

# The Engineering Institute of Technology Engineering Skills & Job Insights Report

A research based on engineering-related job postings across Australia, Canada, Ireland, New Zealand, South Africa, the United Kingdom and the United States

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# Executive Summary

The Engineering Institute of Technology has collated the Engineering Skills & Job Insights Report which offers an in-depth analysis of over 320,000 engineering-related job postings, including technicians, technologist and other associated roles, across seven key markets: Australia, Canada, Ireland, New Zealand, South Africa, the United Kingdom, and the United States. A team of engineers has leveraged advanced AI technologies and expert insights, to produce this comprehensive study that captures technical and soft skill requirements within and across markets.

The report reveals that roles in mechanical, electrical, civil, and industrial engineering dominate the global market, with regional variations influenced by local industries and economic conditions. While on-site work remains the standard across most regions, hybrid and flexible roles are increasingly emerging in markets like New Zealand and the United States, reflecting evolving workplace dynamics. Specialized technical skills, such as proficiency in CAD software, project management expertise, and adherence to safety standards, are consistently in demand, highlighting the importance of continuous skill development for engineers.

In addition to technical expertise, employers are prioritizing soft skills such as problem-solving, communication, teamwork, and adaptability. These skills are crucial for managing complex

projects, collaborating across disciplines, and responding to rapidly changing industry demands. The emphasis on these qualities underlines the growing need for engineers who can pair technical knowledge with strong interpersonal and organizational abilities.

Educational trends show that a bachelor's degree is the baseline qualification across most regions, though some employers demonstrate flexibility by considering certifications for practical or technical roles. Salary analysis reveals wide variations based on specialization and region, with niche engineering roles often commanding premium pay.

This report serves as a roadmap for job seekers aiming to align their skills with market demands, employers seeking to attract top talent, policymakers developing workforce strategies, and education and training institutions aptly tailoring their programs to address evolving skill requirements. By providing these insights, EIT reinforces its commitment to equipping stakeholders with the knowledge needed to strengthen the engineering profession and drive industry innovation.

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# Introduction

Earlier in 2024, the Engineering Institute of Technology (EIT) completed a research report focused on engineering-related job market requirements, utilizing one job website per country. The selection of these sites was based on the availability and quality of relevant information.

Building on the foundation of the previous research, EIT has now leveraged advanced artificial intelligence (AI) technology alongside the expertise of a highly skilled team of engineers to compile a more comprehensive and detailed dataset that includes over 320,000 engineering-related job adverts from seven key markets, namely Australia, Canada, Ireland, New Zealand, South Africa, United Kingdom and United States.

This enhanced approach not only expands the scope of the information gathered but also provides deeper insights into the job market across various engineering disciplines. By using AI to analyze and process large volumes of data more efficiently, the team has been able to uncover specific skill requirements and patterns that were previously difficult to identify.

The result is a much more granular and insightful analysis, offering a clearer picture of the current engineering job landscape and providing valuable, actionable information for both job seekers and industry professionals. It is important to note that roles relating to

technicians, technologist, trades and artisans, as well as engineers, have been taken into consideration within the analysis, grouped according to the International Standard Classification of Occupations (ISCO), which is available in Appendix A.

This report aims to serve as a valuable resource for understanding the global engineering job market, providing job seekers with guidance on the requirements and expectations of the engineering field, enabling them to navigate career decisions effectively.

For employers, it provides some insights into geographical distribution of engineering demand, compensation levels, and what skills are most sought after. Finally, it provides policymakers and educational institutions with data to support informed decisions about workforce development, training, and talent retention strategies within the engineering sector.

By synthesizing data from these seven countries, the report presents a comprehensive, comparative analysis that reflects the diversity of the global engineering job market while also identifying common trends that transcend borders.



# Job research summary of key focus areas

As engineering is a global industry with varying demands and challenges depending on region, this study seeks to draw meaningful comparisons and highlight the key factors influencing the engineering labor market within and across the markets examined.

By reviewing the engineering-related job ads through the lens of specific parameters, this report aims to provide valuable insights for job seekers, industry stakeholders, employers, education providers, and policymakers.

## Key areas of focus

### › Job Classification

We report on the volume of jobs available at the time of review, categorizing them according to the International Standard Classification of Occupations (ISCO).

### › Regional Distribution

We analyze how engineering-related job opportunities are distributed across different regions within each country.

### › Job Level

Job opportunities per discipline are broken down into career levels, from entry-level to senior roles.

### › Average Minimum Years of Experience

This section summarizes the average number of years of experience requested within the job adverts for entry-level, mid-level, and senior engineering roles, per engineering discipline.

### › Educational Attainment

This section reviews the educational requirements explicitly listed for engineering-related jobs per discipline in each market.

### › Work Mode Distribution

We explore the breakdown of work modes as presented in the job ads. The categories have been defined as follows:

- › **Flexible:** Allows employees to choose when and where they work within set guidelines, offering maximum scheduling freedom.
- › **Hybrid:** Combines on-site and remote work with a fixed schedule, specifying certain days for in-office presence.
- › **On-Site:** Requires full-time presence at a specific location for tasks needing hands-on work and in-person interaction.
- › **Remote:** Enables employees to work entirely off-site, using digital tools for communication and collaboration.

### › Technical Skills and Software Tools

This section identifies the most in-demand technical skills and software tools by engineering discipline, including design software, data analysis tools, and sector-specific technologies. A detailed breakdown of the skills identified by engineering discipline, per market, is available on EIT's website.

### › Salary:

We compare average engineering salaries across engineering disciplines per market, as advertised at the time of analysis.

### › Employers:

This section provides an overview of the key companies with engineering-related jobs available within each country at the time of review.

# Section 1. Overview

The table below outlines the total number of engineering job postings as of the given dates, as well as the number of jobs considered for inclusion in this report.

*Table 1: Jobs per market as per sources considered*

Country	Total Engineering-related Job Ads	Jobs Considered	Date
Australia	4,069	4,069	08 Aug 2024
New Zealand	795	795	13 Aug 2024
South Africa	1,567	1,567	14 Aug 2024
United Kingdom	5,587	5,587	14 Aug 2024
Ireland	710	710	16 Aug 2024
Canada	1,821	625 <sup>i</sup>	14 Aug 2024
United States	479,194	311,106 <sup>ii</sup>	26 Sep 2024

The variation in the number of jobs considered across countries is due to differences in the availability of job postings, the nature of the data sources, and regional demand for engineering talent.

The subsequent sections will look into the analysis of this data, uncovering trends, sectoral breakdowns, and key insights that inform the broader engineering job landscape.



# Section 2. Australia

Analyzed 4,069 jobs listed as of 8<sup>th</sup> of August 2024

## Job classification

In Australia, the highest demand is for roles in electrical, mechanical, and civil engineering, with civil engineers being particularly sought after within the construction and infrastructure development sectors.

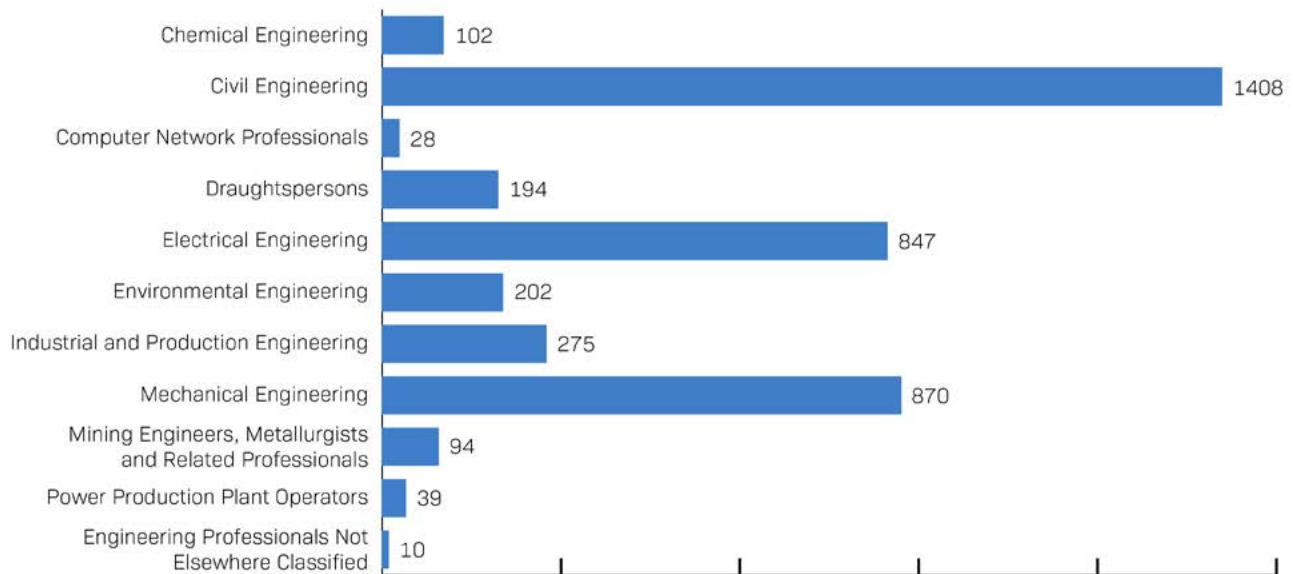


Figure 1: Australian Job Classification

## Regional distribution

New South Wales (1,153 jobs) and Queensland (1,095 jobs) are the leading regions for engineering jobs, followed by Victoria (752 jobs) and Western Australia (713 jobs).

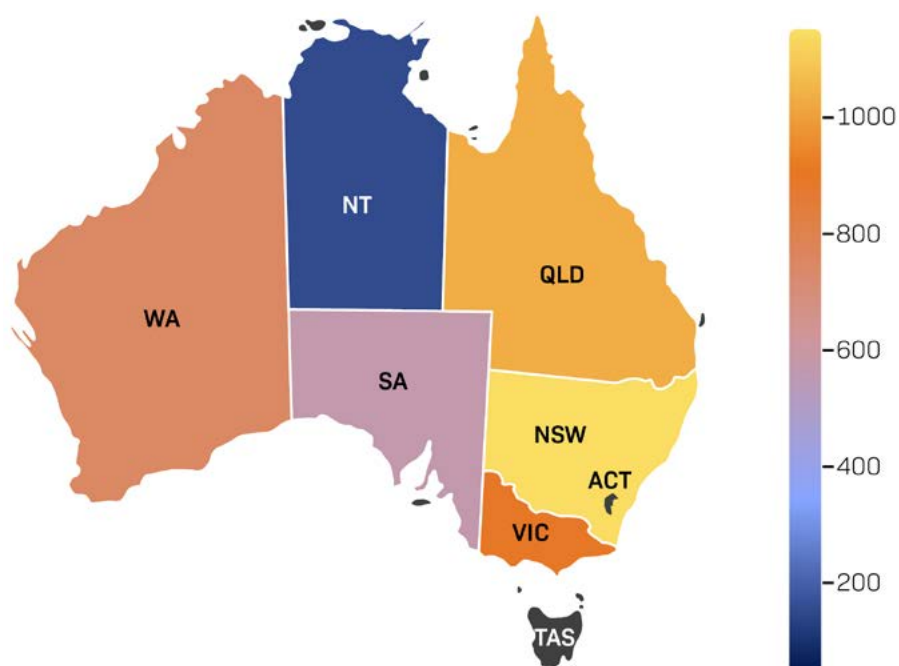


Figure 2: Australian Job Regional Distribution



## Job level

Most disciplines, especially civil and mechanical engineers, have a higher concentration of roles at the entry and intermediate levels. This suggests these professions have robust entry pathways and a steady flow of talent progressing into mid-level positions.

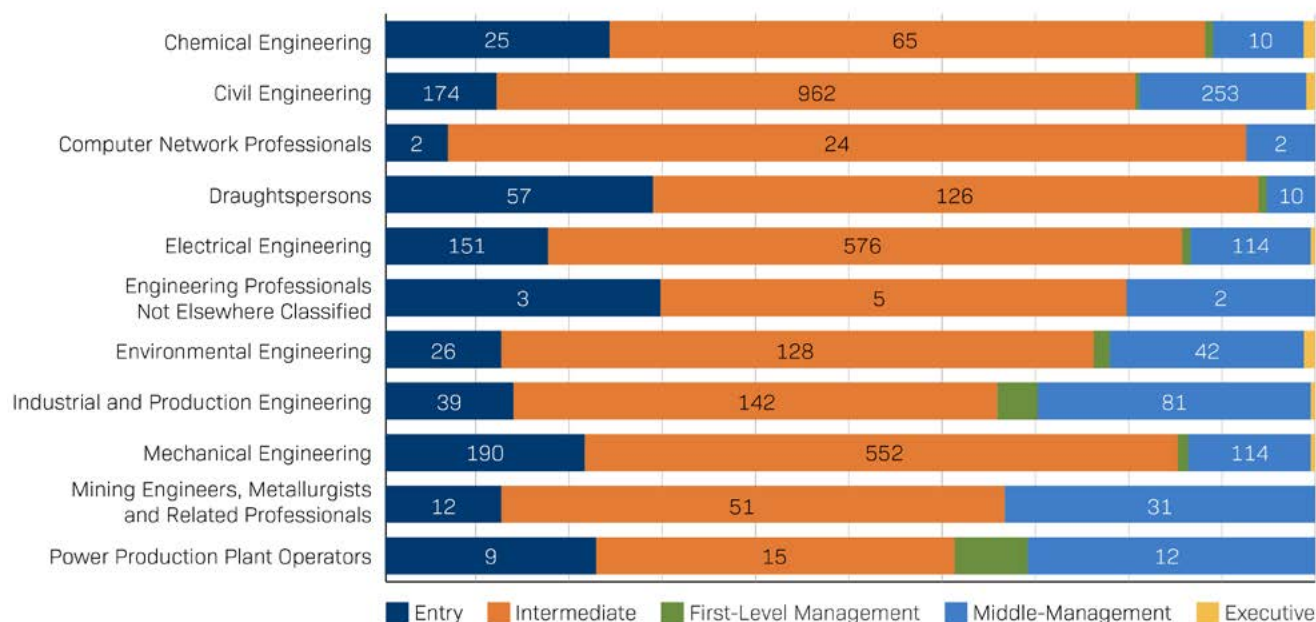


Figure 3: Australian Job Levels

## Average minimum years of experience

The average minimum years of experience varies significantly across engineering professions. Entry-level positions typically require up to 2 years of experience while middle management to executive roles require 6 to 12.5 years of experience, with civil engineers needing the highest number.

Table 2: Australian minimum years of experience

Educational Attainment	Entry	Intermediate	First-level management	Middle management	Executive
Chemical engineering	0.29	4.38		10.43	10
Civil engineering	0.85	4.3	6	8.68	12.5
Computer Network Professionals	1	3.92		6	
Draughtspersons	2.27	4.52		7.86	
Electrical engineering	0.4	4.73	3.5	8.93	10
Engineering Professionals Not Elsewhere Classified	2			10	
Environmental engineering	0.22	4.23		10	
Industrial and Production engineering	0.61	4.38	2	7.45	10
Mechanical engineering	0.91	4.59	2.5	6.44	10.67
Mining engineers, metallurgists and related professionals	2	5.13		10.21	
Power production plant operators	1	3.75		9	

\*Empty cells indicate insufficient data in the dataset.

## Educational attainment

A bachelor's degree is the most common educational qualification requirement across engineering professions, particularly for civil engineers (1,181 with a bachelor's) and mechanical engineers (541). Advanced degrees are rarely required, with only a small number of roles requiring a master's degree (24) or a doctoral degree (3).

Table 3: Australian Educational Attainment

Standard Classification	High school	Certificate	Bachelors	Masters	Doctoral
Chemical engineering	1	0	94	0	0
Civil engineering	3	40	1181	11	1
Computer network professionals	2	1	10	0	0
Draughtspersons	3	59	30	0	0
Electrical engineering	4	75	674	4	0
Engineering professionals not elsewhere classified	0	6	1	0	0
Environmental engineering	0	17	146	3	0
Industrial and production engineering	0	39	165	4	0
Mechanical engineering	7	193	541	1	2
Mining engineers, metallurgists and related professionals	0	12	57	1	0
Power production plant operators	0	15	12	0	0

## Work mode distribution

The majority of the roles advertised in this market offer flexible or hybrid work mode conditions. This is especially true for hands-on disciplines like civil engineers, mechanical engineers, and electrical engineers, where on-site presence is critical due to the nature of the tasks.

*Note: This data only includes job postings where the work mode was explicitly mentioned in the job description, which may not fully represent all available positions.*

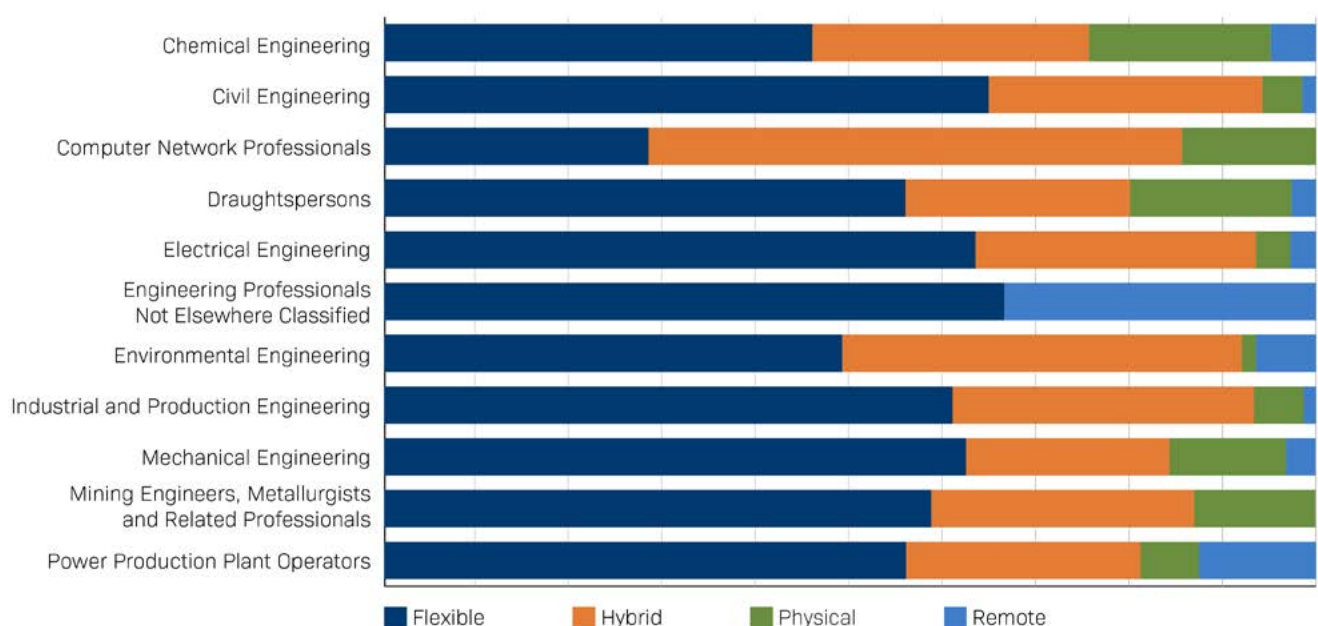


Figure 4: Australian Work Mode Distribution

# Engineering technical skills requirements

Here are the technical skill requirements specific to the Australian market. This summary highlights the most relevant ones per discipline from a total of 5,180 technical skills identified across the 4,069 Australian jobs reviewed.

To explore the comprehensive list of all the technical skills organized into detailed clusters, please visit [this link](#). You can also see the [Universal Skill Requirements](#) section of this report for more information on skill requirements shared among all markets examined.

## 1. Chemical engineering

- › **Project and Quality Management:** Strong project management skills, including budget and risk management, paired with continuous improvement practices like Six Sigma and quality assurance.
- › **Safety and Regulatory Compliance:** Emphasis on risk assessment, process safety management, and adherence to industry standards, including hazardous materials handling and safety engineering.
- › **Design and Process Engineering:** Proficiency in process and plant design, engineering documentation, and optimization techniques, with knowledge of software modeling tools.
- › **Technical and Software Skills:** Hands-on technical support, troubleshooting, and automation expertise (e.g., PLC, SCADA), alongside software proficiency (e.g., Microsoft Excel, SAP).
- › **Data Analysis and Reporting:** Competence in performance monitoring, data visualization, and data-driven decision-making, supported by effective reporting skills.

## 2. Civil engineering

- › **Project Management:** Key skills include project management, risk management, contract administration, and scheduling, essential for successful project delivery and administration.
- › **Design Engineering:** Emphasis on engineering design, civil and structural design, geotechnical analysis, and CAD software proficiency like AutoCAD.
- › **Construction Management:** In-demand skills include subcontractor management, construction techniques, and ensuring compliance with Australian standards.
- › **Quality and Safety Management:** Skills in quality assurance, continuous improvement, site inspection, and health and safety management are critical.
- › **Technical and Data Skills:** Competency in data analysis, technical documentation, Microsoft Office tools, and engineering principles is frequently required.

## 3. Computer network professionals

- › **Network Management and Support:** Proficient in network configuration, IP setup, network planning, and support, with expertise in technologies like Cisco and Fortigate.
- › **Technical Implementation and Automation:** Skills in project management, strategic planning, change management, and automation tools (e.g., Ansible, Jenkins, Puppet) are crucial for efficient implementation.
- › **Communication Systems and Technologies:** Knowledge of RF principles, digital communications, and telecommunications infrastructure, including backhaul and satellite communications, is essential.
- › **Cloud and Cybersecurity:** Familiarity with cloud services (e.g., Azure, VMware) and cybersecurity best practices, including identity and access management and vulnerability management.
- › **Technical Support and Troubleshooting:** Strong diagnostic skills for hardware and software issues, along with experience in system testing and performance tuning.

