

Application Guidance for Chartered Engineer Registration via the Technical Report Route

The work of a Chartered Engineer (CEng) is characterised by their ability to develop appropriate solutions to engineering problems, using new or existing technologies, through innovation, creativity and change. They might develop and apply new technologies, promote advanced designs and design methods, introduce new and more efficient production techniques, marketing and construction concepts, pioneer new engineering services and management methods. Chartered Engineers are engaged in technical and commercial leadership and possess effective interpersonal skills. They demonstrate a personal and professional commitment to society, to their profession, and to the environment.

To become a Chartered Engineer you need:

- to be able to demonstrate competence within the field of refrigeration
- to submit an Engineering Practice Report, work experience listing, organisation chart and development action plan
- to participate in a Stage One Competence Review Interview
- to submit a Technical Report
- to participate in a Technical Report and a Professional Review Interview

Applying for CEng Registration via the Technical Report Route

Candidates who do not possess the formal academic qualifications for CEng Registration*, but who have the appropriate professional experience and technical expertise may be eligible for Registration at this level. The application process is in two stages. At **Stage One** of the application process candidates will submit written documentation along with an application form and then participate in an initial competence-based review interview.

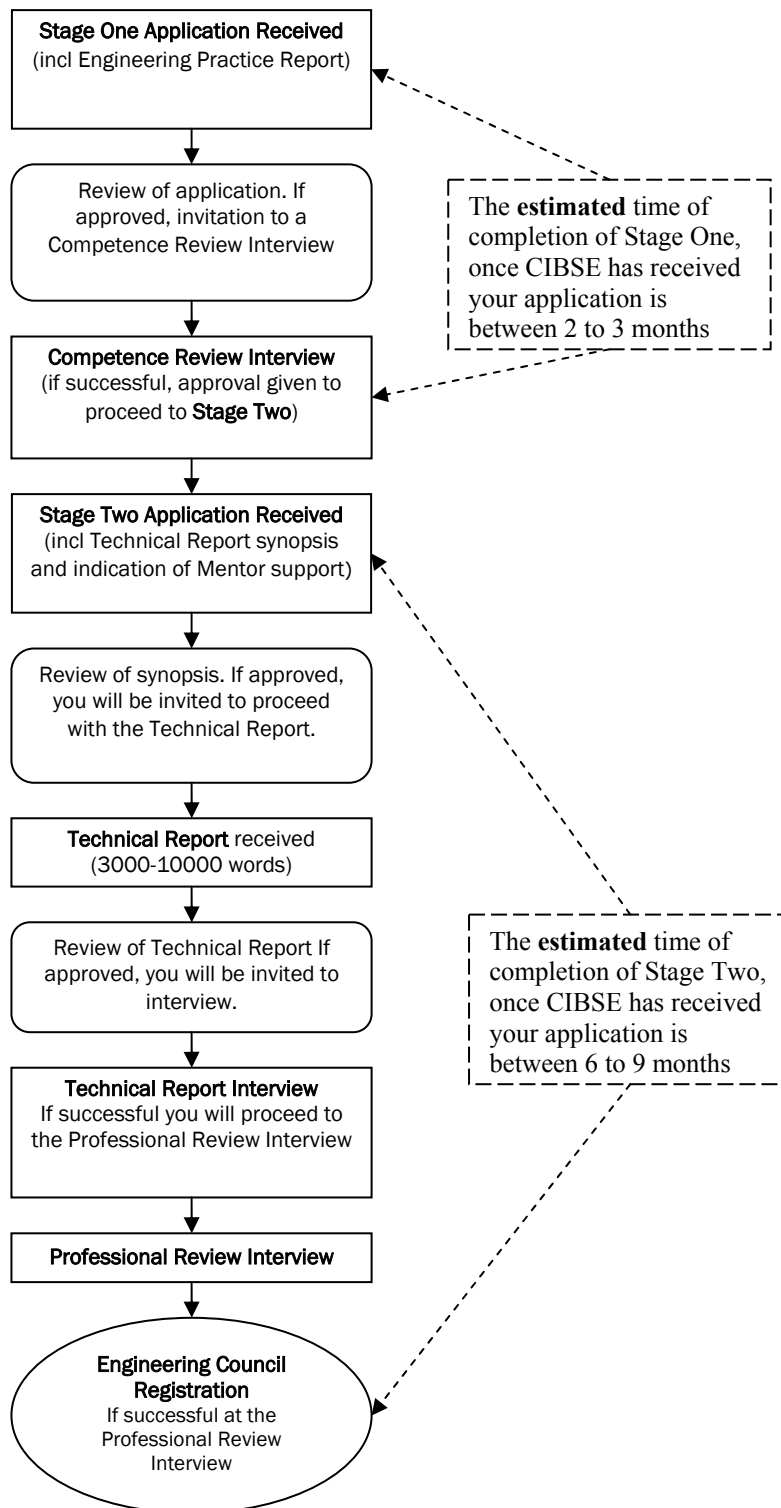
Following approval to proceed to **Stage Two** candidates will submit a Technical Report. The scope of the technical report will be determined case by case, depending on professional experience and any qualifications obtained. The content of the Technical Report will be assessed at a Technical Report interview, after which the candidate's professional competence is further evaluated at a Professional Review Interview.

