

REGULATION OF ENGINEERING

8.1 Introduction

Engineers engaged in private and public practice, and many who are employed by consulting firms, are faced with the necessity of licensure. Many others become licensed to demonstrate professional competence and to be considered for future professional positions.

Licensure has become more desirable with the current national emphasis on health and safety, consumer protection, and environmental concerns. In addition, having a professional engineer's license is one way in which you can demonstrate your credibility to the public.

8.1.2 History of Registration and Licensure

Medicine in Europe was the first profession to be regulated. In 1140, doctors were required to present proof of competency before being allowed to practice medicine. Then, in the reign of Roger, King of Normandy, doctors were required to be examined and certified by their peers.

Professional registration experienced a slow start in the United States, beginning in 1883 when dentists were required to be licensed. Later, doctors, lawyers, pharmacists, architects, nurses, and accountants were among those to be regulated and licensed.

Engineering registration in Kenya started in 1969 with the enactment of the "Engineers Registration Act under the "Engineers Registration Board".

In Kenya, currently, engineering is regulated by the Engineers Act 2011, and the organization mandated to carry out the regulation is "The Engineers Board of Kenya."

8.2 Functions and Powers of the Engineers Board of Kenya

Section 7(1) of the Engineers Act 2011 confers the following functions and powers to The Engineers Board of Kenya: <https://ebk.go.ke/functions-and-powers/?tk=1621777456>

1. Receive, consider, and make decisions on applications for registration and register approved applications;
2. Keep and maintain the Register;
3. Publish the names of registered and licensed persons under the Act;

4. Issue licenses to qualified persons under the provisions of the Act;
5. Publish and disseminate materials relating to its work and activities;
6. Carry out inquiries on matters pertaining to registration of engineers and practice of engineering;
7. Enter and inspect sites where construction, installation, erection, alteration, renovation, maintenance, processing or manufacturing works are in progress for the purpose of verifying that –
 - o Professional engineering services and works are undertaken by registered persons under the Act;
 - o Standards and professional ethics and relevant health and safety aspects are observed;
8. Assess, approve or reject engineering qualifications of foreign persons intending to offer professional engineering services or works;
9. Evaluate other engineering programmes both local and foreign for recognition by the Board;
10. Enter and inspect business premises for verification purposes or for monitoring professional engineering works services and goods rendered by professional engineers;
11. Instruct, direct or order the suspension of any professional engineering services works, projects, installation process or any other engineering works, which are done without meeting the set out standards
12. Approve and accredit engineering programs in public and private universities and other tertiary level educational institutions offering education in engineering;
13. Set standards for engineers in management, marketing, professional ethics, environmental issues, safety, legal matters or any other relevant field;
14. Prepare detailed curriculum for registration of engineers and conduct professional examinations for the purposes of registration;
15. Establish a school of engineering and provide facilities and opportunities for learning, professional exposure and skills acquisition, and cause continuing professional development programmes for engineers to be held;

16. Establish the Kenya Academy of Engineering and Technology whose purpose shall be to advise the National and the County Governments on policy matters relating to engineering and technology;
17. Plan, arrange, coordinate and oversee continuing professional training and development and facilitate internship of graduate engineers;
18. Collaborate with engineering training institutions, professional associations, engineering organizations and other relevant bodies in matters relating to training and professional development of engineers;
19. Determine the fees to be charged by professional engineers and firms for professional engineering services rendered from time to time;
20. Hear and determine disputes relating to professional conduct or ethics of engineers;
21. Develop, maintain and enforce the code of ethics for engineers and regulate the conduct and ethics of the engineering profession in general
22. Determine and define disciplines of engineering recognized under the Act;
23. Conduct recruitment of staff of the Board through a competitive process; and
24. Carry out such other functions related to the implementation of the Act.

8.3 Why Get Licensed?

"Basically being a PE means that you are at the top of your game, top of your profession. They don't just hand that out to anybody." -- **Randal E. Riebel, P.E.**

Licensure is the mark of a professional. It's a standard recognized by employers and their clients, by governments and by the public as an assurance of dedication, skill and quality.

There are many powerful reasons both professional and personal for earning and maintaining a PE license. Only a licensed engineer, for instance, may prepare, sign, seal and submit engineering plans and drawings to a public authority for approval, or to seal engineering work for public and private clients.

For consulting engineers and private practitioners, licensure is a virtual necessity. In fact, it is a legal requirement for those who are in responsible charge of work, be they principals or employees.

More and more with each passing day, government agencies, educational institutions and private industries are requiring that they hire and contract only with licensed professional engineers. This is a trend that is almost certain to continue in the future.

