more information on this process visit the Engineering Council website – see the 'find out more' section on page 11.



## 04 Graduate careers

A degree in building services engineering or a related discipline will equip you with a good knowledge base for a range of challenging and rewarding jobs in the sector.

Building services engineers need more than a degree to succeed. Engineers must understand and take account of what happens on site; they need up-to-date knowledge of regulations, technologies and new products; they must be able to communicate with a wide range of people, including clients and the project team; and they need to be able to solve problems, often within tight timescales and budgets.

As a professional building services engineer, you'll enjoy a variety of work environments and activities. One day you might be on a site visit, checking that a project is progressing as it should; the next day you could be working on your computer, designing building services systems, or making a presentation to help win a major contract. You might even get the opportunity to work on a high-profile building in the UK or abroad.

Working as a graduate building services engineer means the world is your oyster. Whether it's UK-based or abroad, building services engineers work for specialist consultancy practices of all sizes; for multi-disciplinary construction companies; as direct employees of large clients such as councils, the NHS and major housebuilders and also as self-employed consultants.

Here's an overview of the kind of career path you could follow. On page 10 you can get a more detailed idea of what these involve:

- Design Engineer
- Contract or Project Manager
- Consulting Engineer
- Estimator/Quantity Surveyor
- Educator and Trainer
- Business Manager or Proprietor



“The sector offers tremendous opportunities to progress and fulfil your potential. It’s also very rewarding – both personally and financially.”

William McLean  
Project Engineer at NG Bailey



## Graduate training: recognised degrees

A degree in building services engineering is the most direct route into a graduate level career.

There are a number of ways to get onto a degree:

- after completing A' levels or 'Highers'
- after an Advanced Diploma like the Diploma in Engineering or the Diploma in Construction and the Built Environment; or the Welsh Baccalaureate
- as a top-up from a Foundation Degree;
- depending upon the university's entry requirements, after gaining experience and qualifications in a trade or technician role.

An honours degree is a full-time course that normally takes three years to complete. Some universities offer a combined honours and masters programme, which you can usually complete in four years of full-time study. Part-time study options are also available, and you may be lucky enough to find an employer who is willing to support you to study while you are working for them.

General engineering or mechanical engineering degrees can also lead to a career in building services engineering.

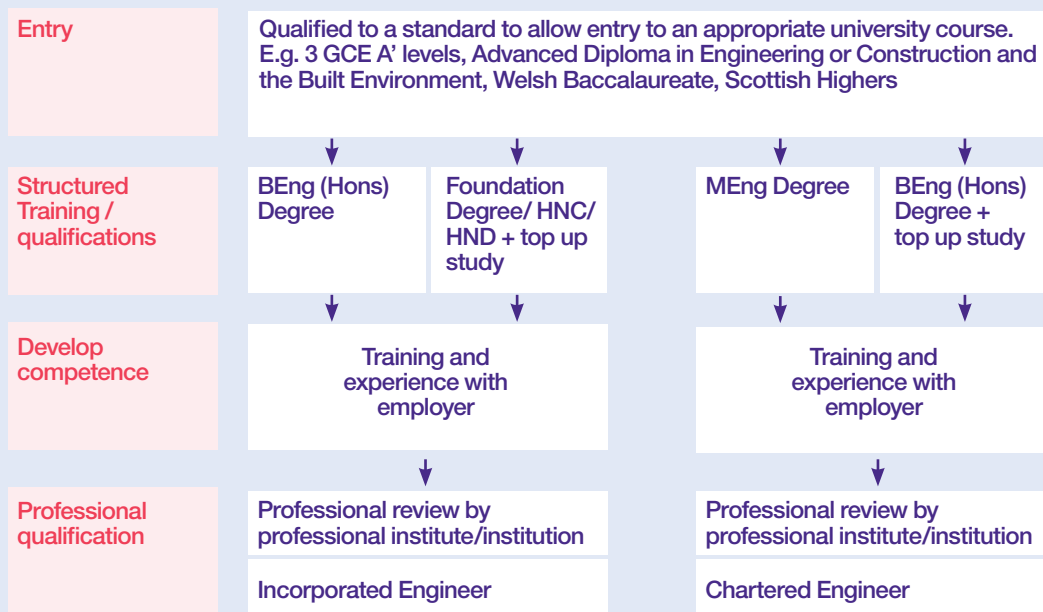
## Prove your knowledge and skills as a Registered Engineer

If you join a professional institution (such as the ones listed at the back of this book), you can then be assessed and go on to become a registered engineer. This is where you are formally recognised by the Engineering Council as an Engineering Technician, Incorporated Engineer or Chartered Engineer, to prove that you have knowledge, skills and competence that are on a level with standards across the world. But to do this, you will need the right qualifications.

It's important to check that any qualifications you plan to study are recognised by the institutions you might want to join. Universities often promote courses as leading to professional recognition, but if there is a particular institution you are interested in joining, it's worth asking them for an up-to-date list of the courses they recognise. The Engineering Council website has a facility to search for recognised courses.

It's important to keep a record of your work experience, as you will need to show evidence of your practical achievements and the responsibilities you have held. You might also have to attend an interview and, if you are going for Chartered status, undertake some further learning.

### Main routes to Engineering Council recognition:



## If you already have experience of working in the sector...

It's sometimes possible to gain recognition as a professional engineer without the qualifications listed above. You'll have to prove that you have the knowledge and skills as set out by the Engineering Council and can meet the institution's specific requirements in order to demonstrate that competence. This is an alternative route into the profession that enables experienced workers to progress from trade to professional careers.