#### 4. Draughtspersons

- › **CAD and Design Software:** Proficiency in AutoCAD, Revit, SolidWorks, and other 2D and 3D modeling tools is essential, along with BIM software knowledge.
- › **Drafting and Technical Drawing:** Strong skills in drafting techniques, structural and architectural drawing, and understanding of Australian drafting standards are important.
- › **Project Management:** Skills in project management techniques, cost efficiency, and resource management, with experience in software like Microsoft Project.
- › **Mechanical and Structural Design:** Experience in mechanical design, structural detailing, and understanding materials like structural steel and concrete.
- › **Quality and Compliance:** Familiarity with Australian standards, quality assurance, and workplace health and safety practices.

#### 5. Electrical engineering

- › **Project Management and Execution:** Strong skills in project management, risk assessment, and commissioning, with emphasis on implementation and resource allocation.
- › **Automation and Control Systems:** Expertise in PLC, SCADA, control systems, and industrial automation technologies is crucial.
- › **Design and Electrical Engineering:** Proficiency in electrical design, CAD software like AutoCAD, substation design, and power systems modeling.
- › **Diagnostics and Troubleshooting:** Critical skills in fault finding, testing, root cause analysis, and technical support for efficient problem-solving.
- › **Quality and Compliance:** Familiarity with Australian standards, quality control, and continuous improvement practices.

#### 6. Environmental engineering

- › **Project Management and Governance:** Skills in project management, strategic planning, feasibility studies, and bid management are essential.
- › **Technical and Data Skills:** Proficiency in report writing, data analysis, hydraulic and hydrological modeling, and GIS tools is critical.
- › **Safety and Risk Management:** Emphasis on risk assessment, safety engineering, and compliance with environmental regulations and WHS standards.
- › **Environmental Management:** Key skills include environmental compliance, impact assessment, waste and water management, and ecological assessments.
- › **Sustainability and Continuous Improvement:** Focus on sustainability policy development, resource management, and infrastructure planning like WSUD design.

#### 7. Industrial and production engineering

- › **Project Management and Methodologies:** Core skills in project management, earned value management, change management, and scheduling, with tools like Microsoft Project and Primavera.
- › **Process Improvement and Lean Practices:** Emphasis on continuous improvement, Six Sigma, root cause analysis, and process optimization techniques.
- › **Technical and Software Proficiency:** Strong skills in troubleshooting, CAD (e.g., SolidWorks, AutoCAD), SAP, and other software solutions for efficient operations.
- › **Maintenance and Asset Management:** Competence in preventive maintenance, asset management, CMMS systems, and reliability engineering.
- › **Manufacturing Efficiency and Logistics:** Focus on lean manufacturing, operational efficiency, inventory management, and resource allocation.



## 8. Mechanical engineering

- › **Project and Process Management:** Key skills include project management, change management, risk management, and continuous improvement for operational efficiency.
- › **Design and Drafting:** Proficiency in CAD software (AutoCAD, SolidWorks), 3D modeling, and mechanical design principles is essential.
- › **Mechanical Maintenance and Troubleshooting:** Expertise in preventive and reactive maintenance, diagnostics, fault finding, and asset management is crucial.
- › **Quality Assurance and Testing:** Focus on quality control, testing techniques, and compliance with Australian and international standards.
- › **Multidisciplinary Engineering and Systems Integration:** Emphasis on systems engineering, integration of mechanical and electrical systems, and cross-disciplinary collaboration.

## 9. Mining engineers, metallurgists and related professionals

- › **Project and Risk Management:** Key skills in project planning, risk assessment, and managing project deliverables and resources efficiently.
- › **Design and Engineering:** Competency in mine design, 3D modeling, and design management, with expertise in various engineering disciplines such as process and mechanical engineering.
- › **Financial and Cost Management:** Strong capabilities in budgeting, cost estimation, procurement, and contract management are critical.
- › **Technical Proficiencies:** Proficiency in CAD tools (AutoCAD, SolidWorks, MicroStation), SAP, and other technical software, along with strong problem-solving and troubleshooting abilities.
- › **Compliance and Safety:** Emphasis on safety compliance, risk management, and adherence to environmental and legislative standards.

## 10. Power production plant operators

- › **Project and Maintenance Management:** Core skills include project planning, cost management, preventive maintenance, and operational maintenance strategies.
- › **Safety and Compliance:** Emphasis on safety management, risk management, and compliance with health, safety, and environmental (HSE) standards.
- › **Technical and Computer Skills:** Proficiency in software like Microsoft Project, SAP, SCADA systems, and a strong foundation in computer literacy and data analysis.
- › **Electrical and HVAC Systems:** Knowledge in electrical systems, HVAC operation, building management systems, and telecommunications infrastructure.
- › **Operational Efficiency and Process Management:** Skills in process improvement, operational strategy, and resource management for effective plant operations.

## 11. Engineering professionals not elsewhere classified

- › **Project Management and Oversight:** Skills in project management, project delivery, and construction management are essential.
- › **Maintenance and Repair:** Expertise in maintenance activities, vessel maintenance, troubleshooting, and problem diagnosis.
- › **Quality Control and Improvement:** Focus on quality assurance, quality inspection, and process improvement techniques.
- › **Safety and Compliance:** Familiarity with safety measures and risk assessment.
- › **Technical and IT Skills:** General engineering, HVAC and electrical systems knowledge, and proficiency in IT tools like Microsoft and PolyWorks.

## Top software tools

- 1. Chemical engineering:**  
Microsoft Office tools, SAP software, AutoCAD, Siemens, Aspen
- 2. Civil engineering:**  
Microsoft Office tools, AutoCAD, 12d, Civil 3D, SPACE GASS, Revit
- 3. Computer network professionals:**  
Microsoft Office tools, VMware, Azure, Active Directory
- 4. Draughtspersons:**  
AutoCAD, Microsoft Office tools, Solidworks, Autodesk Inventor/Vault, Civil 3D, Tekla, 12d
- 5. Electrical engineering:**  
Microsoft Office tools, SCADA, AutoCAD, PowerCad, PSS/E
- 6. Environmental engineering:**  
Microsoft Office tools, GIS (QGIS/ArcGIS), CAD software, ESdat, SoundPLAN, TUFLOW
- 7. Industrial and production engineering:**  
Microsoft Office tools, Project management software, AutoCAD, SAP, CMMS
- 8. Mechanical engineering:**  
Microsoft Office tools, AutoCAD, Solidworks, Autodesk Inventor, SAP, Revit
- 9. Mining engineers, metallurgists and related professionals:**  
Microsoft Office tools, Spry, Creo, Vulcan, Bentley
- 10. Power Production Plant Operators:**  
CMMS, Microsoft Office tools, SAP
- 11. Engineering professionals not elsewhere classified:**  
PolyWorks, Microsoft Office tools

## Salary

The highest paid professionals are mining engineers, metallurgists, and related professionals, who earn an annual average of AUD \$174,405, followed by power production plant operators at \$150,000 per year.

In contrast, draughtspersons and computer network professionals earn the least, with average yearly salaries of \$91,915.10 and \$94,257.50 respectively.

Most traditional engineering fields, such as civil engineers (\$121,365.48 p.a.), electrical engineers (\$129,869.09 p.a.), and industrial and production engineers (\$124,053.33 p.a.), fall in the middle salary range.



Figure 5: Australian Job Salaries

## Employer report

The table below provides an overview of key employers/recruiters in the Australian engineering sector, detailing the number of job postings from each company and a selection of sample job titles.

Table 4: Australian Employer Report

	Employer	Job Post Count	Sample Job Titles
1	Aurecon	73	Energy engineer, consultant/project engineer (program performance), engineering geologist
2	WSP Australia Pty Limited	53	Civil designer / technologist, mechanical engineer, senior/associate water networks planning engineer
3	KBR - Kellogg Brown & Root Pty Ltd	40	Power engineers, mechanical engineer, construction technical manager
4	Airswift	39	Electrical drafter/designer, senior safety assurance engineer, senior structural field engineer
5	Design & Build	36	Structural revit drafter, HVAC project engineer, site engineer
6	Technical Resources Pty Ltd	32	Electrical designer, senior structural engineer, mechanical engineer
7	CGC Recruitment	29	Project engineer   urban   Brisbane, principal electrical engineer, mechanical engineer
8	Core Talent	28	Project manager, robotic systems engineer, service manager
9	Titan Recruitment Pty Ltd	25	Electrical engineer   design   mining, project engineer – tanks, structural engineer
10	Embedded Expertise	25	Junior automation testing engineers, control systems engineer, gathering design engineer – Oil & Gas
11	Consolidated Power Projects Australia Pty Ltd	25	Senior design engineer – structural (renewable & utilities), electrical design drafter – primary (substations), principal engineer - innovation



## Section 3. Canada

Analyzed **625** jobs listed as of 14<sup>th</sup> of August 2024<sup>i</sup>

### Job classification

In Canada, the demand for engineering roles varies, with industrial and production engineers (209) and mechanical engineers (146) having the highest numbers. Electrical engineers (78) and civil engineers (74) also show strong demand. Other fields have relatively fewer openings, indicating more specialized or niche needs. It is important to note that many listings required visiting a third-party website to view the complete job details, which limited the available data for this report.

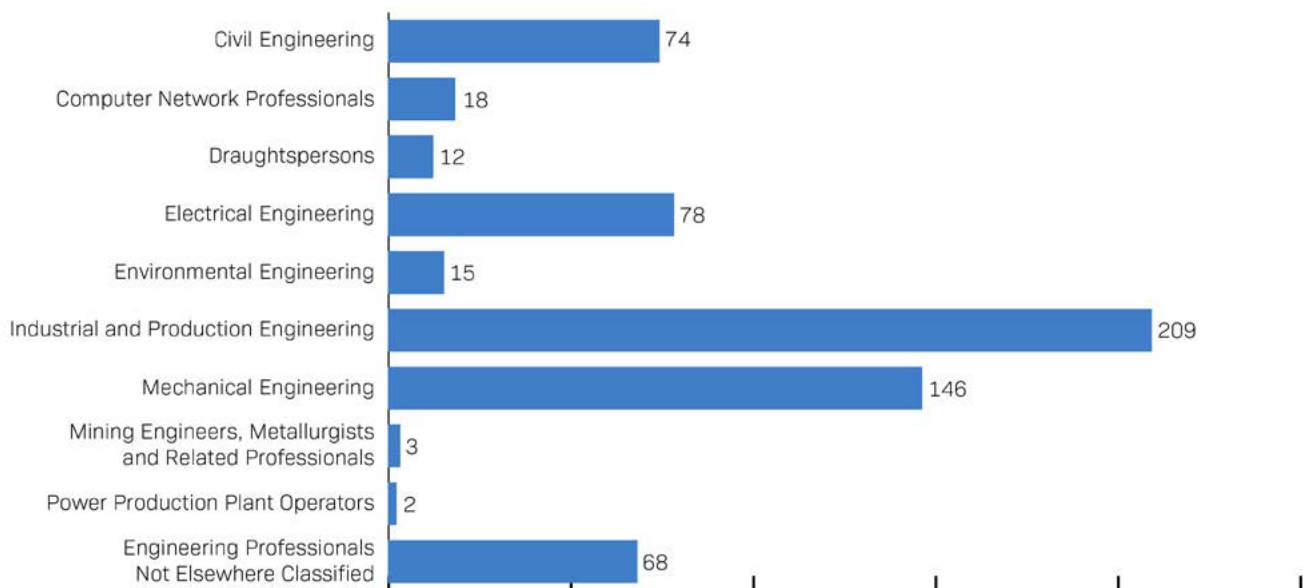


Figure 6: Canadian Job Classification

### Regional distribution

Engineering job opportunities in Canada are heavily concentrated in Quebec (818) and Ontario (545). British Columbia (201) and Alberta (174) also offer significant opportunities, though at a lower scale. This distribution highlights the regional concentration of engineering roles in Canada's most populous and industrialized areas.

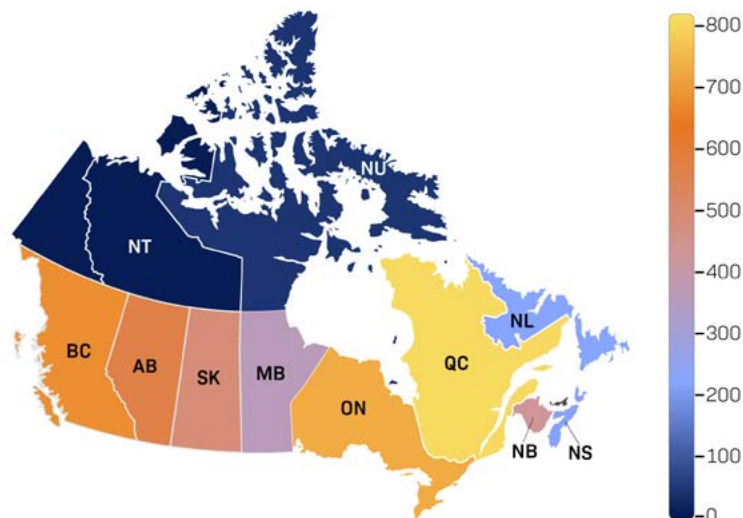


Figure 7: Canadian Job Regional Distribution



## Job level

The job level distribution in Canada reveals that entry level and intermediate positions are the most prevalent, highlighting opportunities for early-career professionals.

Management positions have moderate representations, while executive roles are rare across all fields in the data set analyzed.

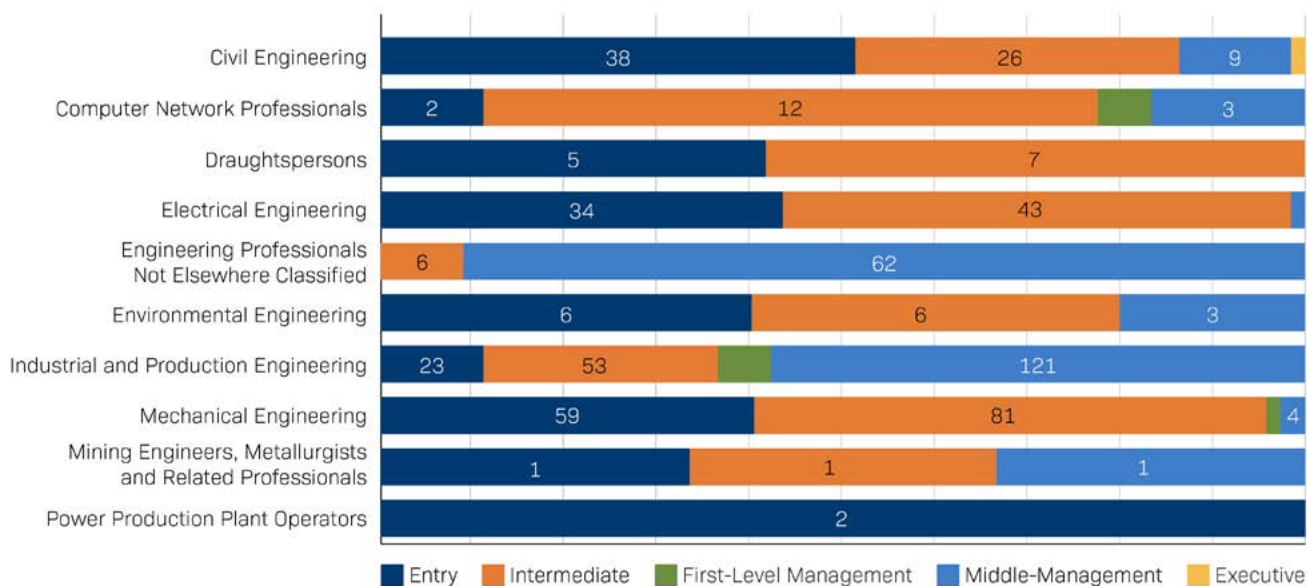


Figure 8: Canadian Job Levels

## Average minimum years of experience

The average minimum years of experience required for the engineering roles vary by job level and discipline. Entry level positions typically demand less than a year of experience, while intermediate roles require around 3 years.

Table 5: Canadian minimum years of experience

Standard Classification	Entry	Intermediate	First-level management	Middle management	Executive
Civil engineering	0.83	3.04		3.33	5
Computer network professionals	0.08	2.75	1	2.67	
Draughtspersons	0.56	3.43			
Electrical engineering	1.02	3.02		5	
Engineering professionals not elsewhere classified		4.17		3.26	
Environmental engineering	0.69	3.33		3	
Industrial and production engineering	1.02	2.92	1.56	3.01	
Mechanical engineering	0.87	3.21	2	4.5	
Mining engineers, metallurgists and related professionals		2		5	

\*Empty cells indicate insufficient data in the dataset.

## Educational attainment

The educational attainment data for engineering job postings in Canada reveals a significant reliance on certificate-level qualifications, especially for roles under mechanical engineering (61), industrial and production engineering (56), electrical engineering (53), and civil engineering (49). This trend is likely tied to the demand for technician and technologist roles within these disciplines. Additionally, bachelor's degrees remain common across many engineering fields, reflecting the higher qualifications required for more advanced positions.

Table 6: Canadian Educational Attainment

Standard Classification	High school	Certificate	Bachelors	Masters	Doctoral
Chemical engineering	0	0	0	0	0
Civil engineering	5	49	11	1	1
Computer network professionals	1	3	9	2	0
Draughtspersons	0	9	0	0	0
Electrical engineering	6	53	9	1	1
Engineering professionals not elsewhere classified	1	4	44	2	0
Environmental engineering	0	9	2	3	0
Industrial and production engineering	9	56	89	2	0
Mechanical engineering	17	61	51	5	0
Mining engineers, metallurgists and related professionals	0	2	1	0	0
Power production plant operators	0	0	0	0	0

## Work mode distribution

The work mode distribution indicates a strong preference for physical, on-site work across the various engineering disciplines. Hybrid work is rare, with only a few positions offering the arrangement. This distribution suggests that, in engineering, most roles still require a physical presence due to the operational and technical demands of the profession.

*Note: This data only includes job postings where the work mode was explicitly mentioned in the job description, which may not fully represent all available positions.*

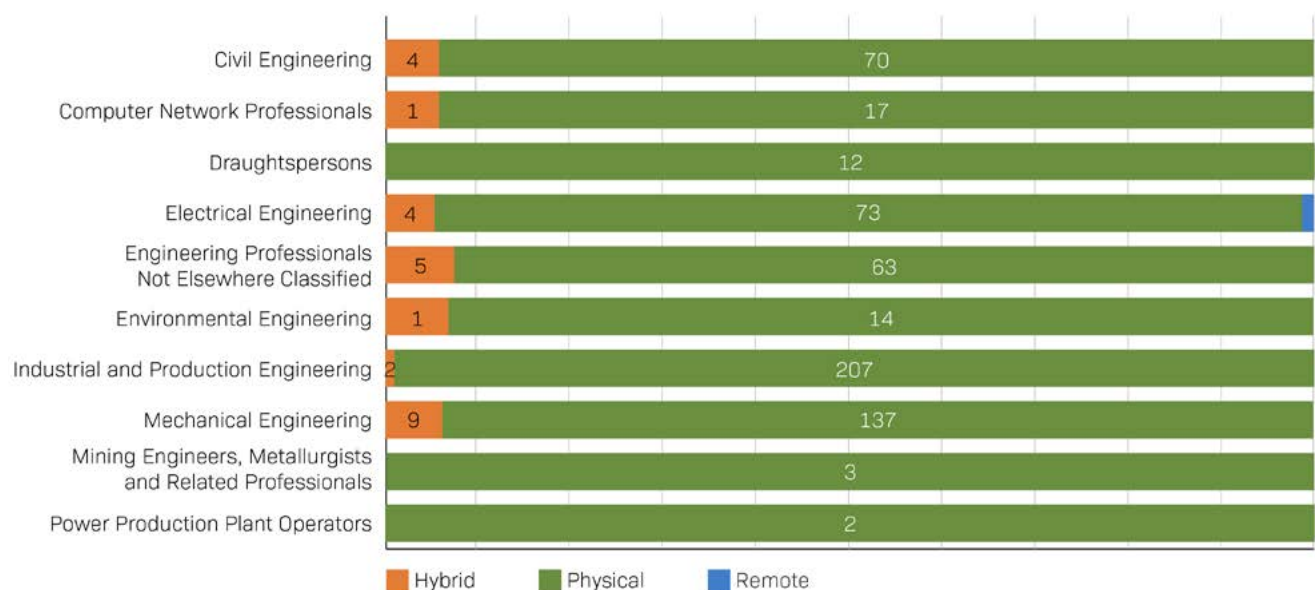


Figure 4: Canadian Work Mode Distribution

# Engineering technical skills requirements

Here are the technical skill requirements specific to the Canadian market. This summary highlights the most relevant ones per discipline from a total of 568 technical skills identified across the 625 Canadian jobs scanned. To explore the comprehensive list of all the technical skills organized into detailed clusters, please visit [this link](#). You can also see the [Universal Skill Requirements](#) section of this report for more information on skill requirements shared among all markets examined.

## 1. Civil engineering

- › **Software Skills:** Proficiency in using engineering and design software like AutoCAD, Civil 3D, and project management tools for efficient planning and analysis.
- › **Engineering Design:** Expertise in designing infrastructure, structural elements, and ensuring compliance with engineering standards and specifications.
- › **Technical Analysis:** Skills in analyzing structural and material properties, performing simulations, and using data to inform engineering decisions.
- › **Project Management:** Competence in overseeing construction projects, managing resources, budgeting, and scheduling to ensure timely and successful project delivery.
- › **Field Related Skills:** Knowledge of site surveying, construction practices, and working with construction materials for effective field operations.