Today, no matter what career path a professional engineer chooses, a successful, ongoing career virtually requires PE licensure.

Five Reasons to Get Licensed

1. **Prestige:** PEs are respected by the public and are seen in the same light as licensed professionals in other fields. PEs are also held in high esteem by their peers within the engineering community, who see the PE as part of an elite group.
2. **Career Development:** Employers are impressed with engineers who have their PE license. Licensure not only enhances your stature, it shows commitment to the profession and demonstrates heightened leadership and management skills. Licensure is also a necessity for rising to increased levels of authority and responsibility.
3. **Authority:** Only PEs can sign and seal engineering drawings; and only PEs can be in responsible charge of a firm in private practice or serve as a fully qualified expert witness. Also, many government agencies and educational institutions are emphasizing licensure among their engineers as well.
4. **Flexibility:** Have a PE license opens up your career options. You can become a specialist, or establish your own business. It also protects you during industry downsizing or outsourcing. The PE license allows you to go as far as your initiative and talent will take you.
5. **Money:** Studies have shown that most PEs earn higher pay throughout their business careers. Having your PE allows expanded opportunities beyond a company structure - as an independent consultant for example.

8.4 Advantages of Licensure

Licensure, first of all, is the mark of a professional. The licensure process demands an extra measure of competence and dedication. While not all engineers find licensure mandatory for their chosen career paths, the PE initials after their names can provide many advantages.

Employers in all disciplines indicate that they find licensed professional engineer employees to be more dedicated, with enhanced leadership and management skills. These employers look to licensure in evaluating the advancement potential of employees.

Licensed engineers also achieve an enhanced status in the eyes of the public, which equates the engineer with professionals licensed in other fields.

Licensure is an indicator of dedication to integrity, hard work, and creativity, and an assurance that the individual engineer has passed at least a minimum screen of competence. Of course, licensure is just a starting point for professional growth and development, and participation in professional activities is part of the ongoing activities of a true professional.

Regardless of the career path you choose to take, there are a number of practical considerations concerning licensure of which you should be aware:

- Only a licensed engineer may prepare, sign and seal, and submit engineering plans and drawings to a public authority for approval, or seal engineering work for public and private clients.
- Licensure for individuals who wish to pursue a career as a consulting engineer or a private practitioner is not something that is merely desirable; it is a legal requirement for those who are in responsible charge of work, be they principals or employees.
- Licensure for engineers in government has become increasingly significant. Many federal, state, and municipal agencies require that certain governmental engineering positions, particularly those considered higher level and responsible positions, be filled only by licensed professional engineers.
- For those considering a career in education, many universities have been increasingly requiring that those individuals teaching engineering must be licensed. Exemptions to laws are under attack, and in the future, those in education, as well as industry and government, may need to be licensed to practice. Also, licensure helps educators prepare students for their future in engineering.

- With the growing complexity and the increasing diversity of modern construction processes and techniques, the engineer in construction must readily be able to communicate and exchange ideas and views with other licensed design engineers.
- For those pursuing careers in industry, licensure has recently taken on increased meaning with heightened public attention concerning product safety, environmental issues, and design defects. Employers have found it advantageous to identify to the courts and the public those employees who have met at least a minimum level of competence.
- The scope of engineering practice is constantly changing, and engineering activities that may be exempt today may eventually shift into a practice area that one day requires a license (for example, research and development may find practical application in the facilities design/construction process, requiring the practitioner to be licensed).
- Engineering boards are increasingly seeking and obtaining the authority to impose civil penalties against unlicensed individuals who unlawfully engage in the practice of engineering.
- Engineers must adapt to a rapidly changing workplace-restructuring, downsizing, outsourcing, privatization, and re-engineering. Engineers should prepare to make the transition into a consulting relationship with former employers and clients in the event of a corporate outsourcing and respond if their corporation decides to bring design and engineering services in-house. Only by becoming licensed can an engineer perform the broad scope of engineering services within an area of competence as defined under the law.

Once more, the country licenses engineers as a means to protect life, health, and property, and to promote public welfare. Licensing:

- Demonstrates your voluntary compliance with the spirit of the licensure laws;
- Confers a recognition of competency, qualifying those who meet a minimum standard;
- Establishes your credibility when you appear at public hearings and in courts of law;
- Allows you to use the title "engineer" in any way. Some companies, governmental agencies, and states restrict the use of the engineer title to those who are licensed.
- Provides greater opportunity for professional advancement.