**Computer Aided Design (CAD) Technician**

Modern building services engineering systems need to be accurately drawn on architectural drawings to show how they should be installed, according to the design specification. The CAD designer will ensure that drawings are accurately produced and kept up to date, should any changes be made on site.

**Commissioning Engineer**

Commissioning engineers ensure that the engineering service systems within a building meet the original design specification and all the heating, ventilation, air conditioning and refrigeration systems fulfil their operation criteria.

**Service and Maintenance Engineer**

Skilled service and maintenance engineers are required to programme and carry out regular maintenance and repairs on all equipment within the heating, ventilation, air conditioning and refrigeration industry.

**Contract or Project Engineer**

A building services or project engineer is responsible for procuring materials and labour, contract management, managing the project team, assisting with design issues and reporting progress, through to the project's final accounts. Contract engineers are usually responsible for a number of contracts and the project engineers who are running those contracts.

**Site Supervisor**

A building services engineering supervisor manages the day-to-day running of projects. Usually progressing from a trade background, they are responsible for specialist subcontractors, resource planning, health and safety, quality and signing off parts of the project as they are completed.

**Design Engineer**

A building services engineering design engineer will design a system to ensure it meets the requirements of the building's inhabitants. This could be anything from designing an air conditioning system in a modern office complex or heating for a hospital, to a ductwork ventilation system in a factory or lighting in a school.

**Contract or Project Manager**

The installation of systems must be managed to ensure that its installation fits with the building's construction. Planning and managing the project will mean that labour, materials and equipment is available as needed and work is carried out accurately and efficiently to the design requirements.

**Consulting Engineer**

Each industry will have a range of specialist engineers. These consulting engineers provide commercial services and advice to other members of the building team. You could provide other members of a project team with specialist advice about all of the building services engineering systems.

**Estimator/Quantity Surveyor**

Before installing a building services engineering project, the amount of materials that will be used (pipe, cable, equipment, machinery etc) needs to be accurately calculated and costed to ensure that the installation is carried out cost-effectively. Complex projects may need the continued involvement of a Quantity Surveyor once work is in progress on site.

**Educator and Trainer**

Education and training is vital within the sector, whether it's someone starting out in their career or a qualified person updating their skills and knowledge, keeping up to date with many advances in technology. Educators and trainers deliver the training required. Universities, further education colleges and private training providers all need teaching staff with both qualifications and experience in building services engineering. It may be possible to combine part time teaching with one of the other roles described here, or to work full time developing courses and teaching students.

**Business Manager or Proprietor**

The building services engineering sector has many opportunities for individuals to develop their skills, career and opportunities further. After gaining valuable experience it may be possible to progress to a managerial role within an existing business or to start your own business.

To find out more about how you can have a Good Day, every day, in your new career, visit our website at [www.goodday.org.uk](http://www.goodday.org.uk) or telephone the careers helpline on 08000 688 336.

## Find out more from other organisations:

Further information about how you can become a registered engineer (Engineering Technician, Incorporated Engineer and Chartered Engineer) is available from the Engineering Council or the individual professional bodies listed below.

Engineering Council (ECUK)

Web: [www.engc.org.uk](http://www.engc.org.uk) Tel: 020 3206 0500

Professional institutions can also give you details on membership requirements, the qualifications they recognise and the technician and professional levels careers available:

Chartered Institution of Building Services Engineers  
Web: [www.cibse.org](http://www.cibse.org)  
Email: [enquiries@cibse.org](mailto:enquiries@cibse.org)  
Tel: 020 8675 5211

Chartered Institute of Plumbing and Heating Engineering  
Web: [www.ciphe.org.uk](http://www.ciphe.org.uk)  
Email: [info@ciphe.org.uk](mailto:info@ciphe.org.uk)  
Tel: 01708 472791

Energy Institute  
Web: [www.energyinst.org.uk](http://www.energyinst.org.uk)  
Email: [info@energyinst.org.uk](mailto:info@energyinst.org.uk)  
Tel: 020 7467 7100

Institution of Engineering and Technology (successor to the IEE and IIE)  
Web: [www.theiet.org](http://www.theiet.org)  
Email: [postmaster@iet.org](mailto:postmaster@iet.org)  
Tel: 01438 313311

Institution of Gas Engineers and Managers  
Web: [www.igem.org.uk](http://www.igem.org.uk)  
Email: [general@igem.org.uk](mailto:general@igem.org.uk)  
Tel: 01509 282728

Institution of Lighting Engineers  
Web: [www.ile.co.uk](http://www.ile.co.uk)  
Email: [info@ile.org.uk](mailto:info@ile.org.uk)  
Tel: 01788 576492

Institute of Refrigeration  
Web: [www.ior.org.uk](http://www.ior.org.uk)  
Email: [ior@ior.org.uk](mailto:ior@ior.org.uk)  
Tel: 020 8647 7033

Institution of Mechanical Engineers  
Web: [www.imeche.org](http://www.imeche.org)  
Email: [membership@imeche.org](mailto:membership@imeche.org)  
Tel: 0845 226 9191

Society of Environmental Engineers  
Web: [www.environmental.org.uk](http://www.environmental.org.uk)  
Email: [office@environmental.org.uk](mailto:office@environmental.org.uk)  
Tel: 01763 271209

Society of Light and Lighting  
Web: [www.cibse.org](http://www.cibse.org)  
Email: [sl@cibse.org](mailto:sl@cibse.org)  
Tel: 020 8675 5211



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