## 2. Computer network professionals

- › **Networking Skills:** Proficiency in configuring and managing network infrastructure, understanding protocols, and optimizing network performance.
- › **Programming Skills:** Competence in coding and scripting to automate processes and develop network applications for enhanced system efficiency.
- › **Information Systems Skills:** Expertise in managing and integrating information systems, ensuring secure and efficient data flow across networks.
- › **Data Management Skills:** Skills in handling and organizing data, using database management systems, and ensuring data integrity and security.
- › **Integration Skills:** Ability to integrate various systems and platforms, ensuring seamless communication and functionality within network environments.

## 3. Draughtspersons

- › **General Computer Skills:** Proficiency in using general computer applications, managing files, and utilizing office software to support drafting and design work.
- › **Design and Drafting Skills:** Expertise in creating detailed engineering drawings, interpreting blueprints, and applying design principles to projects.
- › **Cost Estimation and Project Management:** Skills in estimating project costs, managing resources, and planning projects to ensure efficient and on-time delivery.
- › **Technical Documentation Skills:** Competence in preparing and managing technical documents, including specifications, reports, and maintenance records.
- › **CAD Software Skills:** Proficiency in using CAD software such as AutoCAD and Revit for drafting and designing construction and engineering plans.

#### 4. Electrical engineering

- › **Testing and Inspection:** Expertise in conducting electrical tests, performing quality inspections, and ensuring systems meet safety and performance standards.
- › **Design and Development:** Proficiency in designing electrical systems, developing new technologies, and creating engineering solutions for complex problems.
- › **Construction and Commissioning:** Skills in overseeing construction and commissioning of electrical projects, ensuring successful system integration and operation.
- › **Specifications and Documentation:** Competence in preparing detailed technical specifications, maintaining documentation, and ensuring all records comply with engineering standards.
- › **Project Management and Planning:** Strong abilities in planning, resource management, and coordinating electrical engineering projects to meet deadlines and budgets.

#### 5. Environmental engineering

- › **Field and Laboratory Techniques:** Proficiency in conducting fieldwork, collecting samples, and performing laboratory tests to analyze environmental data.
- › **Software Skills:** Competence in using specialized environmental software for modeling, data analysis, and project management.
- › **Geotechnology and Surveying:** Skills in geotechnical analysis, site surveying, and applying techniques for environmental and land management projects.
- › **Engineering Design and Specifications:** Expertise in creating design plans, developing specifications, and applying engineering principles for environmental solutions.
- › **Environmental Management:** Emphasis on implementing sustainable practices, managing resources, and ensuring compliance with environmental regulations.

#### 6. Industrial and production engineering

- › **Microsoft Office Skills:** Extensive use of Microsoft Office tools for documentation, data analysis, reporting, and project coordination.
- › **Operations Management:** Expertise in managing industrial operations, optimizing processes, and ensuring efficient production workflows.
- › **Financial Management Skills:** Proficiency in budgeting, cost control, financial analysis, and resource management to maximize profitability.
- › **Design Skills:** Skills in creating and optimizing design plans for industrial systems, equipment, and manufacturing processes.
- › **Industrial Processing Skills:** Knowledge of industrial manufacturing processes, equipment handling, and techniques to enhance production efficiency.

#### 7. Mechanical engineering

- › **Design Skills:** Expertise in creating detailed mechanical designs, using CAD software, and developing innovative solutions for mechanical systems.
- › **Software and Programming Skills:** Proficiency in engineering software, programming for automation, and tools for simulation and system modeling.
- › **Inspection and Testing Skills:** Skills in performing rigorous inspections, quality control, and testing mechanical components to ensure reliability and compliance.
- › **Documentation Skills:** Competence in preparing and managing technical documentation, maintenance records, and engineering reports.
- › **Estimation and Financial Skills:** Proficiency in cost estimation, budgeting, and financial analysis to support project planning and resource allocation.



## 8. Mining engineers, metallurgists and related professionals

- › **Geological Skills:** Proficiency in analyzing geological formations, understanding mineral properties, and applying geological knowledge to mining operations.
- › **Field Sampling:** Expertise in collecting and analyzing field samples to assess resource quality and inform mining strategies.
- › **Mapping and Surveying:** Skills in creating geological maps, conducting site surveys, and using surveying tools for accurate data collection.
- › **Laboratory Skills:** Competence in performing laboratory tests, analyzing samples, and maintaining precise records of experimental results.
- › **Mining Engineering:** Foundational knowledge of mining processes, excavation techniques, and equipment used in mining operations.

## 9. Engineering professionals not elsewhere classified

- › **Microsoft Skills:** Proficiency in using Microsoft Office applications for project documentation, data analysis, and efficient communication.
- › **Resource Management:** Expertise in managing resources effectively, ensuring optimal allocation, and overseeing operational activities.
- › **Policy and Program Development:** Skills in developing and implementing policies, creating programs, and strategizing to meet organizational goals.
- › **Management Skills:** Competence in leading teams, coordinating projects, and applying strategic management practices.
- › **Technical Skills:** Foundational technical abilities relevant to various engineering applications, including troubleshooting and technical support.

## Top software tools

1. **Civil engineering:**  
Microsoft Office tools, AutoCAD, 3D graphic software, CAE, Autodesk Revit
2. **Computer network professionals:**  
*No data*
3. **Draughtspersons:**  
AutoCAD, Microsoft Office tools, SolidWorks, CAD
4. **Electrical engineering:**  
Microsoft Office tools, Programming/data analysis/database software, AutoCAD, PLC, CAD, MATLAB
5. **Environmental engineering:**  
Microsoft Office tools, AutoCAD, Adobe suite, GIS
6. **Industrial and production engineering:**  
Microsoft Office tools, AutoCAD, ERP software, SolidWorks, CAD
7. **Mechanical engineering:**  
Microsoft Office tools, AutoCAD, SolidWorks, 3D graphic software, Autodesk, MicroStation, PLC
8. **Mining engineers, metallurgists and related professionals:**  
*No data*
9. **Power Production Plant Operators:**  
*No data*
10. **Engineering professionals not elsewhere classified:**  
*No data*

## Salary

Engineering professions categorized under the “Not Elsewhere Classified” which may include specialized positions in biomedical or nuclear engineering, for example, earn the highest average yearly salary at CAD \$179,125, followed by industrial and production engineers at \$136,236 p.a. and computer network professionals at \$121,988 p.a. This suggests that specialized and less common roles command higher salaries. In contrast, roles like power production plant operators (\$48,872 p.a.) and draughtspersons (\$58,287 p.a.) are on the lower end of the pay scale. Overall, while engineering roles offer competitive salaries, niche or highly specialized positions tend to have a higher earning potential.

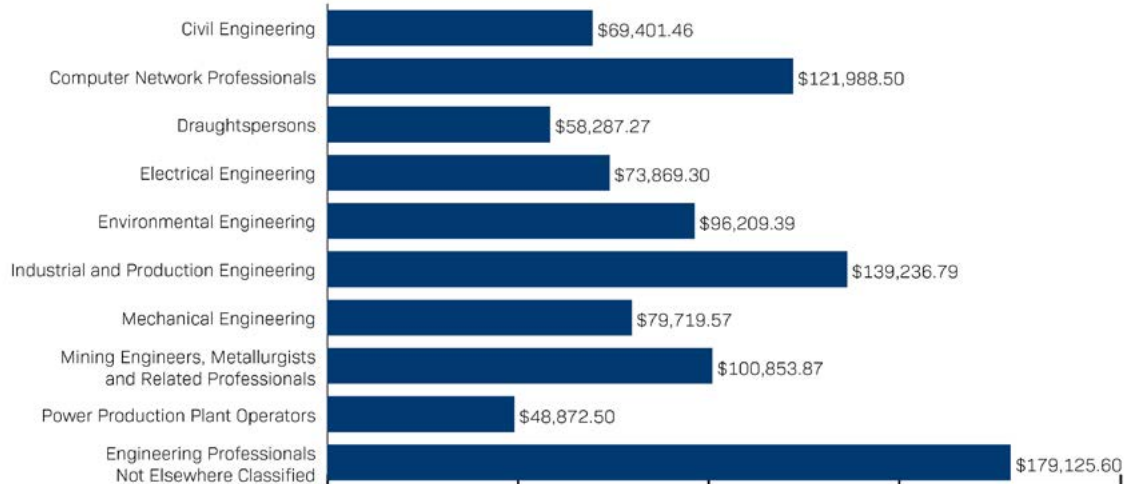


Figure 10: Canadian Job Salaries

## Employer report

The table below provides an overview of key employers/recruiters in Canada’s engineering job market, detailing the number of job postings and sample job titles for each. This data highlights the diverse range of roles available across various engineering disciplines and industries, offering insights into the types of positions employers are actively seeking to fill.

Table 7: Canadian Employer Report

	Employer	Job Post Count	Sample Job Titles
1	Tetra Tech	23	Civil engineering technician, mechanical engineer, building systems engineer
2	Soucy	21	IT development manager, design engineer – mechanical, manufacturing technician
3	Pluritec	19	Civil engineering technician, mechanical engineer
4	BRH	18	Equipment development technician, foundry laboratory technician, power equipment design technician
5	BRP	15	Tool designer, computer department coordinator, engineering service project manager
6	Laporte	13	Building systems engineer, electrical engineering design technologist, mechanical engineer
7	Fed Manutech	13	Mould design engineer, automation technologist, tool designer
8	Avizo Experts-Conseils	13	Engineering service project manager, technician, water distribution systems
9	TechnoGénie - Chasseurs de Talents	12	Automation technician, production engineer, director of mechanical engineering
10	Englobe Corp.	12	Mechanical engineering technician, electrical technician, soil testing technologist
11	Scotiabank	12	Computer and information systems managers, information systems development director

# Section 4. Ireland

Analyzed **710** jobs listed as of 16<sup>th</sup> of August 2024

## Job classification

In Ireland, the job classification data shows that the disciplines of civil engineering (165) and electrical engineering (138) have the highest demand, indicating a strong need for expertise in infrastructure and electrical systems. Industrial and production engineering (123) and mechanical engineering (108) also show significant demand. In contrast, roles like draughtspersons (7) and power production plant operators (7) have limited openings, pointing to specialized or niche roles with lower demand.

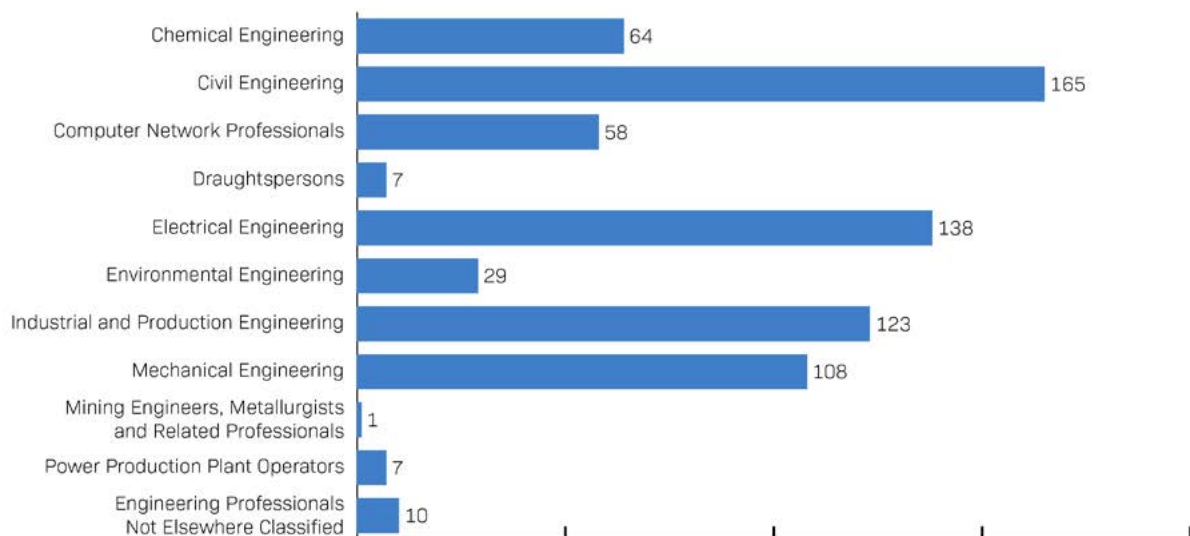


Figure 11: Ireland Job Classification

## Regional distribution

The regional distribution of engineering jobs in Ireland reveals a high concentration in Dublin County, with 327 positions, making it the primary hub for engineering opportunities. Other regions with notable counts include Cork County (121) and Galway County (56), indicating secondary centers of demand. This distribution highlights a strong urban-centric demand, with Dublin being the focal point for engineering jobs in Ireland.

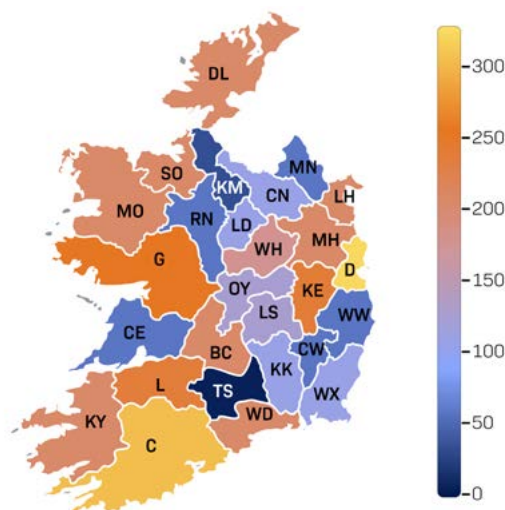


Figure 12: Ireland Job Regional Distribution

## Job level

The data indicates that intermediate positions dominate across most fields. Entry level positions are also visible but less common, with the highest distribution percentage seen in draughtspersons discipline. Management roles are also prominent, but executive roles are rare.

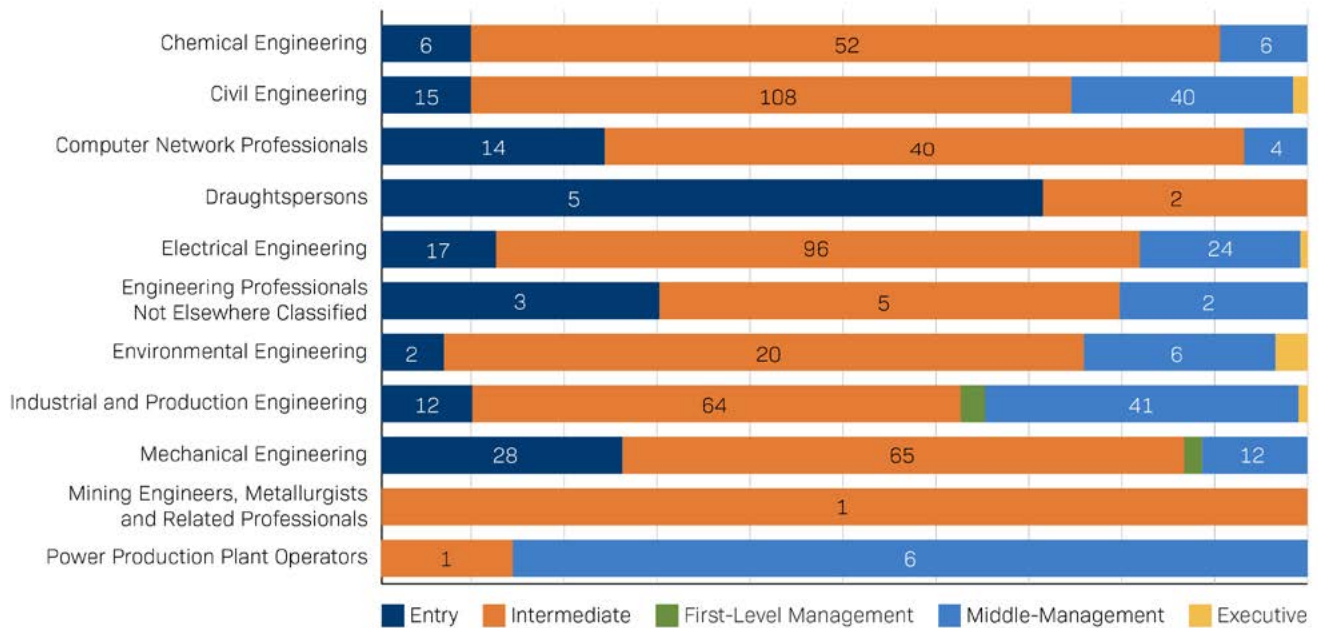


Figure 13: Ireland Job Levels

## Average minimum years of experience

For the Ireland market, entry level engineering roles require up to 2 years, with mechanical engineers having a higher threshold at 2.4 years.

Intermediate roles demand around 4-5 years, while management levels and above often require more than 6 years of experience.

Table 8: Ireland minimum years of experience

Standard Classification	Entry	Intermediate	First-level management	Middle management	Executive
Chemical engineering	1	4.17		7.5	
Civil engineering	2.29	4.67		8.82	20
Computer network professionals	1	4.29		7	
Draughtspersons	1	2			
Electrical engineering	1.2	4.35		8.65	10
Engineering professionals not elsewhere classified	0	4.2		5.5	
Environmental engineering	0	3.67		6	
Industrial and production engineering	0.6	4.55	5	6.69	3
Mechanical engineering	2.43	4.89		5.8	
Mining engineers, metallurgists and related professionals		2			
Power production plant operators		5		9.25	

\*Empty cells indicate insufficient data in the dataset.



## Educational attainment

The educational attainment data reveals that a bachelor's degree is the most common requirement across engineering disciplines, especially for roles within civil engineering (141), electrical engineering (97), and industrial and production engineering (95).

Advanced degrees are visible but less common. Applicants could also land roles with technical or practical focus by getting relevant certifications and training.

Table 9: Ireland Educational Attainment

Standard Classification	High school	Certificate	Bachelors	Masters	Doctoral
Chemical engineering	0	2	55	3	3
Civil engineering	0	6	141	5	1
Computer network professionals	0	2	35	0	0
Draughtspersons	0	1	2	0	0
Electrical engineering	2	10	97	9	0
Engineering professionals not elsewhere classified	0	0	9	0	0
Environmental engineering	0	3	24	2	0
Industrial and production engineering	1	11	95	4	0
Mechanical engineering	1	21	54	0	0
Mining engineers, metallurgists and related professionals	0	0	1	0	0
Power production plant operators	0	0	5	1	0

## Work mode distribution

The work mode distribution highlights that physical on-site roles dominate across most engineering fields, with civil, mechanical, and electrical engineering showing the highest numbers for physical work requirements. Hybrid and flexible work options are also available, but full remote work opportunities are scarce. This trend suggests a strong industry preference for in-person roles, especially in hands-on engineering fields.

*Note: This data only includes job postings where the work mode was explicitly mentioned in the job description, which may not fully represent all available positions.*

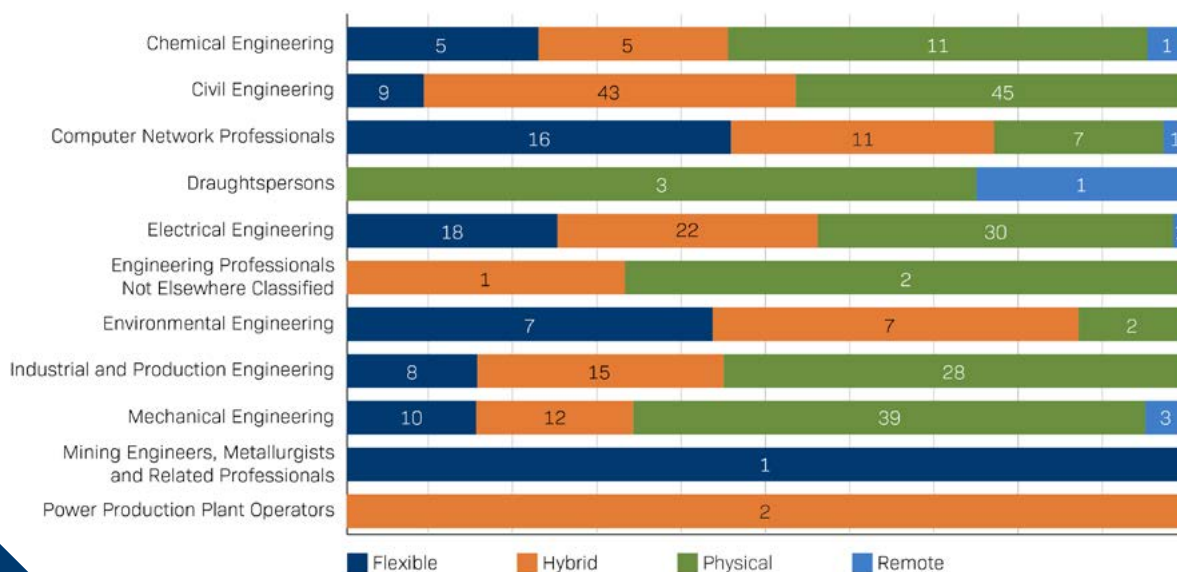


Figure 14: Ireland Work Mode Distribution

# Engineering technical skills requirements

Here are the technical skill requirements specific to the Irish market. This summary highlights the most relevant ones per discipline from a total of 1,791 technical skills identified across the 710 Irish jobs scanned. To explore the comprehensive list of all the technical skills organized into detailed clusters, please visit [this link](#). You can also see the [Universal Skill Requirements](#) section of this report for more information on skill requirements shared among all markets examined.