At some future time, you may wish to enter private practice where engineering is regulated and licensure is mandatory. Keep in mind that requirements for and statutes governing licensure do change from time to time. More stringent examination standards may be imposed.

What Licensure Does Not Do

Licensure:

- Does not stipulate excellence;
- Does not denote outstanding capabilities but merely qualifies those who meet a minimum, acceptable standard;
- Does not guarantee that an individual has all the skills required for assignments
- Is not a substitute for employment standards established by a company.

Perception of the Professional

Engineering is relatively high on the list of professions in terms of public trust. The terms "for the benefit of mankind" and "for the public welfare" are included in definitions of engineering practice. When you achieve professional engineer licensure with voluntary acceptance of rules of professional conduct, you are attesting to your belief that what you do in practice best serves the client, employer, or employees and holds paramount the safety, health, and welfare of the public. This is true whether or not licensure is legally required. Licensure also helps eliminate the indiscriminate use of engineer titles by those not truly qualified by education, training, and experience.

Registration Categories by Engineers Board of Kenya:

- Consulting Engineers
- Professional Engineers
- Graduate Engineers

8.5 Engineers Act 2011

We shall discuss some aspects of the Engineers Act. Download the PDF by going to

https://www.benardmakaa.com/wp-content/uploads/2021/05/EngineersAct_No.43_of_2011.pdf

Or go to <https://www.benardmakaa.com/professional-engineering-practice/> and check the links under the "Extra Notes-Resources" section.

How to register as a graduate engineer in Kenya

Go to the link <https://www.eeekenya.com/how-to-register-as-a-graduate-engineer-in-kenya/>

Or go to <https://www.benardmakaa.com/professional-engineering-practice/> and check the links under "Extra Notes-Resources" section.

How to register as a professional engineer in Kenya

Go to the link <https://www.eeekenya.com/how-to-register-as-a-professional-engineer-in-kenya/>

Or go to <https://www.benardmakaa.com/professional-engineering-practice/> and check the links under "Extra Notes-Resources" section.

8.6 Professional societies and their roles

"A professional association (also called a professional body, professional organization, or professional society) seeks to further a particular profession, the interests of individuals engaged in that profession and the public interest."

"The roles of professional associations have been variously defined: "A group, of people in a learned occupation who are entrusted with maintaining control or oversight of the legitimate practice of the occupation;" also a body acting "to safeguard the public interest;" organizations which "represent the interest of the professional practitioners," and so "act to maintain their own privileged and powerful position as a controlling body." In the UK, the Science Council defines a professional body as "an organization with individual members practicing a profession or occupation in which the organization maintains an oversight of the knowledge, skills, conduct and practice of that profession or occupation". The Quality Assurance Agency distinguishes between statutory bodies and regulators that "have powers mandated by Parliament to regulate a profession or group of professions and protect the use of professional titles" and professional bodies that "are independent membership organizations that oversee the activities of a particular profession and represent the interests of [their] members" and which "may offer registration or certification of unregulated occupations on a voluntary basis."

Many professional bodies also act as learned societies.

Many professional societies are founded to support the single disciplines for which they are named.

The mission of the professional societies is primarily educational and informational. Their influence flows from their continuing and highly visible functions: to publish professional journals, to develop professional excellence, to raise public awareness, and to make awards. Through their work, they help to define and set standards for their professional fields and to promote high standards of quality through awards and other forms of recognition.

In some ways, professional societies have a clearer overview of trends in their fields than do federal agencies, universities, and funding organizations. The central position of professional societies brings excellent leverage with which to design and promote change, including through publications, policy statements, meetings, committees, lectureships, and awards.

Professional societies can provide a supportive environment to develop and test new skills.

In addition to educational offerings, an organization can assist networking and provide the opportunity for companionship.

Participation in societies can vary from membership to leadership opportunities, which may enhance a engineer's career. Advancement in a society starts with membership and attendance at meetings. Some members maintain this level of participation. Others who wish to contribute will serve on society committees. At this time of writing this (May 2021), I serve as a member and secretary of the Innovation and Knowledge Management Sub-Committee at the Institution of Engineers of Kenya (IEK).

In summary, the overall functions of professional bodies vary widely according to how they are set up and organized, but the following list is fairly comprehensive:

- set and assess professional examinations
- provide support for continuing professional development (CPD)
- publish professional journals or magazines
- provide networks for professionals to meet and discuss their field of expertise
- issue a code of conduct to guide professional behaviour

- deal with complaints against professionals and implement disciplinary procedures
- represent their members in lobbying government about relevant legislation
- promote fairer access to the profession to people from all backgrounds
- provide careers support and opportunities for students, graduates and people already working in the profession.