The stages set out in this fact sheet are summarised in the flowchart on the next page.

*The academic standard for CEng registration is any EC^{UK} listed BEng (Hons) degree plus a period of further learning to Master's level or an accredited MEng degree or an accredited BEng (Hons) degree started prior to September 1999. For full details on EC^{UK} listed accredited courses see www.engc.org.uk.

Technical Report Route Flowchart

The flowchart below shows the main stages of the Technical Report Route to Engineering Council registration. Please note that progression is subject to the successful completion of each stage of the process.



Stage One Application Process

Stage One Application

The application is in five parts:

- Application Form
- Work experience listing
- Engineering Practice Report
- Organisation chart
- Development Action Plan

Application Form

It is important that **contact details** provided are accurate and up to date. Should any of them change during the course of your application being processed you need to contact the IOR immediately to ensure that we are able to notify you of progress.

Your application must be signed and supported by a **sponsor** who is responsible for ensuring that they are satisfied that the information in your application is true and that you are applying for the appropriate level of registration. They must endorse copies of qualifications, having seen the originals. Please ensure that they read this guide and the Competence Criteria for Chartered Engineer.

Your sponsor should have known you for a minimum period of one year and will normally be a Fellow or Member of IOR or CEng registered with an engineering institution.

Information of the qualifications you have obtained must be supported by enclosing **copies of the certificates, which have been signed by your sponsor**. *For overseas applicants where the certificates are in languages other than English, an approved English translation must also be provided.*

Remember to sign your application form before submitting it to IOR.

Checks:

- ✓ Has your sponsor signed both your application form and copies of qualification certificates?
- ✓ Have you signed the form?
- ✓ Have you included card payment details or enclosed a cheque covering the interview fee?

Work Experience Listing

This document should outline previous **roles and responsibilities** in chronological order. Should you wish, your existing CV can be enclosed for this purpose. *References to the Competence Criteria should **not** be included in this section.*

Engineering Practice Report

The Engineering Council (UK) has established competence criteria for Chartered Engineer Registration. You should demonstrate your competence through your Engineering Practice Report by showing you can:

- Demonstrate analytical and problem-solving skills
- Evaluate evidence, arguments and assumptions
- Reach sound judgements
- Communicate effectively

Your Engineering Practice Report (EPR) should clearly demonstrate how you have **achieved competence** at a **level of responsibility** suitable for CEng Registration.

The EC^{UK} Threshold Standards of Competence and Commitment are divided into five sub-sections. They are:

- A. Use a combination of general and specialist engineering knowledge and understanding to optimise the application of existing and emerging technology.
- B. Apply appropriate theoretical and practical methods to the analysis and solution of engineering problems.
- C. Provide technical and commercial leadership.
- D. Demonstrate effective interpersonal skills.
- E. Demonstrate a personal commitment to professional standards, recognising one's obligations to society, the profession and the environment.

Each of these sections contains individual objectives with a range statement and to assist you we have included generic examples (see CEng competence fact sheet).

Writing your Report

- **Review your career and experience to date.**

The interviewers will be interested in what **you** have done, your role and responsibilities in a particular career episode and what you know about the different aspects related to it.