## 1. Chemical engineering

- › **Data Analysis and Improvement:** Proficiency in analyzing data, identifying areas for improvement, and implementing strategies to optimize chemical processes.
- › **Project Management:** Skills in planning, executing, and overseeing engineering projects, ensuring they are completed on time and within budget.
- › **Validation and Compliance:** Expertise in validating processes and equipment, ensuring compliance with industry regulations and standards.
- › **Documentation and Technical Writing:** Competence in preparing technical documentation, writing reports, and maintaining accurate records for regulatory purposes.
- › **Manufacturing Processes:** Knowledge of chemical manufacturing techniques, process optimization, and efficient production methodologies.

## 2. Civil engineering

- › **Project Management:** Extensive skills in planning, executing, and managing civil engineering projects, with a focus on meeting deadlines and staying within budget.
- › **Software and IT Skills:** Proficiency in using engineering software and IT tools to support design, data analysis, and project management.
- › **Design and Engineering:** Expertise in designing civil infrastructure, structural analysis, and applying engineering principles to develop efficient solutions.
- › **Technical Skills:** Strong foundation in engineering practices, problem-solving, and technical proficiency for handling complex civil engineering tasks.
- › **Financial Management:** Skills in budgeting, cost control, and financial planning to optimize resource allocation and project success.

## 3. Computer network professionals

- › **Networking:** Expertise in configuring and managing networks, understanding networking protocols, and ensuring network security and performance optimization.
- › **Technical Support:** Proficiency in providing technical assistance, troubleshooting system issues, and maintaining network infrastructure.
- › **Software Development:** Skills in developing and maintaining software solutions that integrate with network systems, ensuring seamless functionality.
- › **Cloud Technologies:** Competence in deploying and managing cloud-based services, leveraging cloud architecture for scalable solutions.
- › **Operating Systems:** Knowledge of various operating systems, managing updates, and ensuring system stability and security.

#### 4. Draughtspersons

- › **Office Skills:** Proficiency in using office software for documentation, communication, and project coordination tasks.
- › **Construction Skills:** Knowledge of construction methods, materials, and best practices for producing detailed and accurate drafting plans.
- › **Technical Skills:** Competence in drafting techniques, blueprint interpretation, and applying technical knowledge to support construction projects.
- › **CAD Software:** Skills in using CAD software for creating precise engineering and architectural drawings.
- › **Project Management:** Basic understanding of project management principles for effective time and resource management.

#### 5. Electrical engineering

- › **Design and Engineering:** Proficiency in electrical design, developing innovative engineering solutions, and creating detailed schematics and plans for power systems.
- › **Networking and Control Systems:** Expertise in configuring and managing control systems, understanding networking protocols, and ensuring seamless integration of electrical networks.
- › **Project Management and Delivery:** Skills in overseeing projects, planning resources, managing timelines, and ensuring successful project execution and delivery.
- › **Technical Skills:** Strong foundation in electrical principles, applying technical knowledge to solve complex engineering problems, and performing system analysis.
- › **Regulatory Compliance and Safety:** Competence in adhering to safety standards, understanding regulatory requirements, and implementing safety measures to ensure compliance.

#### 6. Environmental engineering

- › **Project Management:** Proficiency in planning, executing, and managing environmental projects, ensuring they are completed on time and within budget.
- › **Operational Excellence:** Skills in optimizing environmental processes, monitoring performance, and implementing strategies for sustainable operations.
- › **Safety and Compliance:** Emphasis on ensuring environmental and workplace safety, adhering to compliance standards, and managing risk effectively.
- › **Technology and Software Skills:** Competence in using environmental modeling software, data analysis tools, and technology to support engineering projects.
- › **Regulatory Compliance:** Knowledge of environmental laws, regulations, and best practices to ensure projects meet all necessary legal requirements.

#### 7. Industrial and production engineering

- › **Project Management Skills:** Expertise in planning, coordinating, and managing production projects, ensuring efficiency and timely delivery.
- › **Process Improvement Skills:** Proficiency in Lean and Six Sigma methodologies to optimize processes and increase production efficiency.
- › **Manufacturing Skills:** Strong knowledge of manufacturing processes, equipment, and production techniques to ensure high-quality output.
- › **Automation and Technical Skills:** Competence in using automation technologies, understanding technical systems, and applying engineering knowledge for automated solutions.
- › **Data Analysis Skills:** Skills in analyzing production data, identifying trends, and using insights to drive continuous improvement and informed decision-making.
- › **Industrial Processing Skills:** Knowledge of industrial manufacturing processes, equipment handling, and techniques to enhance production efficiency.

## 8. Mechanical engineering

- › **Technical Skills:** Proficiency in mechanical engineering principles, applying technical knowledge to solve complex engineering challenges, and using analytical methods for system optimization.
- › **Mechanical Design and Engineering:** Expertise in designing mechanical components, developing engineering solutions, and utilizing simulation tools for analysis.
- › **Project Management:** Skills in planning, coordinating, and managing engineering projects, ensuring they meet timelines and quality standards.
- › **CAD and Design Tools:** Competence in using CAD software like AutoCAD, SolidWorks, and other design tools for creating detailed engineering drawings.
- › **Quality Assurance and Compliance:** Emphasis on maintaining quality standards, ensuring compliance with regulations, and performing quality control inspections.

## 9. Power production plant operators

- › **Technical Skills:** Proficiency in operating and maintaining power plant systems, understanding mechanical and electrical components, and troubleshooting equipment issues.
- › **Management Skills:** Competence in overseeing plant operations, managing teams, and coordinating workflow to ensure efficient power production.
- › **Software Proficiency:** Familiarity with power plant management software and data logging tools to monitor and optimize operations.
- › **Regulatory Knowledge:** Understanding of industry regulations and safety standards to ensure compliance and maintain a safe working environment.

## 10. Engineering professionals not elsewhere classified

- › **Quality Management:** Emphasis on maintaining quality standards, conducting audits, and implementing quality control processes.
- › **Project Management:** Skills in planning, executing, and managing engineering projects to meet timelines and deliverables efficiently.
- › **Technical Skills:** Competence in applying engineering principles, conducting lab operations, and utilizing technical expertise for problem-solving.
- › **Statistical Analysis:** Proficiency in using statistical methods to analyze data, inform decisions, and improve processes.
- › **Documentation:** Skills in preparing and managing technical documentation and financial records to support project and operational goals.

## Top software tools

1. **Chemical engineering:**  
Microsoft Office tools, Minitab, AutoCAD, DeltaV
2. **Civil engineering:**  
Microsoft Office tools, AutoCAD, Revit, Civil 3D, BIM
3. **Computer network professionals:**  
Microsoft Office tools, AWS, Azure, Windows, Cisco
4. **Draughtspersons:**  
Microsoft Office tools, AutoCAD, QGIS, ArcGIS
5. **Electrical engineering:**  
AutoCAD, Microsoft Office tools, Revit, EPLAN
6. **Environmental engineering:**  
Microsoft Office tools, AutoCAD, Smartsheet
7. **Industrial and production engineering:**  
Microsoft Office tools, SAP, AutoCAD, ERP, SolidWorks, Minitab
8. **Mechanical engineering:**  
Microsoft Office tools, AutoCAD, Revit, SolidWorks
9. **Mining engineers, metallurgists and related professionals:**  
*No data*
10. **Power Production Plant Operators:**  
Energy management system, Control centre security tools, Scheduling/dispatch tools
11. **Engineering professionals not elsewhere classified:**  
Microsoft Office tools

## Salary

Engineering roles categorized under “Engineering Professionals Not Elsewhere Classified” which may include specialized positions in biomedical or nuclear engineering, for example, command the highest average yearly salary at €134,907, followed by those in chemical engineering at €104,000 p.a.

Civil engineering and mechanical engineering positions also earn competitively, with averages around €68,793 p.a. and €66,734 p.a., respectively.

Lower average salaries are observed among draughtspersons and environmental engineers, with figures closer to €40,000 p.a. and €45,625 p.a.

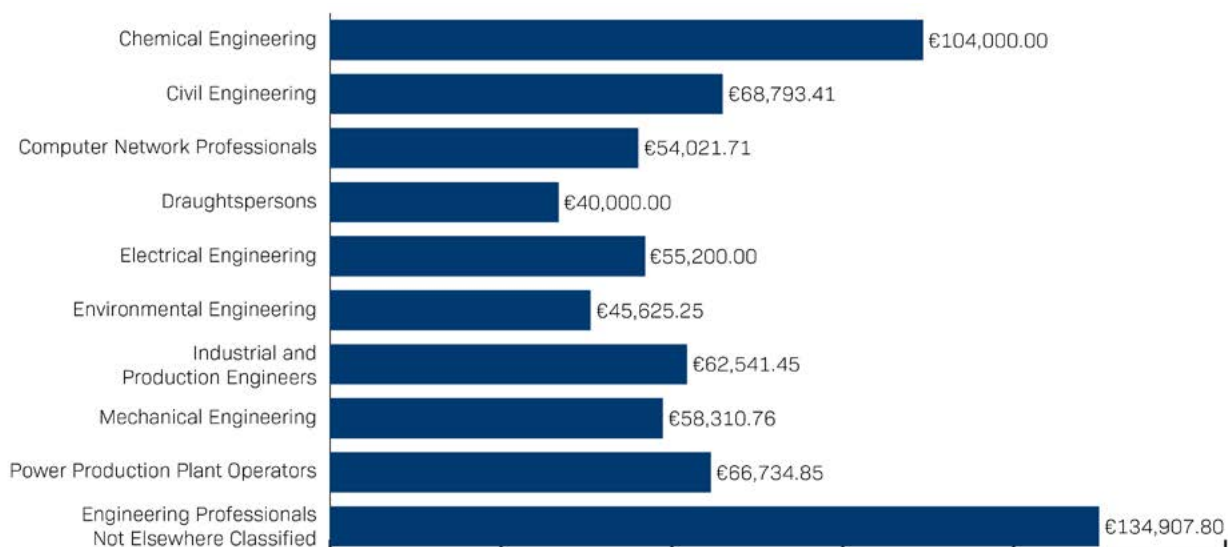


Figure 15: Ireland Job Salaries



## Employer report

The table below provides an overview of key employers/recruiters in Ireland's engineering job market, detailing the number of job postings and sample job titles for each employer.

Table 10: Ireland Employer Report

	Employer	Job Post Count	Sample Job Titles
1	Mastercard, Inc.	36	Software engineer, lead solution engineer, bizops engineer ii
2	Amazon Development Centre Ireland Limited	27	Software development engineer, colocation electrical engineer, network development engineer, frontier networking
3	Microsoft	24	CE program manager, senior customer experience engineer, critical environment field service engineer
4	H&MV Engineering	21	HV electrical site supervisor, commercial manager, IT project manager
5	Amazon Data Services Ireland Limited	21	Supplier quality engineer, global strategy engineer, software development engineer
6	Stryker	19	Senior process engineer – advanced operations, senior specialist regulatory affairs, engineering manager
7	Abbott Laboratories	16	Quality engineer, senior supply chain analyst, environmental health & safety engineer
7	Analog Devices	16	Staff engineer, UI/UX design, principal AI engineer, staff devops engineer
7	DPS Group	16	Senior fire engineer/consultant, design project engineer, automation engineer
10	GerTEK Project Management and Technical Services	15	Process engineer, mechanical design engineer, project engineer



# Section 5. New Zealand

Analyzed **795** jobs listed as of 13<sup>th</sup> of August 2024

## Job classification

Civil engineering (330 roles), mechanical engineering (183 roles), and electrical engineering (126 roles) are the leading fields in demand within New Zealand.

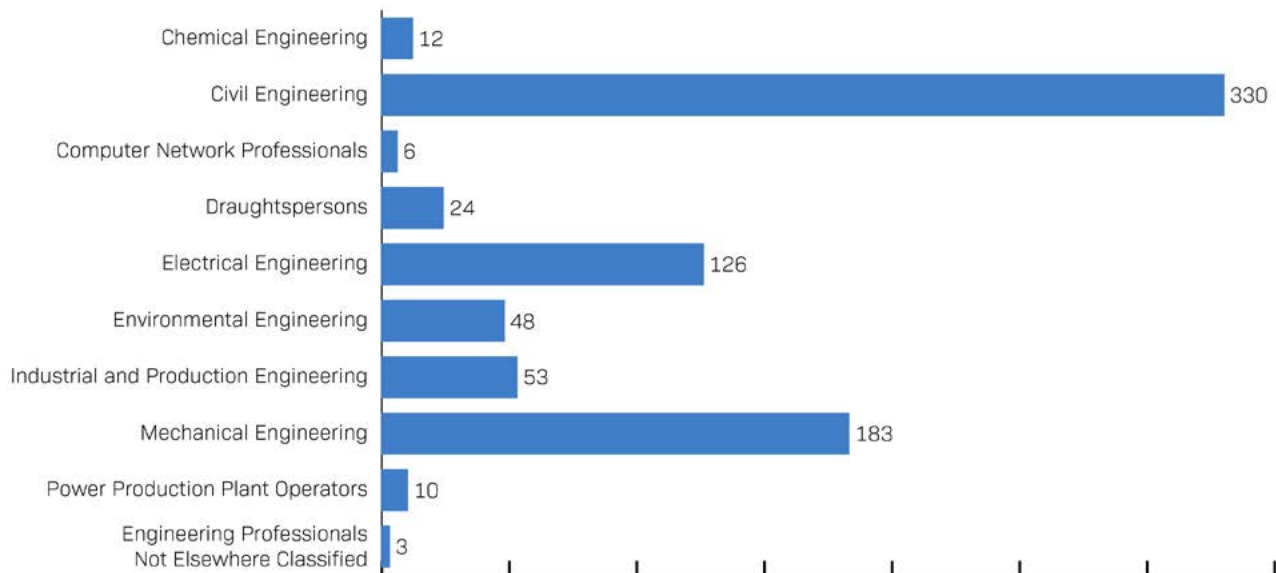


Figure 16: New Zealand Job Classification

## Regional distribution

The Auckland region tops New Zealand's engineering job market with 294 positions, followed by Canterbury with 124 jobs and Wellington with 76 jobs.

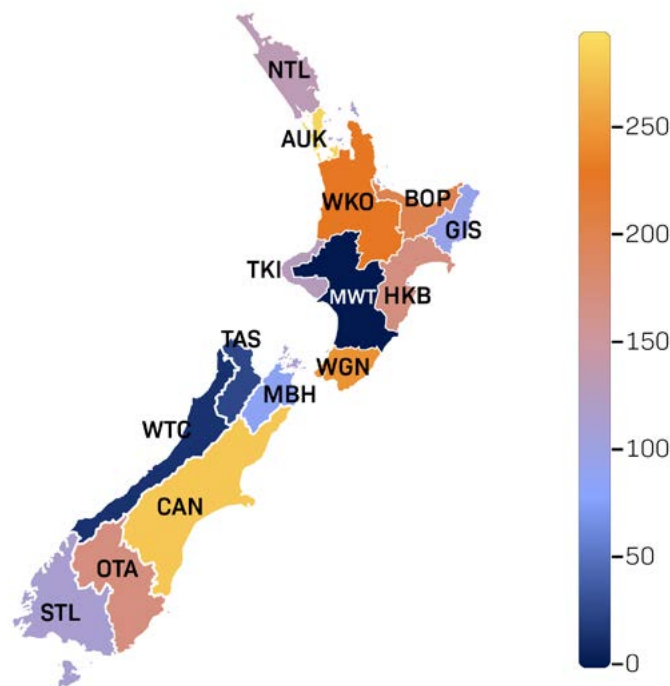


Figure 17: New Zealand Job Regional Distribution

## Job level

Data reveals that most engineering disciplines have a strong presence in entry and intermediate roles, suggesting accessible pathways for new talent and structured career progression into mid-level positions.

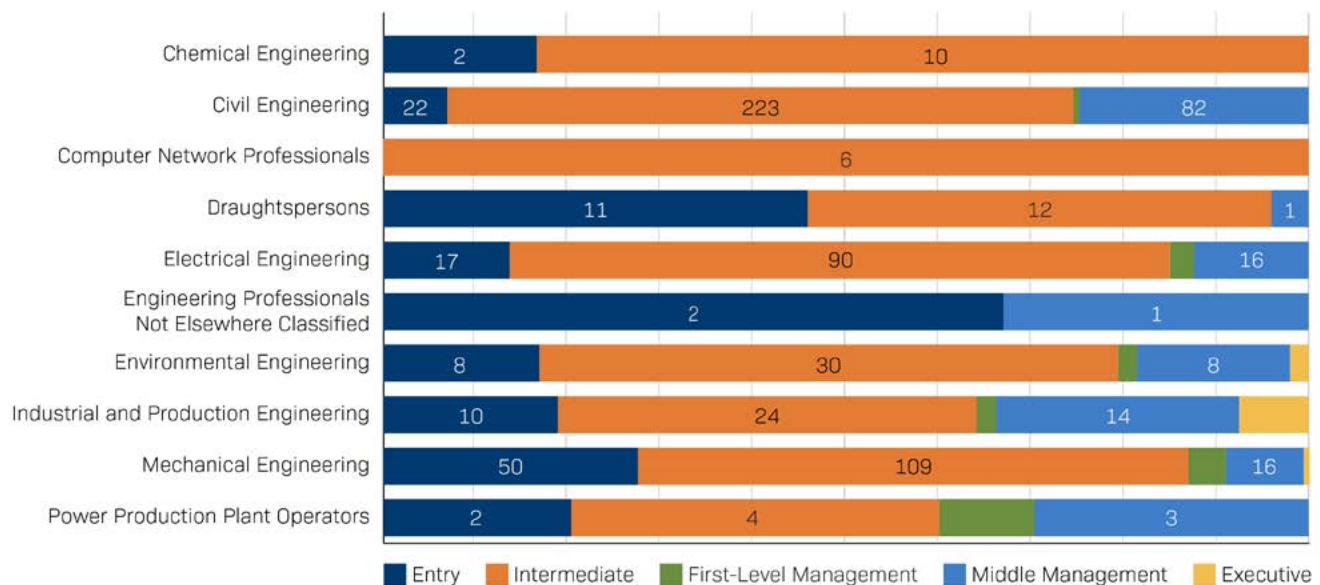


Figure 18: New Zealand Job Levels

## Average minimum years of experience

The average minimum years of experience needed to progress across job levels varies among engineering disciplines.

For entry-level roles, many fields require less than a year, highlighting accessibility for newcomers. Intermediate roles require 3 to 5 years of experience, and advancement to management positions generally demands 5 to 10 years of experience.

Executive roles, on the other hand, require extensive experience, needing up to 15 years.

Table 11: New Zealand minimum years of experience

Standard Classification	Entry	Intermediate	First-level management	Middle management	Executive
Chemical engineering	2.00	5.00			
Civil engineering	0.83	4.62	5.00	8.27	
Computer network professionals		5.50			
Draughtspersons	1.33	3.60			
Electrical engineering	1.29	5.52		9.92	
Engineering professionals not elsewhere classified				4.00	
Environmental engineering	0.00	4.50		10.60	15.00
Industrial and production engineering	0.50	4.60		5.88	8.00
Mechanical engineering	0.67	4.32	3.67	6.00	
Power production plant operators				8.00	

\*Empty cells indicate insufficient data in the dataset.

## Educational attainment

A bachelor's degree is the standard educational requirement for most engineering roles in New Zealand, with some positions occasionally considering relevant certifications.

Advanced degrees are uncommon, with limited demand in specific disciplines. High school qualifications are rarely accepted, underscoring the importance of formal higher education for pursuing a career in engineering across various fields.

Table 12: New Zealand Educational Attainment

Standard Classification	High school	Certificate	Bachelors	Masters	Doctoral
Chemical engineering	0	0	9	0	1
Civil engineering	1	10	281	2	0
Computer network professionals	0	0	1	0	0
Draughtspersons	0	3	7	0	0
Electrical engineering	0	10	96	1	0
Engineering professionals not elsewhere classified	0	3	0	0	0
Environmental engineering	0	3	32	2	0
Industrial and production engineering	0	8	28	0	0
Mechanical engineering	1	69	77	0	0
Mining engineers, metallurgists and related professionals	0	0	0	0	0
Power production plant operators	0	0	6	0	0

## Work mode distribution

The New Zealand engineering job market is showing a shift toward more flexible work arrangements. Most jobs that include work mode in the job description promote flexible and hybrid setups, allowing engineers to choose work preferences while still accommodating roles that require physical presence on-site.

*Note: This data only includes job postings where the work mode was explicitly mentioned in the job description, which may not fully represent all available positions.*

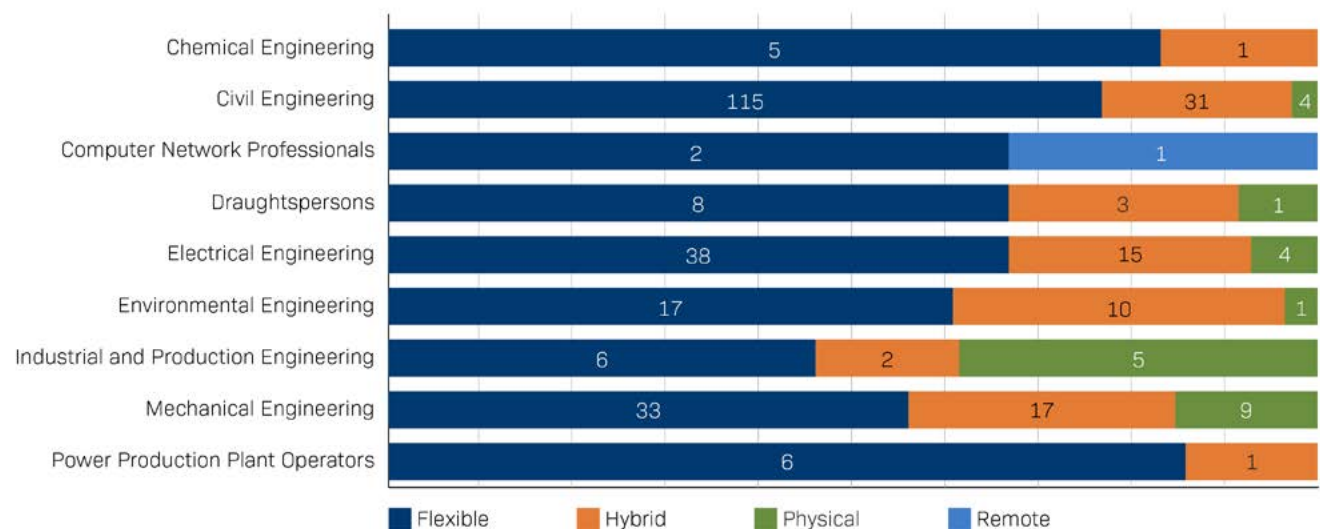


Figure 19: New Zealand Work Mode Distribution

# Engineering technical skills requirements

Here are the technical skill requirements specific to the New Zealand market. This summary highlights the most relevant ones per discipline from a total of 1,364 technical skills identified across the 795 New Zealand jobs scanned. To explore the comprehensive list of all the technical skills organized into detailed clusters, please visit [this link](#). You can also see the [Universal Skill Requirements](#) section of this report for more information on skill requirements shared among all markets examined.

