

# The Institute Of Brewing and Distilling

In conjunction with

**The British Beer and Pub Association**

## **A GUIDE TO TECHNICAL CAREERS IN THE BREWING INDUSTRY**

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## **BACKGROUND INFORMATION**

In the UK about 25 million pints of ales, lagers, stouts and other drinks are produced per day across the country and consumed in public houses, clubs, hotels and private homes.

The brewing process is a bio-chemical one, in which malted barley and other cereals are mixed with water; the extract boiled with hops, cooled and fermented with yeast. During the fermentation process sugars form alcohol and carbon dioxide. Finings may be added to sediment the yeast solids and to leave the beer in a clear, sparkling condition as happens with draught beer. The beer can also be centrifuged to remove the yeast. It is transferred to traditional casks where the fermentation continues, or processed in the Brewery for bottling, canning or putting into metal kegs.

While draught beer is much favoured by real ale drinkers it has a relatively short life and needs close attention in the pub cellar. In contrast beer packaged into bottles, cans and kegs is very stable and can be stored for some time with no ill effects.

To brew on the scale required and to maintain the consistent high quality demanded in the thousands of pubs, bars, clubs and retail outlets, the talents of skilled brewers and engineers are essential. Britain has some of the world's most discerning drinkers and to them the pint must be exactly right.

It is worth remembering that pubs, restaurants and hotel complexes are at the forefront of the leisure industry, providing entertainment for millions of Britons, as well as earning large sums from overseas visitors.

Graduates joining the industry will be placed in the challenging position of brewing beer for this market. If successful, they will be able to derive satisfaction from managing people and controlling a complex technological process.

There are also many more general career opportunities in the brewing business, where technical experience can be of real value. These will be found in distribution, sales and marketing and IT.

Brewing is practised around the world and it is worth remembering that similar career opportunities can frequently be found for those prepared to work overseas. Similarly the distilling industry offers careers in a parallel discipline.

## **THE ROLE OF THE TECHNICAL BREWER**

### **Work Profile**

Technical Brewers are in charge of the entire beer production process, which in many large breweries is highly automated. Their role includes responsibility for the raw materials from which the beer is made, the condition and smooth running of plant and equipment, and for managing the operators and technicians. One of the major tasks is to make sure that the taste, strength and appearance of each batch of beer remains consistent, despite small, unavoidable variations in natural ingredients. This involves monitoring the production process at regular intervals, testing samples and making adjustments where necessary.

In large breweries, technical brewers are likely to specialise at any one time in a single stage of the brewing process, such as wort production (the sweet sugary extract from the malt to which hops will be added), fermentation, filtration, packaging or quality assurance. In the smaller brewery, the brewer will probably be responsible for several, if not all aspects of the production process.

Breweries often introduce new, seasonal or celebration beers which gives the brewers an opportunity to use their creative skills, designing, testing and producing new and original products.

Brewing is constantly changing as new scientific and technological advances are made. For instance, there is an increasing degree of automatic control and computerisation of the process.

The role of the brewer remains a hands-on occupation, less so than some years ago, but brewers are still expected to get their protective clothes on, and personally oversee the production, in what may be a hot and noisy, cold or wet environment.

### **Skills and Interests**

Brewers are practical people with a strong scientific bent, who enjoy working at the centre of a manufacturing process. They have to be quick thinking and able to apply their scientific and technical knowledge to solving problems as they arise.

They need a wide knowledge of chemistry, biochemistry, biology of raw materials, and microbiology. An aptitude for the chemical, mechanical and electrical engineering is required for dealing with plant and equipment, adjusting it when necessary and identifying problems that affect the brewing process.

Brewing involves the management of production personnel so brewers must have the inter-personal skills to communicate and to motivate the people working for them.

Information technology skills are becoming increasingly important and brewers need sound business and commercial sense. Beer sales is a very competitive business, prices must be kept low and quality consistently high. Brewers play a key role in achieving these goals.

### **ENTRY REQUIREMENTS**

The majority of people who start as a trainee brewer have a degree, such as biological science, microbiology, chemistry or chemical engineering.

The minimum qualifications for degree courses are five GCSEs/S grades (A-C/1/3) and two A levels/three H grades, or equivalent qualifications such as NVQs/SVQs, GNVQs/GSVQs, national diplomas or an Access course.