Note for researchers and lecturers:

Where your employment profile makes it difficult to provide evidence of first hand involvement in some aspects of the Competence Criteria, you are encouraged to show understanding and awareness of these issues through reading of journals and trade press, engagement with student projects or through simulations or business games. As an example, objectives listed under management could be contextualised to the supervision and management of student projects and timetabling, student selection and recruitment activities and involvement in quality theory.

- **Compile your report, making reference to all 16 competence criteria listed.**

Within each of the sections A – E (see above) you need to be **fully competent** in 60-70% of the competence criteria, and show your awareness and understanding of the remainder.

Begin with a short **introduction** to give a general picture, in a few sentences, of the type of work and professional development you have had to date.

The report should be approximately **4,000 words**.

Check:

- ✓ **Have you referred to all 16 competence criteria?**

Organisation Chart

Your organisation chart should clearly indicate **your position within your company**. If you are self-employed and do not have an organisation chart, please provide a brief note outlining your level of responsibility and leadership in career episodes undertaken. You may also enclose a previous organisation chart as long as this is clearly indicated.

Check:

- ✓ **Is your position in the organisation clearly indicated in the chart?**

Development Action Plan

This is a statement of how you intend to continue with your personal and professional development, as it is a requirement that all engineers show commitment to keeping up to date with developments and with maintaining their skills and expertise. You should identify your **short, medium and long term goals** and indicate how you propose to meet them. The document will be approximately one page and should **not** include past CPD records.

Check:

- ✓ Does your Development Action Plan identify future goals and not past achievements?
- ✓ Have you addressed short, medium and long term goals?

Checklist - What to send?

- Application form (signed by your sponsor)
- Qualification certificate(s) (signed by your sponsor)
- Work Experience Listing
- Engineering Practice Report
- Development Action Plan
- CD Rom of your complete submission
- £70 Application Fee, non-returnable, payable to IOR
- £60 Stage One Assessment Fee, payable to IOR

What happens after you have submitted your application to IOR?

The IOR will, on receipt, check that your application is complete and will send you an acknowledgement. Your application will then be sent to CIBSE. CIBSE will process your Stage One application and forward it a Registered CIBSE Interviewers. If your application is satisfactory you will be invited to the Stage One Competence Review Interview.

Stage One Competence Review Interview

In order to initially assess your competence at CEng level and proceed to Stage Two of the application process, you will be required to participate in a Competence Review Interview which will be based on your written submission.

How to prepare for your Stage One Interview

Prepare a **10 minute** presentation on a career episode or episodes from your Engineering Practice Report where you have taken a leading role. For example, explain how you:

- established opportunities and limitations
- researched, costed and selected components to meet the client's needs
- found solutions to technical and other problems
- coped with unforeseen complications

This must show how your **personal contribution** helped to achieve a successful outcome.

You may bring to the interview visual aids which are relevant to your presentation: *for example*, photographs and technical drawings. Should you wish to do a PowerPoint presentation, we recommend that you bring your own laptop computer for this purpose.

Extend and develop material presented in your *Engineering Practice Report*, but do not simply repeat it. Your interviewers will already be familiar with what is in your *Report*.

Read relevant trade magazines, journals and on-line materials to ensure you are up to date with recent issues and developments within the profession. Ensure that you are familiar with relevant Professional Codes of Conduct.

Look again at the *Chartered Engineer Competence Criteria*, as these are the criteria your interviewers will be using when assessing your competence at the interview.

As well as discussing your areas of special expertise, the interviewers will expect you to show some awareness of areas of RAC engineering where you have not had direct experience.

The Decision

Following the recommendations of your interviewer(s) you will be notified in writing of the outcome of your Competence Review Interview. If you are successful you will proceed to Stage Two of the Application Process.

Stage Two Application Process

Stage Two Application

Once Stage One of your application for CEng Registration has been assessed and approved, you will be invited to continue to Stage Two, which involve submitting a **Technical Report**. The Technical Report is separate from, and in addition to, the Engineering Practice.

With confirmation of approval to proceed to Stage Two, CIBSE will send you an application form on which you will be asked to provide contact details of a **Mentor** and to enclose a **Synopsis** of your Technical Report.

The Technical Report

The purpose of the Technical Report is to show that you have gained the same level of engineering knowledge and understanding of engineering fundamentals as someone who has the exemplifying qualifications.