## 1. Chemical engineering

- › **Project and Risk Management:** Skills in project management, risk management, and procurement for effective oversight and coordination.
- › **Process Improvement and Safety:** Focus on root cause analysis, process safety, continuous production, and process optimization techniques.
- › **Design and Engineering:** Competency in design engineering, reactor and product design, and understanding of mechanical engineering principles.
- › **Compliance and Safety Standards:** Emphasis on regulatory compliance, safety standards, and health and safety protocols.
- › **Technical and Analytical Skills:** Proficiency in data analysis, equipment specification, automation systems, and using testing methods like electron microscopy.

## 2. Civil engineering

- › **Project Management and Delivery:** Essential skills include project management, contract administration, risk management, and strategic planning for effective project execution.
- › **Design and Engineering:** Proficiency in structural and seismic engineering, geotechnical analysis, and the use of CAD software such as Civil 3D and AutoCAD is highly valued.
- › **Financial and Procurement Management:** Expertise in budget management, cost estimation, procurement, and financial performance management is critical.
- › **Site Management and Construction Practices:** Key skills involve site supervision, construction monitoring, earthworks management, and safety compliance.
- › **Technical Proficiency and Reporting:** Strong abilities in data analysis, report writing, GIS, and using modeling tools for infrastructure and water management.

## 3. Computer network professionals

- › **Networking and Communication:** Key skills include general networking, network device management, switching and routing, and knowledge of various network protocols.
- › **Cloud Technologies and Virtualization:** Proficiency in cloud computing, cloud infrastructure, and virtualization technologies is essential.
- › **Server and Systems Management:** Competency in Active Directory, operating systems (e.g., OS patching, group policy), and server deployment and support.
- › **Security and IT Service Management:** Skills in firewall technologies, security management principles, and IT service management (ITSM) tools are crucial.
- › **Project and Asset Management:** Experience in project management, asset management, quality control, and customer relationship management.



#### 4. Draughtspersons

- › **CAD Tools and 3D Modeling:** Proficiency in AutoCAD, Revit, and other 3D modeling tools, along with skills in technical drawing and drafting.
- › **Design and Drafting:** Expertise in design drafting, structural and architectural design, and engineering drawings.
- › **Project Management and Estimation:** Skills in cost estimation, project management, and continuous improvement practices.
- › **Documentation and Compliance:** Competence in report writing, documentation management, and ensuring code and safety compliance.

#### 5. Electrical engineering

- › **Project and Risk Management:** Core competencies in project management, risk assessment, budget control, and resource allocation for effective project oversight.
- › **Design and Engineering:** Proficiency in electrical design, circuit design, power system analysis, and control systems, including PLC and SCADA technologies.
- › **Simulation and Modelling:** Skills in simulation tools like PSCAD, load flow simulation, and time-domain modeling for power systems.
- › **Maintenance and Troubleshooting:** Expertise in fault finding, preventive maintenance, and troubleshooting electrical and control systems.
- › **Technical Documentation and Compliance:** Strong abilities in report writing, technical documentation, and adherence to safety and engineering standards.

#### 6. Environmental engineering

- › **Project and Asset Management:** Proficiency in project management, strategic planning, asset management, and contract documentation is essential for project execution and delivery.
- › **Data Analysis and Reporting:** Skills in data analysis, report writing, monitoring, and data visualization are crucial for effective environmental assessments.
- › **Regulatory and Compliance:** Expertise in resource consent processing, compliance advice, regulatory adherence, and environmental management is critical for ensuring projects meet legal standards.
- › **Water Resources and Flood Management:** Key skills include flood risk management, hydrologic and hydraulic modeling, and water treatment and wastewater management.
- › **Engineering and Technical Skills:** Competence in design engineering, asset investment planning, and technical proficiency, with familiarity in software tools like Microsoft and GIS.

#### 7. Industrial and production engineering

- › **Project and Risk Management:** Core skills in project management, risk assessment, contract management, and strategic planning for efficient project execution.
- › **Manufacturing and Process Improvement:** Expertise in lean manufacturing, continuous improvement, robotics, and automation systems like PLC and SCADA.
- › **Technical and Design Skills:** Proficiency in AutoCAD, design drafting, technical documentation, and machine vision technologies.
- › **Safety and Compliance:** Strong emphasis on health and safety standards, regulatory compliance, and risk management practices.
- › **Data and Financial Management:** Skills in data analysis, inventory management, budgeting, and financial performance monitoring.

## 8. Mechanical engineering

- › **Troubleshooting and Diagnostics:** High proficiency in troubleshooting, fault finding, root cause analysis, and using diagnostic tools for mechanical and hydraulic systems.
- › **Mechanical Maintenance:** Expertise in preventive and reactive maintenance, mechanical maintenance strategies, and reliability analysis, including CMMS.
- › **Design and CAD Proficiency:** Strong skills in mechanical design, CAD software (e.g., SolidWorks, AutoCAD), 3D modeling, and finite element analysis (FEA).
- › **Fabrication and Manufacturing:** Competence in welding techniques, fabrication processes, machining, and assembly, with a focus on lean manufacturing practices.
- › **Project Management and Safety Compliance:** Project planning, documentation, data analysis, and adherence to health and safety standards are essential.

## 9. Power production plant operators

- › **Project and Risk Management:** Proficiency in project management frameworks (e.g., PMBOK), strategic planning, risk management, and scheduling.
- › **Financial and Investment Skills:** Competence in investment analysis, financial modeling, and resource management for efficient operations.
- › **Data Analysis and Visualization:** Skills in data management, predictive analysis, and using tools like Power BI and Microsoft Excel.
- › **Technical and Maintenance Skills:** Knowledge of electrical systems, HVAC, plumbing, and renewable energy (e.g., solar PV), alongside technical proficiency in AutoCAD.
- › **Health and Safety Compliance:** Emphasis on following safety regulations and quality management practices, including testing and commissioning.

## 10. Engineering professionals not elsewhere classified

- › **Analytical and Oversight Skills:** Key skills include problem analysis and monitoring to ensure smooth operations.
- › **Maintenance and Repair:** Competence in ship maintenance, engine room watch, and general repair and cleaning tasks.
- › **Management and Strategic Planning:** Skills in strategic planning, contract management, and operations management are essential for overseeing projects and resources.



## Top software tools

- 1. Chemical engineering:**  
Microsoft Office tools, MEX maintenance software, Solidworks, MATLAB
- 2. Civil engineering:**  
AutoCAD, Civil 3D, 12d, Microsoft Office tools, HEC-RAS, HEC-HMS, Structural analysis software, RAMM software
- 3. Computer network professionals:**  
Windows OS, Linux OS, RAMM, Microsoft Office tools
- 4. Draughtspersons:**  
CAD, Revit, Microsoft Office tools, Autodesk products
- 5. Electrical engineering:**  
DigSILENT PowerFactory, PLS-CADD, AutoCAD, Microsoft Office tools, Siemens PSSE, SCADA
- 6. Environmental engineering:**  
Microsoft Office tools, ArcGIS, SCADA systems, CAD
- 7. Industrial and production engineering:**  
Microsoft Office tools, CMMS, AutoCAD, PowerBI, SAP
- 8. Mechanical engineering:**  
Solidworks, AutoCAD, CMMS, Microsoft Office tools, Inventor
- 9. Mining engineers, metallurgists and related professionals:**  
*No data*
- 10. Power Production Plant Operators:**  
AutoCAD, PowerBI
- 11. Engineering professionals not elsewhere classified:**  
*No data*

## Salary

From the available data, power production plant operators are the highest-paid professionals, earning an average of NZD \$125,000 per year.

They are followed by positions in civil engineering (\$117,866 p.a.), and electrical engineering (\$111,740 p.a.). Please note that these average salaries are based only on job postings that included salary information, which may not fully represent the entire job market for each role.

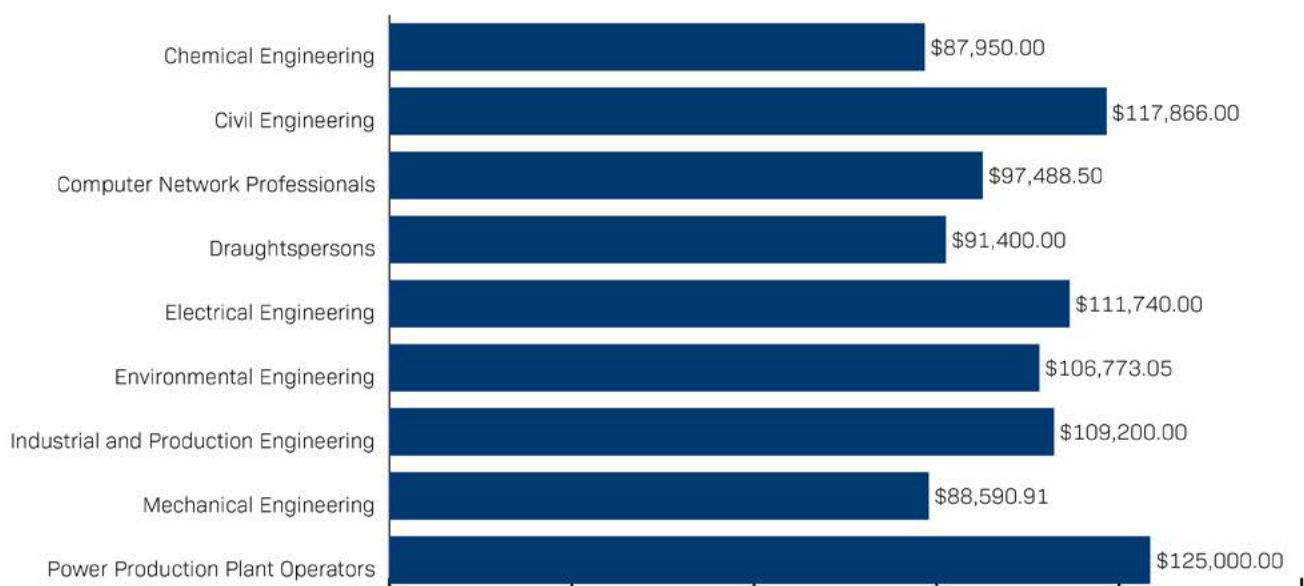


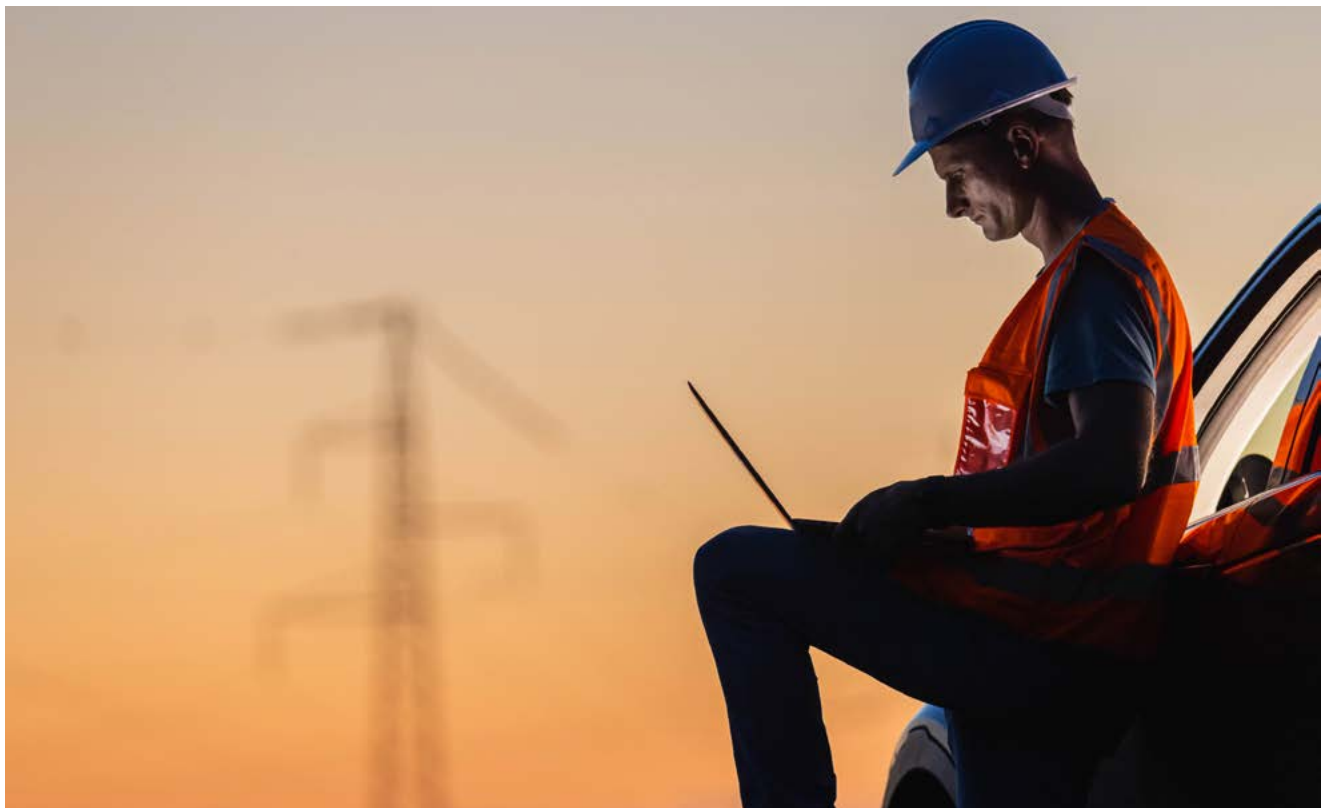
Figure 20: New Zealand Job Salaries

## Employer report

The table below presents a snapshot of leading employers/recruiters in New Zealand's engineering sector, showcasing the number of job postings from each company and a selection of sample job titles for the roles they are hiring.

Table 13: New Zealand Employer Report

	Employer	Job Post Count	Sample Job Titles
1	Archway Recruitment	36	Senior geotechnical engineer, structural engineer, senior civil engineer
2	Transpower	31	Cost engineer / cost estimator, senior power system engineer, engineering standards manager (substations)
3	Stantec New Zealand	26	Principal stormwater engineer, electrical engineer – hydropower, principal engineer – water, senior modeller
4	Grada Recruitment	21	Geotechnical engineer, structural engineer, civil engineer
5	DOWNER NZ	17	Senior design engineer – pavements, asset engineer, facilities manager
6	Rocket Lab	16	Team lead – neutron flight safety systems, principal space systems structural analyst, avionics manufacturing/systems engineering intern
7	WSP New Zealand	13	Work group manager – transportation & road safety, engineering geologist/geotechnical engineer, senior engineer bridges & civil structures
8	Technical Recruitment Solutions	12	Maintenance fitter, electrical design engineer (consultancy), automation & electrical engineer
9	Harper Smith Recruitment	11	CPEng civil engineer, intermediate – senior structural engineer, senior structural revit technician
10	84 Recruitment	10	Intermediate facade engineer, principal stormwater engineer, senior civil engineer / team leader



# Section 6. South Africa

Analyzed 1,567 jobs listed as of 14<sup>th</sup> of August 2024

## Job classification

In South Africa, the engineering job market is primarily driven by demand in the mechanical engineering (456), industrial and production engineering (320), electrical engineering (261), and civil engineering fields (227).

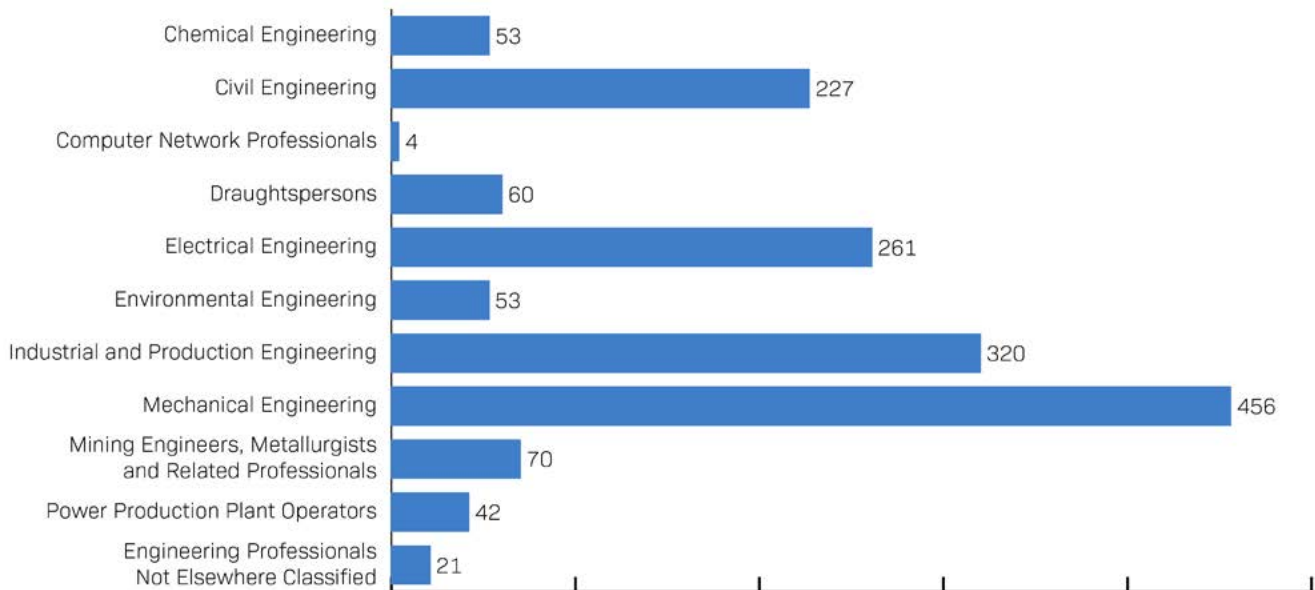


Figure 21: South Africa Job Classification

## Regional distribution

Gauteng (664), Western Cape (313), and KwaZulu-Natal (213) are the leading provinces for engineering jobs in South Africa.

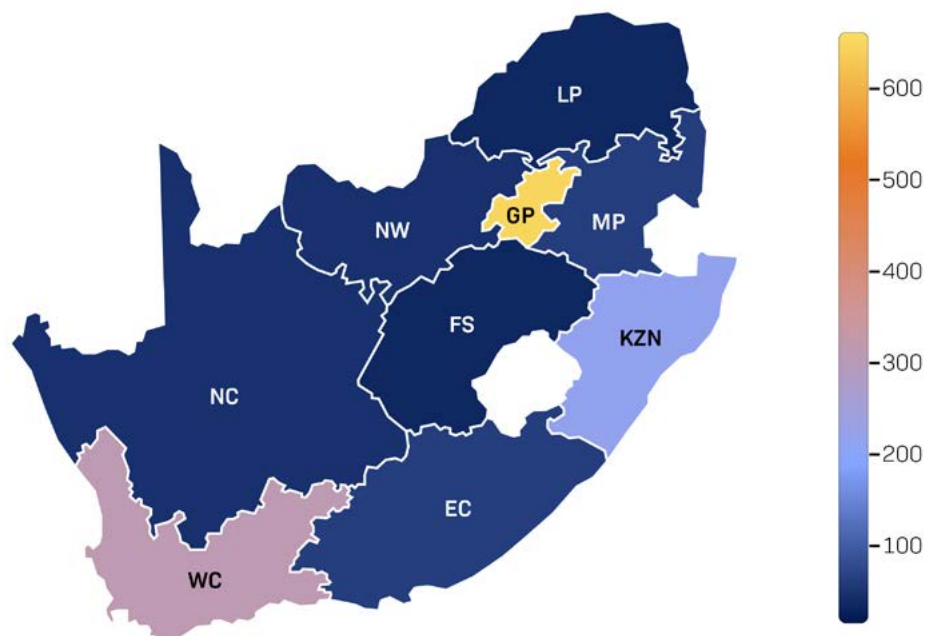


Figure 22: South Africa Job Regional Distribution



## Job level

Intermediate and entry level positions are the most in demand across various disciplines, reflecting a strong need for foundational and early-career talent in the engineering industry. Management and executive positions are less common overall, with only a handful requiring this advanced level of experience. This distribution suggests that the engineering job market in South Africa is primarily focused on expanding the workforce at the operational level.