For instance Heriot-Watt University offers a BSc (Hons) in Brewing and Distilling. Modules include biology, biochemistry, chemistry and microbiology.

Students also study a production management business subject to give them a sound idea of the commercial aspects of brewing. In the third year, as well as scientific subjects, the course covers the science and technology of brewing, distilling and related fermentation industries, with practical training in the department's own

brewery, maltings and distillery. In the fourth year there is a choice of modules plus a compulsory ten-week research project. Students spend at least eight weeks working in a brewery, maltings or distillery to gain experience of the industries.

The University has also introduced a MEng in Chemical Engineering with a Diploma in Industrial training (Brewing and Distilling Technology). This takes six years although as in other courses suitably qualified students may be able to start in year two or three.

The University also offers a postgraduate MSc and diploma courses in brewing and distilling. For the diploma course and MSc, applicants need a degree in an appropriate subject, preferably at honours level. They have also introduced an MBA in Brewing and Distilling, available by distance learning, aimed at managers in the industry.

The Universities of Sunderland, Nottingham and others also all offer various courses and modules, which can help with employment and development within the industry.

### **Recruitment**

Recruitment into the profession is mainly of graduates from a wide range of pure and applied-scientifically based disciplines, including those from the International Centre for Brewing and Distilling at Heriot Watt University at Edinburgh. Particularly in demand are those who can demonstrate potential strength of leadership, initiative and the ability to manage people and develop general business management skills.

Some recruits will go directly into a programme of training and job experience to enable them to obtain the necessary qualifications for a technical management career. Others will go straight into technical or scientific work positions.

### **Training and Qualifications**

Entrants to the industry are expected to continue their education and training and pass one or more of the professional examinations set by the Institute of Brewing and Distilling.

The **Diploma** Examination in Brewing, Distilling or Packaging covers the underlying scientific and engineering knowledge required, while the **Master Brewer** requires experience and more practical knowledge of raw materials, brewing or distilling, packaging, dispense, engineering and quality assurance. Candidates for the Master must first qualify for the Diploma.

The IBD also offers a General Certificate in Brewing, Distilling or Packaging.

These examinations, which are recognised by the City and Guilds system and are equivalent to NVQ Level 3 for the General Certificate and Level 4 for the Diploma are available to people who have not been through tertiary education or may already work in breweries or distilleries at team, technician or operator level. These exams are an excellent springboard to Diploma and Master Brewer level examinations.

## **ENGINEERING IN THE BREWING INDUSTRY**

### **General**

Brewing is a capital intensive, high technology industry that offers a wide range of opportunities for mechanical, electrical, production and chemical engineering graduates. Engineers may be involved in the development, operation or maintenance of modern processing plants and there are opportunities for career development into senior engineering and other management posts.

### **Engineering Management**

There are opportunities to manage the engineering maintenance of production plants, which covers the brewing and beer processing plants, as well as high-speed packaging lines for kegs, bottles and cans. This involves the preparation and administration of the maintenance budgets and the training and motivation of a team of specialist craftsmen. Maintenance Engineers work closely with plant managers to plan and execute maintenance so that the production schedules are achieved. The engineering department also has the responsibility for the economic provision of all site engineering services, including steam, water and electricity and shares responsibility with production management teams for their efficient use.

In many companies, the engineering department has responsibility for capital projects. This involves the preparation of budgets and specifications and the management and co-ordination of the contractors involved in the project.

### **Production Management**

Suitable engineers may be able to start in, or transfer to production. The first opportunity will often occur in the highly mechanised packaging departments and progress will depend on the demonstration of ability in general and technical management skills.

### **Specialist Engineers**

Some of the larger brewing companies offer specialist opportunities in central engineering departments. The skills required in this area are:

- Project management
- Process control
- Energy management
- Packaging
- Civil engineering
- Electronics

Work in engineering departments can vary and may involve design and implementation of multi-million pounds projects, either in house or with contractors.

### **Research and Development**

There are opportunities for all types of brewers and engineers in the research and development departments of the major brewing companies, although these are becoming more restricted.