In Kenya, the main engineering society for engineers is called, The Institution of Engineers of Kenya (IEK).

8.7 The Institution of Engineers of Kenya (IEK)

The Institution of Engineers of Kenya (IEK) is the learned society of the engineering profession and co-operates with national and other international institutions in developing and applying engineering to the benefit of humanity.

History of IEK

The East African Association of Engineers (EAAE), which was the precursor to the Institution of Engineers of the Kenya (IEK), was formed in 1945 as a professional and learned body, independent of control by governments and with membership spread in the original East Africa i.e. Kenya, Uganda, and Tanzania (Tanganyika and Zanzibar). The breakup of the East African Community in the early 1970's resulted in the splitting of most of the professional/learned bodies, among them the EAAE. IEK was born out of this split. IEK was registered as a professional/learned and independent body in 1972.

Ideals and Objectives of IEK

The ideals and objectives of IEK since its formation have been:

1. To represent the diverse interests of all branches of engineering.
2. To promote, encourage and improve the application of engineering to technical and other related practices.
3. To facilitate the exchange of information and ideas on technical and other related matters.

4. To safe-guard the dignity and integrity of the engineering profession and safeguard the standards set to guide the application of engineering knowledge to the solution of problems.
5. To contribute to and set standards for theoretical, practical and management training leading to acceptance to Membership of IEK and registration by the Engineers Board of Kenya (EBK)
6. Commitment to Continuous Professional Development for members of IEK.

Distribution of Membership

Most members of IEK are resident in Kenya but IEK has members outside Kenya. The membership is drawn from practicing engineers in the local/and central government departments, parastatals, private industry, consultants, contractors, educators, designers, manufacturers and other persons interested in engineering. The IEK is organized into the following units:

1. Council of IEK (Capital Branch) based in Nairobi
2. Coast Branch based in Mombasa
3. Western Branch based in Kisumu
4. South-Rift Branch based in Nakuru
5. North-Rift Branch based in Eldoret
6. Central Kenya Branch based in Nyeri
7. North-Eastern Branch based in Isiolo

The interest of all members are represented by the Council of IEK, which coordinates the interests/activities of the regional branches and various other associated bodies. The Council of IEK arranges national conferences, seminars and representation of IEK members in various committees formed in the country and internationally. The regional branches and their committees play a vital role in membership contract by organizing lectures, demonstrations, technical visits and in upholding professional standards. The success of the regional branches depends greatly on the support given by members who are encouraged to take a positive part in the activities of regional branches. The regional branches ensure maximum benefit is obtained by members and help to expand the membership of the IEK.

Activities of IEK

IEK provides a service to its members by means of seminars, lectures, publications and training, to enable them to keep up to date with technical and industrial developments, management aspects of engineering, changes in technology and relevant developments in Kenya and elsewhere. The "Engineering in Kenya" is the quarterly journal of the IEK and is distributed to all members of IEK.

Source: https://iekenya.org/web/background_information

Membership Classes:

These are defined by the IEK constitution which can be downloaded here:

https://iekenya.org/web/membership_classes

Or go to <https://www.benardmakaa.com/professional-engineering-practice/> and check the links under "Extra Notes-Resources" section.

How to register as a member:

https://iekenya.org/web/register_as_member

Roles of IEK:

https://iekenya.org/web/what_we_do

8.8 Regulation of Engineering Technologists and Technicians.

Engineering Technologists and Technicians are regulated under The Kenya Engineering Technology Registration Board (KETRB). KETRB was established by the Engineering Technology Act of 2016.

Only persons registered and licensed under the Engineering Technology Act of 2016 are allowed to undertake engineering technology professional services and works in Kenya. Consequently, KETRB has the mandate to enter and inspect sites where construction, installation, erection, alteration, renovation, maintenance, processing or manufacturing works are being undertaken and impose penalties against unlicensed individuals engaging in the same (Section 5c, (i), section 28(1)).

KETRB is mandated to plan, arrange, coordinate and oversee professional training of engineering technologists for the purpose of upholding and improving professional standards and conduct within the sector. As such, through KETRB, registered and licensed professionals gain from constant communication and exchange of ideas with other engineering technologists in a sector that is characterized by growing complexity and diversity in modern engineering processes and techniques (Section 5n, section 28(2) of the Engineering Technology Act, 2016).