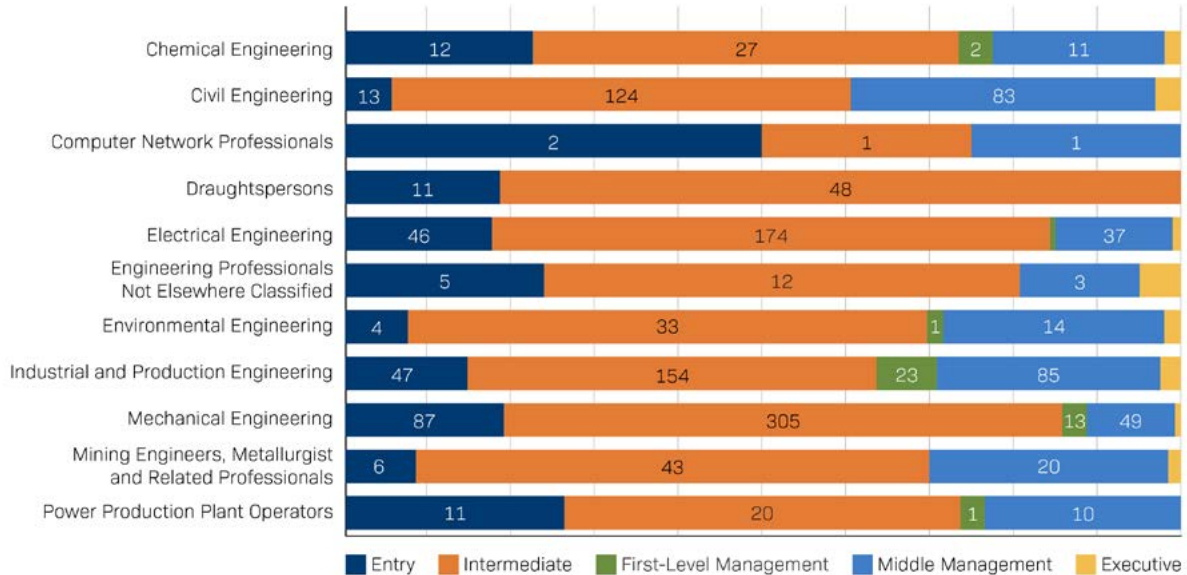


Figure 23: South Africa Job Levels

## Average minimum years of experience

Entry level roles typically require 1 to 3 years of experience while intermediate roles require 3 to 5 years of experience as a minimum requirement. Meanwhile, middle management roles have a wide range of years of experience requirement, ranging from 4 to 12 years. Executive engineering roles generally require more than 10 years of experience in the industry.

Table 14: South Africa minimum years of experience

Standard Classification	Entry	Intermediate	First-level management	Middle management	Executive
Chemical engineering	1.33	3.96	3.00	4.38	10.00
Civil engineering	1.56	5.52		9.69	18.33
Computer network professionals	1.00				
Draughtspersons	2.00	4.09			
Electrical engineering	1.64	4.36		9.55	12.50
Engineering professionals not elsewhere classified	3.00	4.11		11.50	10.00
Environmental engineering	2.33	4.68	3.00	6.91	10.00
Industrial and production engineering	1.52	3.59	3.62	6.48	10.00
Mechanical engineering	1.85	4.24		7.26	16.50
Mining engineers, metallurgists and related professionals	3.50	4.75		7.21	20.00
Power production plant operators	2.43	3.78		6.80	

\*Empty cells indicate insufficient data in the dataset.

## Educational attainment

Although a bachelor's degree is considered a foundational requirement for an engineering-related job, some employers in South Africa are more open to accepting applicants with high school diplomas and relevant certificates for a certain role, particularly in fields like draughtspersons and mechanical engineering. This flexibility reflects an inclusive hiring approach, allowing candidates with varied educational backgrounds to enter the workforce, provided they have the necessary practical skills and certifications.

Table 15: South Africa Educational Attainment

Standard Classification	High school	Certificate	Bachelors	Masters	Doctoral
Chemical engineering	6	8	34	3	0
Civil engineering	10	25	170	7	0
Computer network professionals	1	1	0	0	0
Draughtspersons	13	25	10	0	0
Electrical engineering	27	90	119	3	0
Engineering professionals not elsewhere classified	4	3	8	1	0
Environmental engineering	9	9	28	2	0
Industrial and production engineering	89	67	126	4	0
Mechanical engineering	103	183	112	4	1
Mining engineers, metallurgists and related professionals	19	16	32	0	0
Power production plant operators	13	10	16	0	0

## Work mode distribution

The engineering professions in this market require on-site roles, with most of the positions across various engineering disciplines indicating physical presence as a key requirement. This is likely due to the hands-on nature of the roles and the need for access to specialized equipment or facilities.

*Note: This data only includes job postings where the work mode was explicitly mentioned in the job description, which may not fully represent all available positions.*

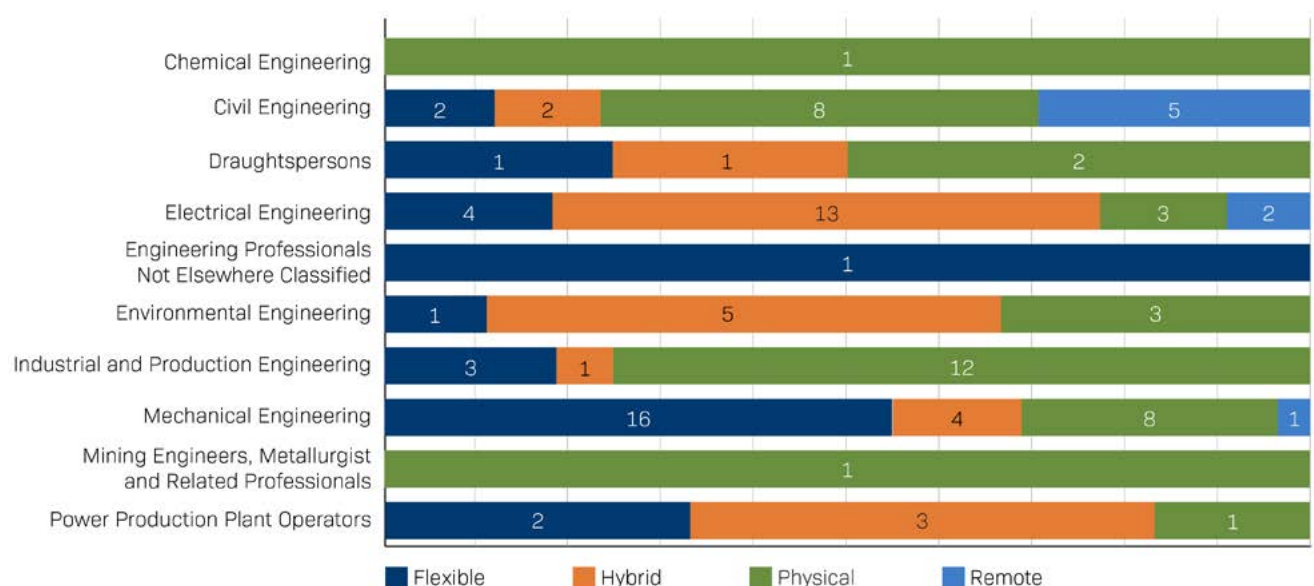


Figure 24: South Africa Work Mode Distribution

# Engineering technical skills requirements

Here are the technical skill requirements specific to the South African market. This summary highlights the most relevant ones per discipline from a total of 2,622 technical skills identified across the 1,567 South African jobs scanned. To explore the comprehensive list of all the technical skills organized into detailed clusters, please visit [this link](#). You can also see the [Universal Skill Requirements](#) section of this report for more information on skill requirements shared among all markets examined.

## 1. Chemical engineering

- › **Project and Quality Management:** Proficiency in project management, quality control, and budget management, with a strong emphasis on process optimization and strategic planning.
- › **Data Analysis and Reporting:** Skills in data analysis, report generation, cost-benefit analysis, and statistical reporting for effective decision-making.
- › **Regulatory Compliance and Safety:** Knowledge of HACCP, FSSC 22000, ISO standards, and safety protocols, including laboratory safety and the OSH Act.
- › **Process Design and Engineering:** Expertise in chemical process design, heat balance, fluid management, and automated process control techniques.
- › **Maintenance and Troubleshooting:** Competence in troubleshooting, equipment maintenance, and operations management to ensure continuous process improvement.

## 2. Civil engineering

- › **Project and Contract Management:** Key skills include project management, contract administration, risk management, and tender management for effective project delivery.
- › **Design and Structural Engineering:** Proficiency in civil design, structural analysis, AutoCAD, Civil 3D, and various structural design methods like reinforced concrete and foundation design.
- › **Cost and Budget Management:** Expertise in cost estimation, budget control, financial management, and resource allocation to optimize project finances.
- › **Quality and Safety Compliance:** Emphasis on quality management, quality assurance, health and safety management, and compliance with industry standards.
- › **Technical and Software Proficiency:** Competence in reporting, Microsoft tools (e.g., Excel, Project), and other software like Prokon and Revit for efficient project execution.

## 3. Computer network professionals

- › **Networking and Configuration:** Proficiency in network fundamentals, configuration management, and technologies like Mikrotik, LTE, and network engineering.
- › **Security and Surveillance:** Skills in access control, CCTV, and security engineering to manage and protect network infrastructures.
- › **Technical Support and Problem Solving:** Competence in troubleshooting, fault finding, and providing technical support to resolve network issues.
- › **VoIP and System Management:** Experience with VoIP solutions such as Yeastar, Mitel, and 3CX, along with skills in virtualization systems (e.g., VMS, VBX).

## 4. Draughtspersons

- › **CAD and Modeling Software:** Proficiency in AutoCAD, Revit, SolidWorks, and other 2D and 3D design software, as well as BIM tools for project execution.
- › **Technical Drawing and Drafting:** Skills in technical drawing, drafting techniques, structural detailing, and blueprint reading are essential.
- › **Manufacturing Processes and CNC Skills:** Competence in CNC programming, machining, and understanding fabrication and manufacturing methods.
- › **Documentation and Administration:** Emphasis on document management, administrative skills, and handling project documentation like bills of materials.

- › **Regulatory and Structural Knowledge:** Familiarity with industry standards, building codes, and structural drafting for steel and concrete structures.

## 5. Electrical engineering

- › **Project and Risk Management:** Key skills in project management, scheduling, risk assessment, contract management, and budgeting to ensure successful project execution.
- › **Troubleshooting and Maintenance:** Proficiency in troubleshooting, fault finding, preventive maintenance, and repair of electrical systems and equipment.
- › **Control Systems and Automation:** Expertise in PLC systems, SCADA, HMI development, and control system design, including programming and process automation.
- › **Design and Technical Documentation:** Competence in electrical design, circuit analysis, CAD tools (e.g., AutoCAD), and creating technical documentation and reports.
- › **Compliance and Quality Assurance:** Emphasis on quality control, safety inspections, compliance with electrical standards, and adherence to safety protocols.

## 6. Environmental engineering

- › **Quality Management and Compliance:** Proficiency in quality control, quality assurance, auditing practices, and compliance with ISO and HACCP standards.
- › **Project Management:** Skills in project management, budget management, feasibility studies, and strategic planning for effective project execution.
- › **Data Analysis and Technical Reporting:** Competence in data analysis, root cause analysis, report writing, and the use of Microsoft applications for documentation.
- › **Health, Safety, and Risk Management:** Emphasis on safety adherence, incident investigation, risk assessment, and emergency response planning.
- › **Environmental and Resource Management:** Knowledge in environmental management, resource assessment, renewable energy, and sustainable practices like nutrient and chemical management.

## 7. Industrial and production engineering

- › **Project and Quality Management:** Proficiency in project management, quality control, quality assurance, and process improvement, with skills in Six Sigma and Lean methodologies.
- › **Data Analysis and Software Proficiency:** Strong analytical skills, data analysis, and proficiency in Microsoft applications (Excel, Word), ERP systems like SAP, and data visualization tools.
- › **Operations and Inventory Management:** Expertise in inventory management, production planning, operations management, and supply chain logistics.
- › **Technical and Maintenance Skills:** Competence in troubleshooting, maintenance planning, preventive maintenance, and equipment repair.
- › **Compliance and Safety Standards:** Emphasis on health and safety compliance, risk management, and regulatory adherence.

## 8. Mechanical engineering

- › **Maintenance and Repair:** High proficiency in preventive maintenance, repair skills, hydraulic and pneumatic systems, and equipment management for optimal performance.
- › **Project Management and Planning:** Competence in project management, cost control, strategic planning, and workshop management for efficient resource allocation.
- › **Technical Drawing and CAD Skills:** Expertise in technical drawing, CAD software (e.g., AutoCAD, SolidWorks), and engineering schematics for design and documentation.
- › **Diagnostics and Troubleshooting:** Strong skills in troubleshooting methods, fault analysis, root cause investigation, and use of diagnostic tools for effective problem-solving.
- › **Safety and Compliance:** Emphasis on safety protocols, compliance with regulations, risk management, and health and safety standards.

## 9. Mining engineers, metallurgists and related professionals

- › **Project and Risk Management:** Strong skills in project management, strategic planning, risk assessment, and contract administration to oversee mining projects efficiently.
- › **Safety and Compliance:** Emphasis on conducting safety inspections, adherence to SHERQ standards, hazard identification, and compliance with regulatory health and safety protocols.
- › **Mining Operations:** Proficiency in mine planning, blasting optimization, drilling monitoring, mineral processing, and overall operational maintenance for efficient and sustainable mining practices.
- › **Operational and Technical Skills:** Competence in troubleshooting, diagnosing mechanical and electrical issues, and using specialized software for modeling and technical problem-solving.
- › **Data Analysis and Reporting:** Expertise in data analysis, performance monitoring, numerical modeling, and preparing detailed reports to facilitate data-driven decision-making and operational improvements.

## 10. Power production plant operators

- › **Maintenance Skills:** Proficiency in preventive maintenance, equipment handling, troubleshooting, fault finding, and using common tools and techniques like machinery alignment and CMMS (Computerized Maintenance Management Systems).
- › **Management Skills:** Strong project management capabilities, strategic planning, financial management, inventory management, and efficient scheduling practices to oversee plant operations effectively.
- › **Technical Skills:** Expertise in software skills like Microsoft Office, safety compliance, and technical support for systems like CRM software and electrical testing for monitoring and operations.
- › **Machine Skills:** Competence in managing machinery and equipment, understanding mechanical and electrical systems, operating power generation equipment, and designing infrastructure solutions like metering and PV systems.
- › **Compliance Skills:** Focus on risk assessment, quality control, compliance monitoring, and adherence to safety regulations such as the OSH Act and labor legislation.

## 11. Engineering professionals not elsewhere classified

- › **Computer Skills:** Proficiency in office software like Microsoft Excel, Microsoft Word, and SAP, as well as general computer literacy and website monitoring.
- › **Financial Skills:** Expertise in financial management, budget preparation, expenditure control, cost analysis, and revenue management, including invoice handling and cashflow management.
- › **Data Analysis Skills:** Skills in data interrogation, analytical techniques, reconciliation, and the use of pivot tables and data capture methods for comprehensive analysis.
- › **Administrative Skills:** Competence in documentation, scheduling, packaging, note transcribing, and administrative tasks to support operational efficiency.
- › **Planning and Reporting:** Abilities in strategic planning, operational innovation, report writing, record keeping, and document management to align with standards and compliance requirements.



## Top software tools

- 1. Chemical engineering:**  
SYSPRO, Aspen, Microsoft Office tools, BioWin, CHEMCAD
- 2. Civil engineering:**  
Microsoft Office tools, AutoCAD, PROKON, Revit, Civil 3D
- 3. Computer network professionals:**  
Biometric devices (Suprema, Idemia, Virdi), Security tools (Immix, SureView, Camect, Calipsa, Digital Watchdog)
- 4. Draughtspersons:**  
AutoCAD, Autodesk, SolidWorks, Microsoft Office tools, Inventor, PROKON, Revit
- 5. Electrical engineering:**  
AutoCAD, Microsoft Office tools, Siemens, EPLAN, PVsyst
- 6. Environmental engineering:**  
Microsoft Office tools, CRM software, QGIS, ArcMap
- 7. Industrial and production engineering:**  
Microsoft Office tools, PowerBI, Autodesk, SYSPRO, SAP, SolidWorks
- 8. Mechanical engineering:**  
Microsoft Office tools, AutoCAD, SolidWorks, Inventor, SAP, Siemens, CMMS
- 9. Mining engineers, metallurgists and related professionals:**  
Microsoft Office tools, Mine planning software, MS Project
- 10. Power Production Plant Operators:**  
Microsoft Office tools, Project management tools, SAP, Google Workspace, CRM software
- 11. Engineering professionals not elsewhere classified:**  
Microsoft Office tools

## Salary

The salary distribution for engineering professions shows significant variation by specialization. “Not Elsewhere Classified” engineering roles which may include specialized positions in safety, nuclear or biomedical engineering, for example, lead with an average yearly salary of R947,333, indicating high pay for niche skills. Roles within environmental engineering (R588,026 p.a.) and civil engineering (R655,192 p.a.) are also well-compensated, reflecting demand in sustainability and infrastructure.

Electrical engineers (R446,012 p.a.) and power production plant operators (R316,460 p.a.) earn competitive wages, highlighting the importance of energy expertise. In contrast, mining engineers and metallurgists earn a lower average of R214,301 p.a., possibly due to demand shifts in the mining sector. Overall, while engineering salaries are competitive, they vary widely based on field-specific demand and required expertise.

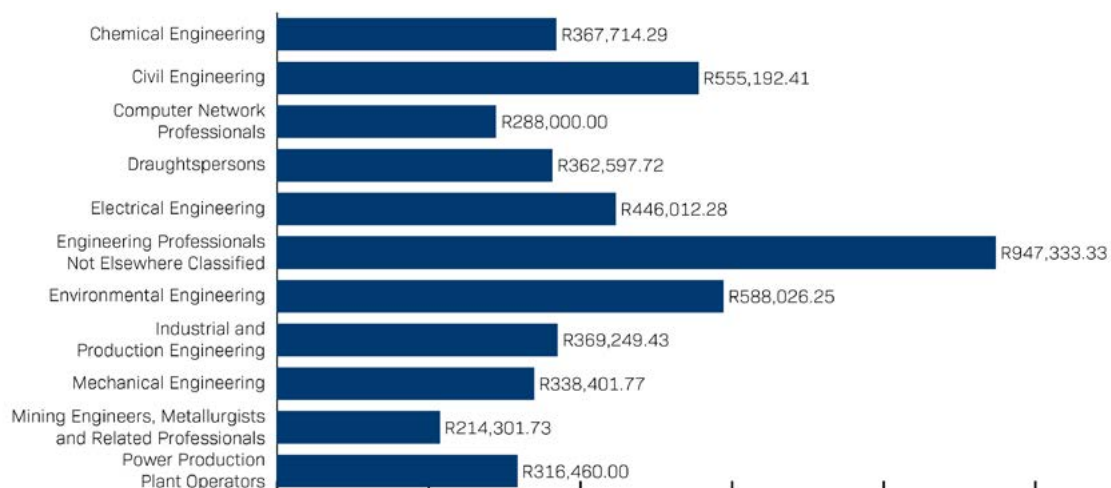


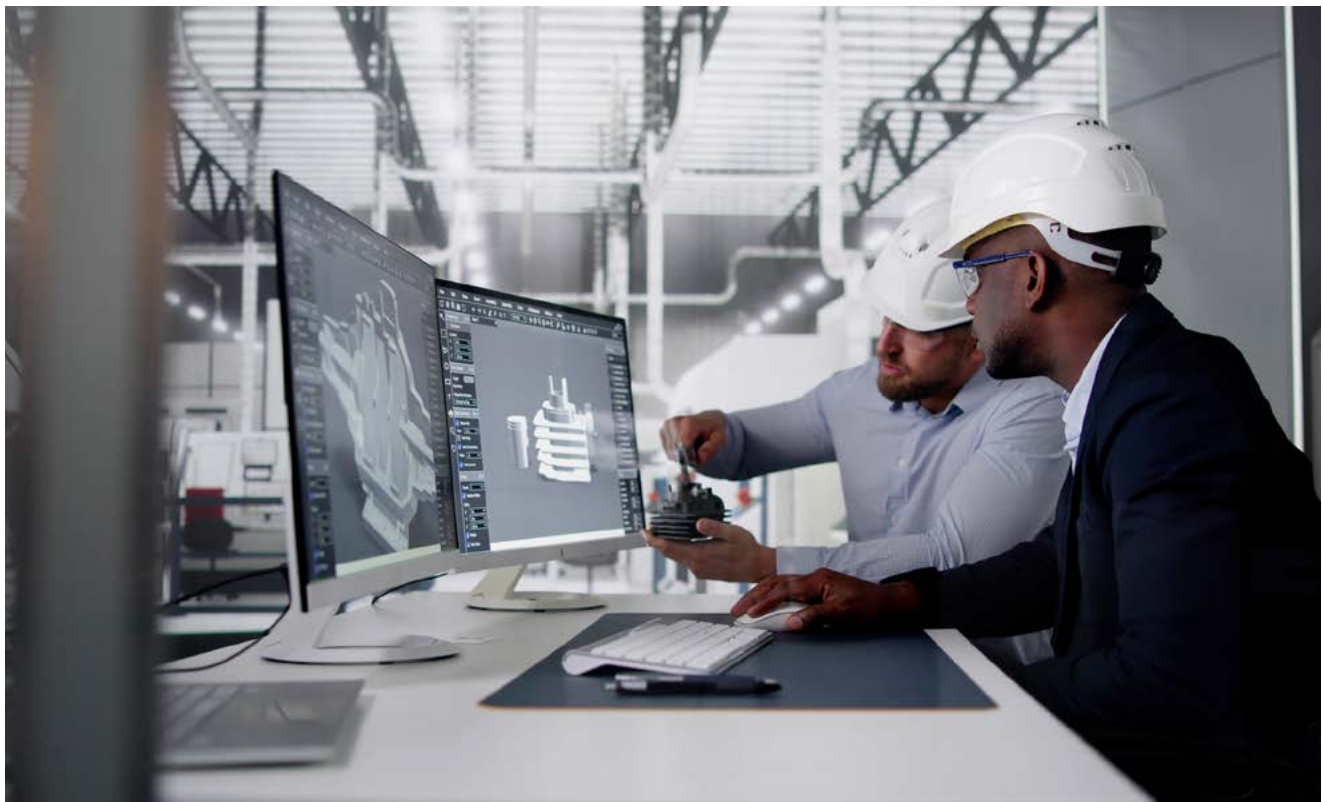
Figure 25: South Africa Job Salaries

## Employer report

The table below provides an overview of key employers/recruiters in South Africa's engineering job market, detailing the number of job postings and sample job titles for each employer. This data highlights the diverse range of roles available across various engineering disciplines and industries, offering insights into the types of positions employers are actively seeking to fill

Table 16: South Africa Employer Report

	Employer	Job Post Count	Sample Job Titles
1	Professional Career Services - Gauteng	79	Senior estimator, quality team leader (automotive), plant supervisor
2	The Recruitment Guy (Pty) Ltd	62	Senior contracts manager, engineering storeman (mechanical & electrical), diesel truck technicians
3	Unique Personnel	40	Mechanical design engineer, technical manager, electrician
4	Hire Resolve	39	Resident engineer – structures, tender specialist, mid/senior draughtsman
5	West Coast Personnel	34	Packaging supervisor, turner machinist, assessor & moderator – aircon & refrigeration trade
6	GSI Talent Solutions Pty Ltd	26	Millwright, jnr mechanical engineer, electronic engineer graduate
7	The Legends Agency	25	Refrigeration warehouse technician, operator composite industry, injection moulding maintenance and engineering technician/manager
8	Worldwide Staffing (Pty) Ltd	22	Mechanical engineer – power station, riggers, c & i design engineer
9	Prosperitas Personnel	20	Battery engineer (solar sector), strategic sourcing manager
10	RPO Recruitment	19	Red seal mechanical fitter, construction manager, structural technologist



# Section 7. United Kingdom

Analyzed 5,587 jobs listed as of 14<sup>th</sup> of August 2024

## Job classification

In the United Kingdom (UK), mechanical engineering has the highest number of roles, totaling 2,268, reflecting the strong need for expertise in mechanical systems and production. Electrical engineering follows with 1,148 available job positions, indicating a demand in sectors requiring electrical knowledge. Industrial and production engineering and civil engineering also show high numbers in the UK, totaling 786 and 676 job demands, respectively.