Bodies such as The Brewing Research International (BRi) and Heriot Watt University maintain active research and consultancy services.

### **Other opportunities.**

There are all sorts of other career opportunities in the Industry, for instance in cellar services, human resources, finance, sales and marketing, IT and logistics.

Cellar service technicians can now gain a level 3 NVQ in drinks dispensing systems.

Distribution and warehousing of the production is a major employer of people in the Industry and again offers training and careers in these aspects of the business.

### **Post Graduate Qualification**

Post-graduate qualifications, as already mentioned, for instance an MSc in Brewing and Distilling are available from the ICBD at Heriot-Watt University, Edinburgh. Several universities provide post-graduate degrees in Biochemical Engineering. Once professional qualifications have been obtained, many managers in the Brewing Industry study for other business qualifications such as an MBA.

The Institute supports ongoing training and education within the Industry, with a continuous programme of lectures, seminars and conferences and publications designed to keep everyone up to date.

### **The Institute of Brewing and Distilling.**

The IBD is an independent, international educational charity. Its main objective is to promote educational excellence in education and training and professional standards in the science and technology of brewing, fermentation and distilling.

It is the examining body for the Industry and has classes of individual membership. Details of the examinations were listed in the section on training and qualifications. The IBD and its sections provide a variety of training courses to help candidates prepare for its examinations.

For the Diploma, there are intensive modules devoted to the application of engineering and sciences to the brewing and distilling processes, such as malting, wort production, fermentation, and post fermentation. Graduates, depending on their first degree may need to supplement their private study by attending one or all of these modules in preparation for the Diploma

Non-graduates may have to attend evening classes or otherwise to ensure they have sufficient knowledge of the basic science before they can benefit from the specialist modules in preparation for the exam. The IBD can provide details of local colleges.

After passing the Diploma, entrants will need a period of varied job experience, supplemented by private study and possible further IBD courses before they are ready to take the Master Brewer exam.

Courses are arranged to support entrants for the Master Brewer exam, which consists of five modules, along with recommended reading and past papers.

Similarly, entrants for the General Certificates in Brewing, Packaging, or Distilling have available a programme of study, workbooks and courses.

Various awards are available to those achieving distinction in the examinations.

### **Publications**

The Journal of the Institute of Brewing is the world's foremost journal for original research in brewing, distilling and fermentation and is published every two months.

The Brewer and Distiller International is a magazine style journal, published monthly, and designed to keep all members up to date with IBD and Industry affairs, although it also contains scientific and technical articles that are valued by the technical staff of the Industry.

### **Sections**

The IBD is organised into geographical sections, to enable members to meet to hear invite speakers and to provide opportunities for discussion at a local level. Some of the larger meetings are however, attended from members from all over the world.

The sections of the IBD are:

In the UK: Southern, Midland, Great Northern, Scottish Sections  
In Ireland: Irish Section covering the North and the Republic  
Overseas: International Section, Africa Section, Asia- Pacific Section

The IBD and its sections hold regular meetings and workshops to enable all members to keep abreast of the latest developments in Industry matters and to provide a forum for social activities and the interchange of ideas.

### **Further Information**

For more information visit the IBD web site at [www.ibd.org.uk](http://www.ibd.org.uk)

Queries can also directed to:

The Institute of Brewing and Distilling,  
33 Clarges St,  
London.  
W1J 7EE.

Tel: +44(0) 20 7499 8144  
Fax: +44(0) 20 7499 1156  
e-mail [enquiries@ibd.org.uk](mailto:enquiries@ibd.org.uk)

Details of Brewing Companies and other Industry bodies can be obtained from the IBD or The British Beer and Pub Association, which is the principal UK trade association for beer producers and pub retailers and represents the interests of the brewing and pub sector to government in the UK and Europe.

The British Beer and Pub Association,

Market Towers,  
Nine Elms Lane,  
London SW8 5NQ

Tel: +44(0) 20 7627 9191

E-mail [enquires@beerandpub.com](mailto:enquires@beerandpub.com)

Other bodies:

Heriot-Watt University,  
Riccarton,  
Edinburgh,  
EH14 4AS

Tel: +44(0) 131 451 3184

Web site: [www.bio.hw.ac.uk](http://www.bio.hw.ac.uk)