For Registration at CEng level you are required to demonstrate that you have reached a level of knowledge and understanding equivalent to MEng (Master of Engineering)

Your Technical Report should be a critical exposition of some aspect of engineering. You must define a technical problems involved and show how these have been solved through **the application of engineering principles**.

Normally, your report will be based on

- describing a project you have been involved with, **or**
- an investigation or research project on some aspect of engineering you have undertaken.

Remember that **the purpose of the report is to show that your acquired knowledge fully compensates for any lack of formal academic qualifications**. In the Technical Report you are **not** asked to demonstrate your professional competence, for example your management skills and experience. These will have been covered in your Engineering Practice Report.

Mentor Support

In planning and preparing your Synopsis and Technical Report, it is strongly recommended that you work with a Mentor. Your mentor should hold CEng registration with the ECUK, and they could be a colleague at work, a teacher or trainer who is a knowledgeable and experienced building services engineer. Most importantly, it should be someone whom you know well and trust, and who is prepared to spend some time with you to:

- learn about the requirements for ECUK Registration
- advise you on how to approach your Technical Report
- support you as you work on it
- read and comment on your work
- endorse your synopsis and your Report

Synopsis

Before submitting the full report, you are required to submit a **synopsis** to CIBSE for approval. In it you must set out clearly how you intend to demonstrate your technical knowledge and understanding. You must identify the engineering principles involved rather than, for example, just describing a project on which you have been working.

The synopsis should be approximately 750 words and should indicate the planned structure and content of your Technical Report.

CIBSE will respond within **8 – 10 weeks**, after receipt, advising you to either

- proceed on the basis of this outline, **OR**
- amend and resubmit your synopsis

Please submit 3 copies in total of the application form and all supporting documentation together with the Technical Report Administration Fee (see page 10).

Writing your Technical Report

Content

A completed report will usually include a **written explanation, diagrams** and **calculations** which together show your understanding of fundamental engineering principles. Some or all of the following are likely to feature in it:

- **mathematical** aspects and calculations
- use of appropriate **software** to solve problems and reach engineering solutions
- application of **new and innovative technologies** relevant to the subjects of the project
- application of **analysis and modelling**
- evaluation and exploitation of **sustainable technologies** in providing building services
- establish **fitness for purpose** using reliable quantitative methods
- solution of **practical problems**
- **scientific knowledge** of properties of materials and components, and of physical processes
- selection and use of relevant **materials, equipment, tools processes or products**
- use and apply **information from technical knowledge resources**
- **application of engineering practices** and processes e.g. commissioning, design, maintenance, repair, refurbishment, adaptation
- analysis of the **economic, social and environmental contexts** of the work being described

The Technical Report must be the result of **your own original thoughts and work**. If you are including background materials such as printouts from using calculations software, or the products of others' work, these must be attributed and included as appendices and not in the main body of the Report.

Structure

The Report should be in English, framed with an **introduction, aim, discussion** and **evaluation**

It should be self contained, and not rely on other papers unless they are provided in appendices. It must have a logical structure.

The Report might be organised as follows:

TITLE

INTRODUCTION – what the Report is about

AIM – what is the aim of the project or investigation?

BACKGROUND - setting the scene. Where does the project lie in relation to the total picture?

TECHNICAL CONTENT AND DESCRIPTION – to draw out the fundamentals underlying the subject(s) you are writing about. Your Report must not simply show that you applied the relevant codes and standards, but must illustrate your understanding and application of fundamental engineering principles. Include mathematical analysis where it is appropriate.

CONCLUSIONS – in relation to the application of engineering principles, what were the successes and failures of the project or investigation?

EVALUATION AND REFLECTION – what lessons have been learned? What evaluation criteria have you used to assess the success or failure of the project/subject being investigated? Include your own critical comments, again linking them to fundamental engineering principles. What commercial and other risks were inherent in the project, and how were they tackled?

Supporting documents may include:

APPENDICES – information to support and provide background for the main report. Explain where they have come from and how they are relevant.

DIAGRAMS AND DRAWINGS – preferably these should be positioned close to the text they refer to.