Registration and licensure by KETRB guarantee the qualification and competence of a person practising in the engineering technology sector. Many employers therefore require that engineering technology positions be filled only by licensed engineering professionals. Licensed professionals gain an advantage when it comes to accessing career opportunities as well as increasing their earning potential (Engineering Technology Act, 2016).

Only registered and licensed persons can use the title of Engineering Technologist in describing their occupation and business. Any person who adopts and uses the title in any style or form displays any sign, board, card or a prescribed stamp implying that they are an Engineering Technologist without registration by KETRB, commits an offence under the Engineering Technology Act 2016.

Go to <https://www.benardmakaa.com/professional-engineering-practice/> and check the links under the "Extra Notes-Resources" section to download the Engineering Technology Act 2016.

KETRB Website:

<https://ketr.go.ke/>

KETRB Mandate:

1. Issue licenses to qualified persons under the provisions of the Act
2. Take disciplinary measures in accordance with the provisions of The Act
3. Enter and Inspect sites where Construction, Installation, Erection, Alteration, Renovation, Maintenance, Processing or Manufacturing works

4. Recommend for the suspension of any Engineering Technology Professional Services, Works, Projects, Installation process or any other Engineering Technology works which are done without meeting the standards
5. Assess, approve or reject engineering technology qualifications of foreign persons intending to offer engineering technology professional services or works in Kenya
6. Enter and inspect business premises for verification purposes or for monitoring works, services and goods rendered by Professional Engineering Technologists
7. Set Standards for Engineering Technologists in Management, Marketing, Professional Ethics, Environmental Issues, Safety, Legal matters or any other relevant field
8. Conduct Professional Examinations for the purposes of registration where applicable
9. Collaborate with Engineering Technology Training Institutions and Organizations, Professional Associations and other relevant bodies in matters relating to Training and Professional Development of Engineering Technologists
10. Plan, Arrange, Coordinate and oversee professional training and facilitate Internship of Engineering Technologists
11. Determine the fees to be charged by Engineering Technologists and firms for Professional services rendered from time to time

8.9 The Institution of Engineering Technologists and Technicians (Kenya)

The Institution of Engineering Technologists and Technicians (IET) was registered on 16th November, 2011 under the Societies Act section 10.

The Institution's main objective is to promote the advancement of the engineering technology profession and the science of engineering technology in Kenya.

The Institution aims to:

1. Advance the profession of Engineering Technologists and Technicians in Kenya.
2. Further and promote education and training and to encourage the professional development of Engineering Technologists and Technicians.
3. Advance and uphold the dignity and status of the profession by obtaining International recognition through Dublin and Sydney Accords.

4. Promote research and encourage the writing and presentation of papers, on matters pertaining to engineering technology.
5. Professionally deal with and engage in all matters concerning and relating to the profession.
6. Form such branch or branches as may from time to time be deemed necessary within the Republic of Kenya for the benefit of the members.

Membership categories and membership process:

<https://ietkenya.org/membership/>

IET Services:

<https://ietkenya.org/services/>

8.9 The Architectural Association of Kenya (AAK)-Engineers Chapter

The Engineer's Chapter of the Architectural Association of Kenya is one of the seven Chapters of AAK. This chapter primarily caters for engineers in the built environment sector.

There are four branches of the Engineering discipline that deal with the provision of the built environment:

1. **Civil Engineers** – deals with infrastructure, the provision of roads, water supply, sewerage and surface drainage.
2. **Structural Engineers** – deals with the provision of the building structure, foundation, walling and roofing.
3. **Electrical Engineers** – deals with the provision of electrical power supply to building, light, automation and communication systems.
4. **Mechanical Engineers**– deals with the provision of plumbing and drainage systems, firefighting, ventilation and air conditioning.

How to Join AAK Engineers Chapter:

<https://aak.or.ke/joining-instructions/>

Membership Categories at AAK:

1. Student
2. Graduate
3. Licentiate
4. Technician
5. Corporate

Membership portal:

<https://members.aak.or.ke/application/register>

Final Word

There are many engineering societies that someone can join to enhance their career. Some, such as the Institute of Electrical and Electronics Engineers (IEEE), are global. You can join a society that builds you up as long as you meet their membership requirements. IEEE even has local university chapters that students can join.

Personal Note:

I am a registered professional engineer with the Engineers Board of Kenya, a Corporate Member of the Institution of Engineers of Kenya, a Corporate member of the Architectural Association of Kenya-Engineers Chapter, and a Member of the Institute of Electrical and Electronics Engineers (IEEE). For any questions on how to register with any of these, reach out through the contact details given at <https://www.benardmakaa.com/contact/>