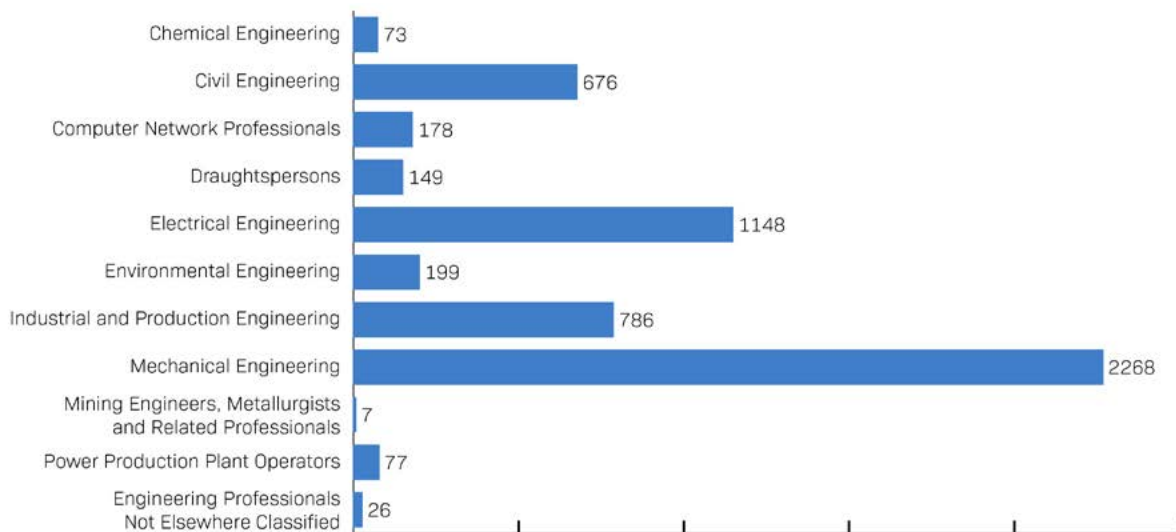


Figure 26: United Kingdom Job Classification

## Regional distribution

Engineering job opportunities in the UK are highly concentrated in the South East (857), North West (698), and West Midlands (661). London has relatively fewer positions (252), which suggests that the engineering demand is centered outside the capital, with a focus on regional hubs.

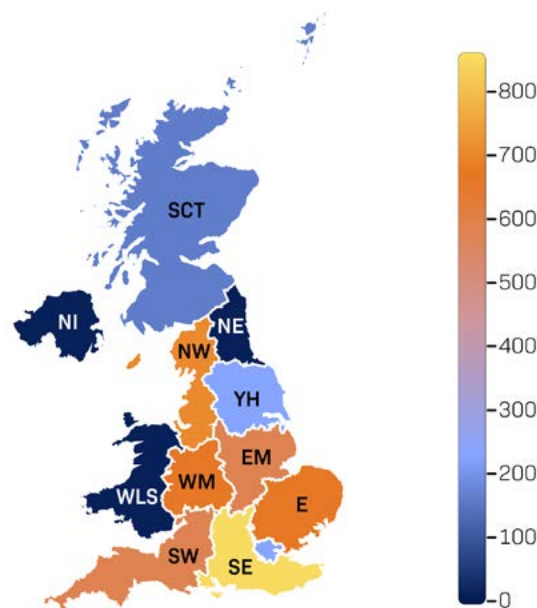


Figure 27: United Kingdom Job Regional Distribution

## Job level

The distribution of job levels across engineering-related roles shows a strong preference for entry level and intermediate positions. Middle management roles are fewer, and executive positions are rare. This suggests the UK engineering job market favors operational and technical roles over managerial positions.

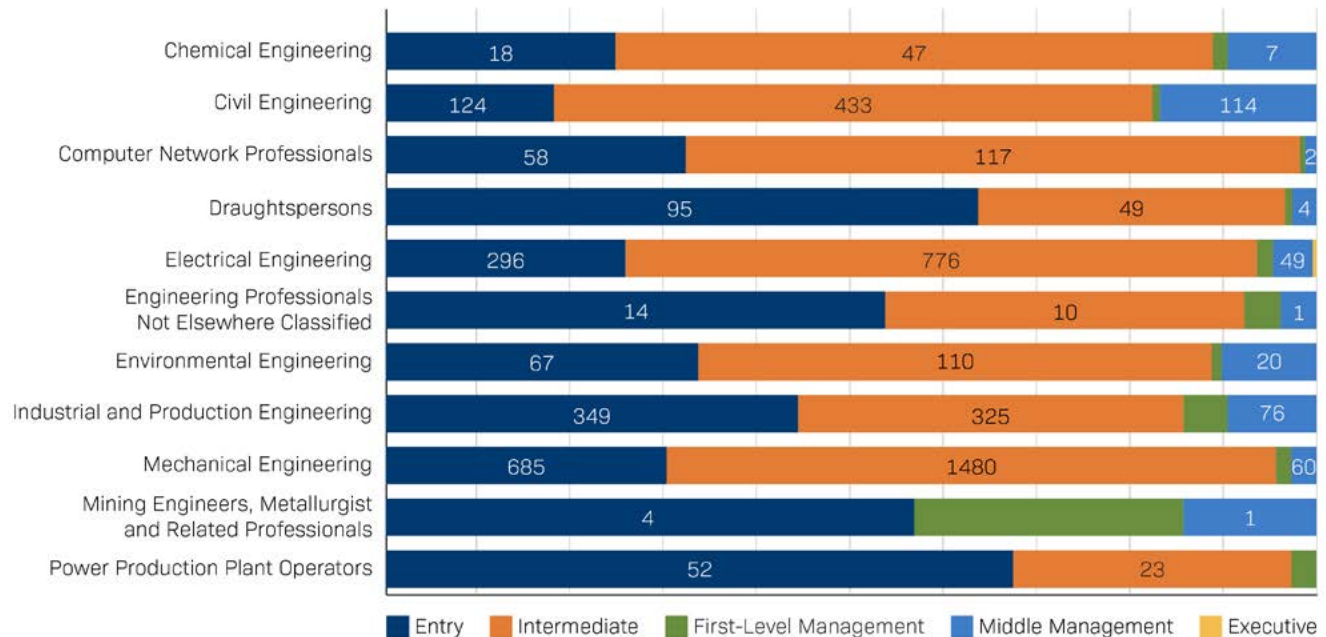


Figure 28: United Kingdom Job Levels

## Average minimum years of experience

The average minimum years of experience required vary widely across engineering roles and job levels. Entry level positions demand up to 2 years of experience. Intermediate roles typically need 3 to 4 years, and management level positions often require 3 to 6 years of experience.

Table 17: United Kingdom minimum years of experience

Standard Classification	Entry	Intermediate	First-level management	Middle management	Executive
Chemical engineering	2	4.07		4	
Civil engineering	0.78	3.83		6.38	
Computer network professionals	1.88	3.77		5	
Draughtspersons	1.88	3		2	
Electrical engineering	1.18	4.63	3	6	12
Engineering professionals not elsewhere classified		3.6			
Environmental engineering	0.8	3.32		6.4	
Industrial and production engineering	1.92	4.11	4	5	
Mechanical engineering	1.98	3.57	3.33	5.36	
Mining engineers, metallurgists and related professionals					
Power production plant operators	0.05	13.5			

\*Empty cells indicate insufficient data in the dataset.

## Educational attainment

The data shows that certificate-level qualifications are quite prevalent in certain engineering disciplines, particularly mechanical engineering (827), electrical engineering (392), and industrial and production engineers (118). However, a bachelor's degree remains essential for many roles. This suggests a mix of educational requirements in the engineering sector, with some flexibility for hands-on roles.

Table 18: United Kingdom Educational Attainment

Standard Classification	High school	Certificate	Bachelors	Masters	Doctoral
Chemical engineering	0	5	46	0	0
Civil engineering	2	46	343	12	0
Computer network professionals	0	6	10	0	0
Draughtspersons	1	22	20	1	0
Electrical engineering	6	392	234	6	0
Engineering professionals not elsewhere classified	1	3	2	0	0
Environmental engineering	1	35	66	3	0
Industrial and production engineering	12	118	95	2	0
Mechanical engineering	14	827	298	9	1
Mining engineers, metallurgists and related professionals	0	0	1	0	0
Power production plant operators	3	36	6	0	0

## Work mode distribution

The work mode distribution shows that hybrid mode of work is prevalent, indicating partial remote arrangements in the different disciplines. However, while engineering increasingly adapts to hybrid and flexible arrangements, many job positions still require on-site work.

*Note: This data only includes job postings where the work mode was explicitly mentioned in the job description, which may not fully represent all available positions.*

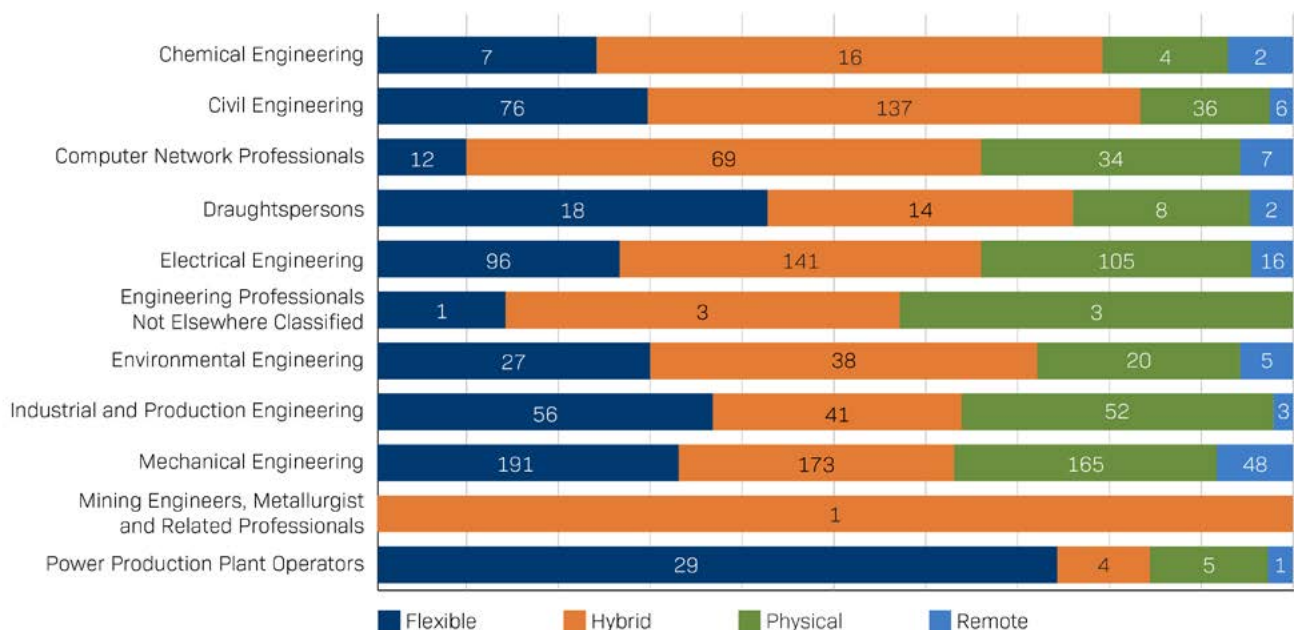


Figure 29: United Kingdom Work Mode Distribution



# Engineering technical skills requirements

Here are the technical skill requirements specific to the UK market. This summary highlights the most relevant ones per discipline from a total of 7,011 technical skills identified across the 5,587 UK jobs scanned. To explore the comprehensive list of all the technical skills organized into detailed clusters, please visit [this link](#). You can also see the [Universal Skill Requirements](#) section of this report for more information on skill requirements shared among all markets examined.

## 1. Chemical engineering

- › **Process Engineering:** Extensive expertise in optimizing chemical processes, heat and mass transfer, and automation to improve efficiency and output.
- › **Technical Skills:** Proficiency in using engineering software, conducting technical analysis, and applying advanced chemical engineering principles for problem-solving.
- › **Project Management:** Skills in budget management, scheduling, risk assessment, and strategic planning to ensure successful project execution.
- › **Quality Assurance:** Competence in quality control, process auditing, and adherence to industry standards to maintain high production quality.
- › **Health and Safety:** Emphasis on implementing safety protocols, hazard identification, compliance with safety regulations, and risk management practices.

## 2. Civil engineering

- › **Technical Skills:** Extensive knowledge of engineering principles, structural analysis, geotechnical engineering, and proficiency in CAD and BIM software for design and project modeling.
- › **Design Skills:** Expertise in designing infrastructure projects, creating engineering plans, and developing structural specifications to meet project requirements.
- › **Project Management:** Strong abilities in planning, scheduling, budget management, risk assessment, and overseeing project execution from conception to completion.
- › **Construction Management:** Proficiency in overseeing construction activities, subcontractor coordination, site management, and ensuring compliance with safety standards.
- › **Quality Assurance and Control:** Competence in quality control measures, inspections, and ensuring construction and design standards are met.

## 3. Computer network professionals

- › **Network Administration:** Advanced skills in configuring, maintaining, and optimizing network systems, including routing, switching, and managing network infrastructure.
- › **Technical Support:** Proficiency in troubleshooting, diagnosing, and resolving network and system issues, providing efficient and reliable support to ensure seamless operations.
- › **Operating Systems Administration:** Expertise in managing and administering various operating systems, ensuring system stability, security, and performance optimization.
- › **Cloud Technologies:** Strong capabilities in deploying and managing cloud-based solutions, understanding cloud architecture, and leveraging platforms like AWS, Azure, and Google Cloud.
- › **Automation and Scripting:** Competence in automating tasks and scripting for efficient system management, using tools like Python, Bash, and PowerShell.

#### 4. Draughtspersons

- › **CAD & Design Software:** Proficiency in using AutoCAD, Revit, SolidWorks, and other design tools for creating detailed and accurate engineering drawings and models.
- › **Technical Skills & Software:** Expertise in technical drafting, blueprint interpretation, and using specialized software for design and documentation.
- › **Fabrication & Welding:** Knowledge of welding techniques, fabrication methods, and understanding construction materials for producing high-quality structures.
- › **General Skills & Attributes:** Emphasis on attention to detail, precision in work, and strong organizational skills to handle complex design projects.
- › **Materials & Construction:** Understanding of construction materials, methods, and standards to ensure durability and compliance with design specifications.

#### 5. Electrical engineering

- › **Analytical and Technical Skills:** Expertise in analyzing complex electrical systems, applying engineering principles, and using advanced technical skills to solve problems efficiently.
- › **Electrical Maintenance:** Proficiency in maintaining, inspecting, and repairing electrical systems and equipment to ensure optimal performance and reliability.
- › **Electrical Engineering Design:** Strong skills in designing electrical circuits, systems, and components, with a focus on innovation and efficiency.
- › **Electrical Systems:** In-depth knowledge of electrical systems, including power distribution, system integration, and understanding electrical schematics.
- › **Skills in Electronics:** Competence in working with electronic systems, understanding microelectronics, and applying technical knowledge for system enhancements.

#### 6. Environmental engineering

- › **Technical Design Skills:** Expertise in designing environmental solutions, creating plans for waste management, water treatment, and sustainable infrastructure projects.
- › **Environmental Management Skills:** Proficiency in managing environmental projects, implementing eco-friendly practices, and ensuring compliance with environmental regulations.
- › **Health and Safety Skills:** Emphasis on developing and enforcing health and safety protocols, conducting risk assessments, and ensuring workplace safety compliance.
- › **Maintenance Skills:** Skills in maintaining environmental systems, managing equipment, and applying preventive maintenance strategies to reduce environmental impact.
- › **Project Management Skills:** Competence in overseeing environmental projects, managing budgets, scheduling, and ensuring successful project completion.

#### 7. Industrial and production engineering

- › **Engineering and Technical Skills:** Proficiency in engineering practices, process optimization, and applying technical knowledge to enhance manufacturing and production efficiency.
- › **Skilled Trades and Fabrication:** Expertise in fabrication techniques, welding, machining, and using trade skills for high-quality production outcomes.
- › **Quality Assurance and Control:** Strong capabilities in quality management, conducting inspections, implementing standards, and ensuring continuous product quality.
- › **Lean and Continuous Improvement:** Focus on applying Lean principles, Six Sigma, and continuous improvement strategies to optimize processes and reduce waste.
- › **Production and Operations Management:** Competence in managing production workflows, resource allocation, and implementing efficient operations management practices.

## 8. Mechanical engineering

- › **Repair and Maintenance:** Extensive skills in preventive and corrective maintenance, equipment repair, and ensuring machinery operates efficiently and reliably.
- › **Design and Engineering:** Proficiency in mechanical design, 3D modeling, structural analysis, and developing engineering solutions for complex mechanical systems.
- › **Diagnostics:** Expertise in diagnosing mechanical issues, performing root cause analysis, and using diagnostic tools to identify and resolve system faults.
- › **Electrical Systems:** Strong knowledge of integrated electrical systems, power distribution, and managing electro-mechanical components within mechanical projects.
- › **Project Management:** Competence in planning, scheduling, budget control, and managing resources to ensure the successful delivery of engineering projects.

## 9. Mining engineers, metallurgists and related professionals

- › **Manufacturing Skills:** Expertise in mining-related manufacturing processes, production methods, and understanding materials used in mining operations.
- › **Management Skills:** Competence in overseeing mining operations, resource management, and strategic planning to optimize output and efficiency.
- › **Process Control Skills:** Proficiency in monitoring and controlling mining processes, ensuring efficient operations, and maintaining quality standards.
- › **Scientific Skills:** Strong understanding of geology, mineral processing, and applying scientific methods to solve mining challenges.
- › **Technical Skills:** Skills in using mining-specific tools, technical analysis, and applying engineering principles to enhance mining operations.

## 10. Power production plant operators

- › **Technical Skills:** Strong proficiency in operating power generation equipment, understanding complex systems, and applying engineering principles for plant efficiency.
- › **Maintenance Skills:** Expertise in preventive maintenance, equipment inspection, and ensuring that machinery and systems function reliably.
- › **Systems and Technology:** Competence in using advanced technology, monitoring systems, and implementing technological improvements to optimize plant operations.
- › **Operational Management:** Skills in managing plant operations, overseeing workflow efficiency, and ensuring effective resource utilization.
- › **Safety and Compliance:** Emphasis on following safety protocols, regulatory compliance, and implementing safety measures to ensure a secure working environment.

## 11. Engineering professionals not elsewhere classified

- › **Software Skills:** Proficiency in using engineering software and tools to enhance design, analysis, and project management.
- › **Welding Techniques:** Expertise in various welding methods and fabrication processes for creating durable and high-quality structures.
- › **Manufacturing Processes:** Skills in overseeing manufacturing operations, understanding production methods, and optimizing processes for efficiency.
- › **Quality Management:** Emphasis on maintaining high standards, conducting quality inspections, and ensuring product consistency and reliability.
- › **Materials Knowledge:** Understanding of different materials and their properties, crucial for design, fabrication, and engineering applications.