REFERENCE SOURCES – a clear listing of the information sources you have used such as books, journals, Guides, websites etc in preparing the Report

NB: Where you use software, modeling techniques, standards, codes of practice or other predetermined methods of solution you must demonstrate your understanding of the basis for such methodology e.g. provide a first principles calculation, or reasoning, for that part of the work being completed.

Length

The Technical Report may be up to 10,000 words in length, and should be suitably illustrated. It must be based on your experience and demonstrate a **knowledge and understanding of fundamental engineering principles**. The expected length of the Technical Report will vary with the level of the highest qualification you hold. The following guidelines indicate the expected size of the Report, excluding appendices. However, they are approximations only.

If you already hold:	Approximate word count
Accredited BEng(Hons)/Cognate Degree	3000 - 5000
BSc/MSc/HND/HNC	5000 - 7000
No appropriate qualifications	7000 - 10 000

The Judging Criteria

CIBSE will assess your Technical Report against the following criteria:

1. Underpinning science and mathematics and associated building services engineering disciplines, will normally include
a. understanding of the scientific principles of your own specialisation and related disciplines
b. awareness of developing technologies related to your own specialism
c. knowledge and understanding of mathematical and computer models relevant to building services engineering and an appreciation of their limitations
d. understanding of concepts from a range of areas including some outside engineering, and the ability to apply them effectively in engineering projects
2. Engineering analysis, will normally include
a. ability to use fundamental knowledge to investigate new and emerging technologies
b. ability to apply mathematical and computer-based models for solving problems in engineering, and the ability to assess the limitations of particular cases
c. ability to extract data pertinent to an unfamiliar problem, and apply in its solutions using computer based engineering tools where appropriate

3. Design awareness, will normally include
a. knowledge and understanding of design processes and methodologies and the ability to apply and adapt them in unfamiliar situations
b. ability to generate an innovative solutions for products, systems, components or processes to fulfill new needs

Please submit 3 copies of your Technical Report, endorsed by your Mentor, together with the Technical Report Assessment Fee.

Stage Two Assessment Interviews

The Technical Report Interview

If CIBSE’s Assessors consider your Technical Report to be satisfactory, you will be invited to discuss it at a Technical Report Interview. The Interview fee will be payable at this stage.

At the interview, you will be invited to make a brief presentation on your Technical Report submission, after which the interviewers will ask questions about your report. You will be assessed using the **Technical Report Judging Criteria** during this interview.

If you are successful in the Technical Report Interview, a Professional Review will follow immediately. It will not normally be necessary to make a separate appointment.

Professional Review Interview

Prior to this interview you will be asked to submit an update to your Engineering Practice Report detailing further experience gained, since your Competence Assessment Interview. The interviewers will review this, along with your complete documentation submitted at **Stage One** and the file note of your Competence Assessment Interview. The Professional Review Interview will follow the same format as your previous Competence Assessment Interview; however you will be required to prepare a slighter longer presentation of **15-20 minutes**.

Both interviews will be held at CIBSE Head Office in Balham, South London. The interviews will be conducted by two senior members of CIBSE. (CIBSE may also appoint an IOR observer).

Should you need to cancel a scheduled interview, CIBSE may make an administrative charge.

The Decision

The interviewers will make their recommendation on your application to the **CIBSE Registration Panel**. The Panel will take into account your **written documentation** and the **interviewers’ recommendations**. You will receive CIBSE’s decision shortly after the Panel meeting. Successful applicants will automatically become Partner Members of CIBSE, at no extra charge.

Remember: The interviews are your opportunity to present your achievements as a professional engineer.

IOR and CIBSE want you to succeed!

Additional Details

Fees

The fees currently applicable to the Technical Report route are as follows:

	Amount	Payable
Technical Report Administration Fee	£90.00	with initial application
Technical Report Assessment Fee	£140.00	with submission of the Technical Report
Interview Fee (Technical Report + Professional Review)	£160.00	on approval of the Technical Report, prior to the interview stage

Dates

The CIBSE will accept applications for the Technical Report route at any time. Please note, however, that you will need to have successfully completed the application process for MCIBSE before being eligible for the TRR.

Cancellations

In the event that you cancel a scheduled interview, CIBSE may make an administrative charge.

Further Information

For further guidance please contact the CIBSE/IOR Liaison officer at CIBSE on 020 8772 3644