## Top software tools

- 1. Chemical engineering:**  
Microsoft Office tools, AutoCAD, CRM, Solidworks
- 2. Civil engineering:**  
AutoCAD, Microsoft Office tools, MicroDrainager, Civil 3D, Revit, Tekla
- 3. Computer network professionals:**  
Microsoft Office tools, Windows OS, Azure, VMware, Linux, Cisco, Active Directory, Hyper-V
- 4. Draughtspersons:**  
AutoCAD, Solidworks, Revit, Autodesk Inventor, Microsoft Office tools, Adobe Creative Suite
- 5. Electrical engineering:**  
AutoCAD, Microsoft Office tools, Siemens, Allen-Bradley, Solidworks Electrical
- 6. Environmental engineering:**  
Microsoft Office tools, AutoCAD, CadnaA, SAP, QGIS
- 7. Industrial and production engineering:**  
Microsoft Office tools, ERP/MRP, SAP, AutoCAD, CMMS
- 8. Mechanical engineering:**  
Microsoft Office tools, Solidworks, AutoCAD, Autodesk Inventor, CMMS, Siemens, FANUC, Creo
- 9. Mining engineers, metallurgists and related professionals:**  
*No data*
- 10. Power Production Plant Operators:**  
ComAp, PLC, DCS control system, SCADA
- 11. Engineering professionals not elsewhere classified:**  
Microsoft Office tools

## Salary

The salary data indicates considerable variation across engineering roles, with this in chemical engineering earning £50,731.82 per year on average, followed by power production plant operators at £49,500 p.a.

It is important to note, however, that these figures were generated only from job postings where salaries were explicitly stated, which may not represent all positions in the market.

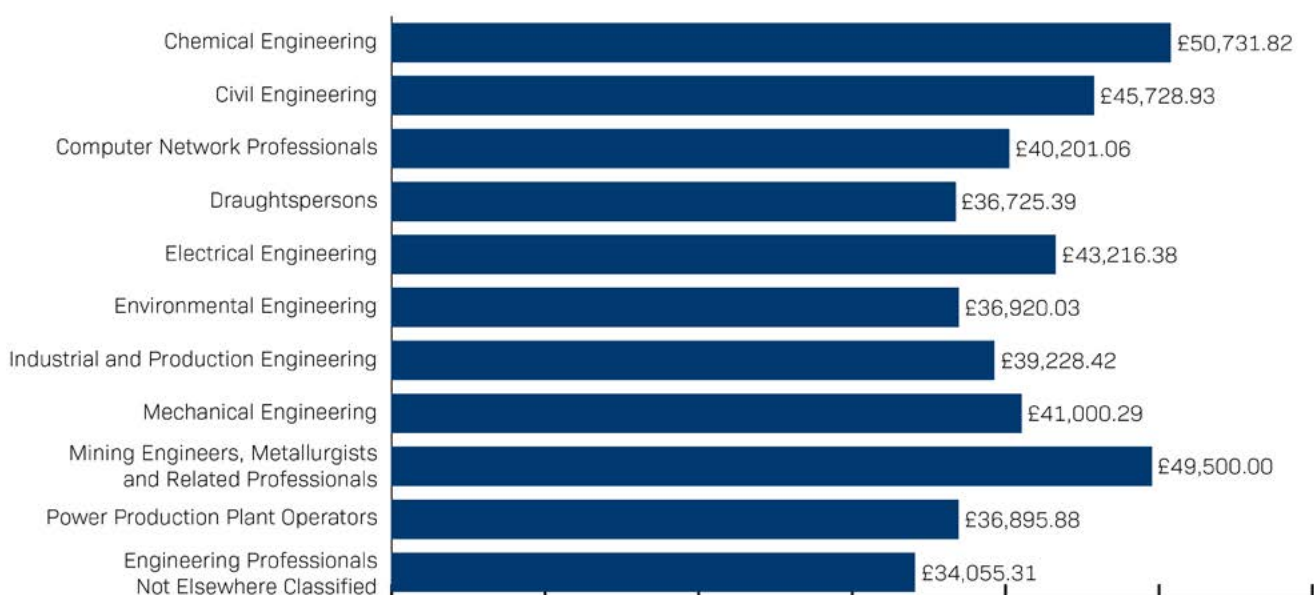


Figure 30: United Kingdom Job Salaries

## Employer report

The table below provides an overview of key employers/recruiters in the United Kingdom's engineering job market, detailing the number of job postings and sample job titles for each employer.

Table 19: United Kingdom Employer Report

	Employer	Job Post Count	Sample Job Titles
1	Rise Technical Recruitment	251	Maintenance engineer, installation engineer / technician, field service engineer (alarm / cctv)
2	Ernest Gordon Recruitment Limited	145	Site supervisor, QC supervisor, electrical maintenance engineer
3	Bennett and Game Recruitment LTD	119	Junior heat pump engineer, lift service engineer, HVAC engineer
4	Matchtech	88	Senior civil 3D technician, manufacturing research development engineer, systems engineer
5	Penguin Recruitment	82	Graduate geoenvironmental or geotechnical engineer, senior town plan-ner, air tightness consultant
6	Carrington West	69	Structural Revit technician, principal mechanical engineer, commercial manager (rail)
7	Pioneer Selection Ltd	64	Electrical maintenance engineer, field service engineer, plc engineer
8	Adecco	53	Operator technician, lead mechanical design engineer, sheet metal worker
9	Interaction Recruitment	44	CNC turner, mobile plant engineer, field service engineer
10	Calibre Search	42	Refrigeration maintenance engineer, senior civil design engineer, senior flood risk engineer





# Section 8. United States of America

Analyzed **311,106** jobs listed as of 26<sup>th</sup> of September 2024<sup>ii</sup>

## Job classification

In the United States of America (USA) engineering job market, the field of electrical engineering has the highest representation with 71,132 job listings, closely followed by civil engineering with 62,410 listings, and mechanical engineering with 60,743.

Computer network professionals and industrial and production engineers also show substantial demand, with 37,505 and 28,186 listings, respectively. Specialized roles such as those within mining engineering and power production plant operators have the lowest numbers at 1,156 and 2,852, respectively.

This data indicates a robust demand for traditional engineering disciplines, particularly in infrastructure and electrical sectors.

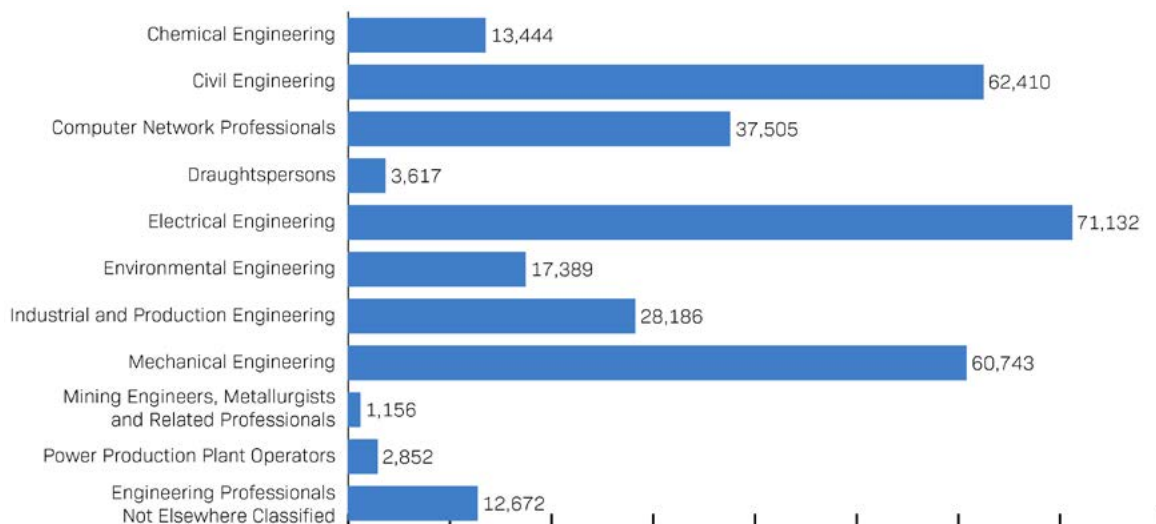


Figure 31: United States Job Classification

## Regional distribution

California dominates the engineering job market with over 90,000 opportunities, reflecting the state's expansive technology and infrastructure sectors. Texas and Virginia also have significant job counts. This data underscores the concentration of engineering roles in regions with major economic and technology-driven industries.

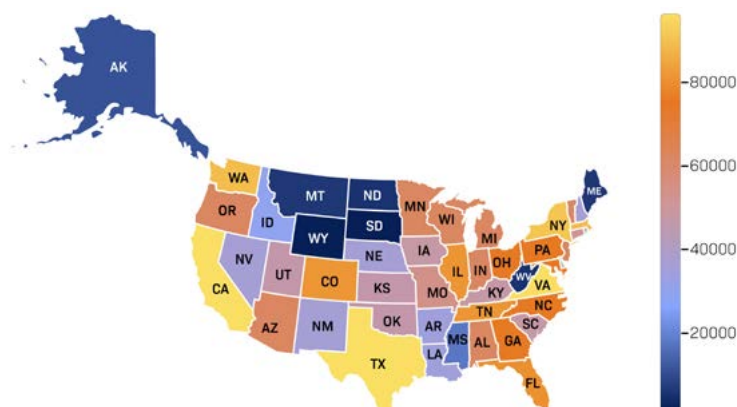


Figure 32: United States Job Regional Distribution

## Job level

The data chart shows a significant representation of intermediate and entry level roles across engineering disciplines in the USA. There is also a notable demand for management levels. The distribution highlights the growth potential for engineers as they advance from entry to higher roles in the USA.

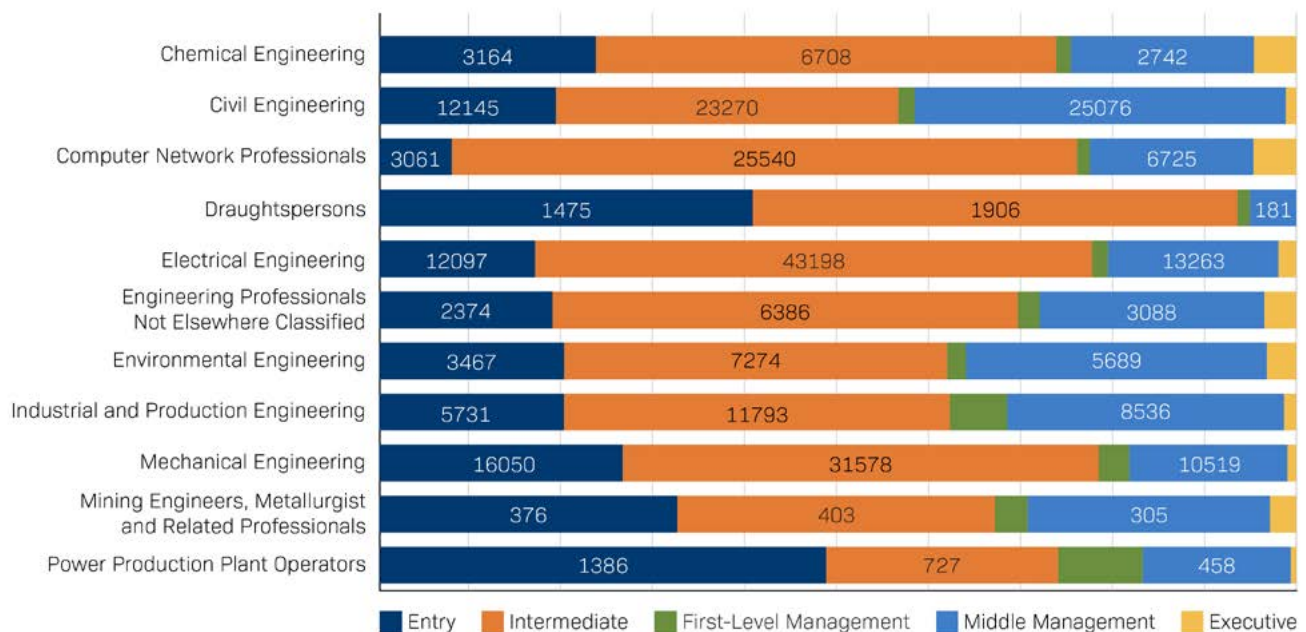


Figure 33: United States Job Levels

## Average minimum years of experience

In the USA, entry level roles generally require around 1-2 years of experience, while intermediate roles require about 4-5 years of experience on average. The progression to management positions starts at 3.5 years, but some managerial roles demand up to 9 years of experience. Executive positions, the highest tier, require the most stringent experience, with at least 10 years to fill the role.

Table 20: United States minimum years of experience

Standard Classification	Entry	Intermediate	First-level management	Middle management	Executive
Chemical engineering	1.08	4.17	4.51	8.29	10.68
Civil engineering	1.04	4.31	3.86	8.56	11.97
Computer network professionals	1.79	5.49	4.89	8.35	11.74
Draughtspersons	1.65	4.42	3.77	7.72	11.67
Electrical engineering	1.41	4.79	4.80	8.73	12.47
Engineering professionals not else-where classified	1.36	4.47	3.67	8.34	12.08
Environmental engineering	1.09	4.16	3.58	7.95	10.91
Industrial and production engineering	1.38	3.91	3.53	7.15	11.11
Mechanical engineering	1.66	4.50	4.16	8.04	12.31
Mining engineers, metallurgists and related professionals	1.33	4.52	4.77	9.00	13.73
Power production plant operators	1.67	3.81	3.46	6.94	12.18

\*Empty cells indicate insufficient data in the dataset.

## Educational attainment

Data shows that most of the job postings require a bachelor's degree as a foundational requisite, with approximately 78% of the positions available requiring it.

Around 17% of the positions allow at least a high school diploma or a relevant certification as a job qualification, while only 5% of the total demand would require an advanced degree (master's or doctoral) to fill in the position.

Table 21: United States Educational Attainment

Standard Classification	High school	Certificate	Bachelors	Masters	Doctoral
Chemical engineering	461	142	10142	991	1582
Civil engineering	3860	1134	52800	1689	343
Computer network professionals	1725	1229	27024	890	400
Draughtspersons	784	1050	1241	37	16
Electrical engineering	6744	4485	52122	3515	1014
Engineering professionals not elsewhere classified	988	347	9514	697	404
Environmental engineering	954	295	13100	1231	1323
Industrial and production engineering	3178	801	22132	509	75
Mechanical engineering	13507	4275	35914	1501	688
Mining engineers, metallurgists and related professionals	150	25	842	37	21
Power production plant operators	1554	197	589	14	1

## Work mode distribution

The data on work modes for engineering roles reveals a strong preference for hybrid and physical work environments. Hybrid work mode leads with 37.36% of positions, followed by physical mode at 33%. Flexible work arrangements account for 22.01%, while fully remote roles are the least common, comprising only 7.59% of the total positions.

This distribution highlights a trend towards a balanced mix of on-site and remote work in engineering, with a notable preference for hybrid settings, reflecting the industry's adaptability while still emphasizing the importance of in-person collaboration.

*Note: This data only includes job postings where the work mode was explicitly mentioned in the job description, which may not fully represent all available positions.*

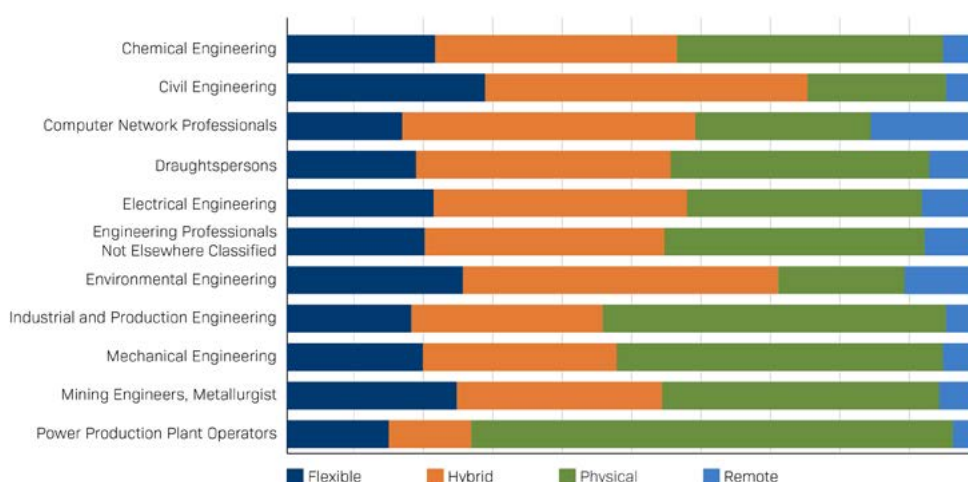


Figure 34: United States Work Mode Distribution

# Engineering technical skills requirements

Here are the technical skill requirements specific to the USA market. This summary highlights the most relevant ones per discipline from a total of 177,086 technical skills identified across the 311,106 American jobs scanned. To explore the comprehensive list of all the technical skills organized into detailed clusters, please visit [this link](#). You can also see the [Universal Skill Requirements](#) section of this report for more information on skill requirements shared among all markets examined.

## 1. Chemical engineering

- › **Chemical Engineering:** Deep expertise in chemical process design, reaction engineering, thermodynamics, and developing innovative chemical solutions.
- › **Process Engineering:** Proficiency in optimizing chemical processes, improving production efficiency, and implementing engineering solutions for manufacturing.
- › **Laboratory Skills:** Competence in conducting experiments, analyzing chemical reactions, and using laboratory techniques to support research and development.
- › **Project Management:** Expertise in planning, organizing, and managing chemical engineering projects, ensuring timely and successful delivery.

## 2. Civil engineering

- › **Project Management and Planning:** Extensive skills in managing civil engineering projects, resource allocation, scheduling, and ensuring successful project delivery.
- › **Software and CAD Tools:** Proficiency in using CAD software like AutoCAD, Civil 3D, and engineering software for designing and modeling infrastructure projects.
- › **Compliance and Regulation:** Knowledge of local, state, and federal regulations, ensuring projects adhere to environmental and construction standards.
- › **Field Inspections and Testing:** Competence in conducting site inspections, performing tests on materials, and ensuring construction quality meets design specifications.
- › **Structural Engineering:** Expertise in analyzing and designing structures, ensuring safety, and optimizing materials for construction projects.

## 3. Computer network professionals

- › **Networking:** Extensive expertise in network design, management, and troubleshooting, ensuring optimal connectivity and performance.
- › **Security:** Strong focus on cybersecurity, implementing security measures, and protecting network infrastructure from threats.
- › **Hardware Management:** Proficiency in managing and maintaining hardware systems, ensuring reliability and seamless operation of network equipment.
- › **Collaboration Tools:** Skills in using and managing collaboration platforms to enhance communication and teamwork within organizations.
- › **Application Development:** Competence in developing and managing applications, integrating them into network systems for improved functionality.

#### 4. Draughtspersons

- › **Design Software:** Proficiency in using CAD tools like AutoCAD, Revit, and other drafting software to create precise and detailed technical drawings.
- › **Construction Skills:** Knowledge of construction practices, materials, and techniques to ensure designs are practical and compliant with industry standards.
- › **Engineering Principles:** Understanding of core engineering concepts to support accurate drafting and effective communication with engineering teams.
- › **Drafting Skills:** Expertise in technical drawing, blueprint creation, and ensuring clarity and accuracy in all drafted materials.
- › **Data Management:** Skills in organizing and managing data, including handling project documentation and maintaining version control.

#### 5. Electrical engineering

- › **Electronics Design:** Expertise in designing electronic circuits, PCBs, and developing innovative electronic systems for various applications.
- › **Manufacturing Processes:** Proficiency in overseeing and optimizing manufacturing workflows, ensuring high-quality and cost-effective production.
- › **Control Systems:** Skills in designing and managing control systems, including automation and PLC programming, to enhance system efficiency.
- › **Telecommunications:** Knowledge of telecommunications technologies, network infrastructure, and communication protocols for efficient data transfer.
- › **Quality Assurance:** Emphasis on quality control practices, testing methodologies, and ensuring products meet industry standards and regulations.

#### 6. Environmental engineering

- › **Environmental Skills:** Extensive expertise in environmental management, sustainable practices, and implementing eco-friendly solutions for various engineering projects.
- › **Engineering Skills:** Strong foundation in applying engineering principles to address environmental challenges, including water and air quality management.
- › **Technical Skills:** Proficiency in using engineering tools, modeling software, and applying technical knowledge for environmental assessments and solutions.
- › **Data Analysis Skills:** Skills in collecting, analyzing, and interpreting environmental data to drive informed decision-making and improve project outcomes.
- › **Research Skills:** Competence in conducting environmental research, developing innovative solutions, and staying updated with the latest industry advancements.

#### 7. Industrial and production engineering

- › **Manufacturing Process:** Extensive knowledge of manufacturing methods, process optimization, and applying Lean and Six Sigma techniques for efficiency.
- › **Project Management:** Skills in coordinating projects, managing timelines, and ensuring successful delivery of production goals.
- › **Quality Management:** Expertise in quality control systems, ensuring products meet industry standards and implementing continuous improvement strategies.
- › **Supply Chain Management:** Proficiency in overseeing supply chain operations, inventory management, and optimizing logistics for production.
- › **Manufacturing Technologies:** Competence in using modern manufacturing technologies, including automation and computer-integrated manufacturing.



## 8. Mechanical engineering

- › **Mechanical Engineering:** Extensive expertise in designing mechanical systems, applying engineering principles, and developing innovative solutions for various applications.
- › **Manufacturing Processes:** Proficiency in overseeing and optimizing manufacturing workflows, using Lean and Six Sigma techniques to improve efficiency.
- › **Project Management:** Skills in managing engineering projects, coordinating resources, and delivering results on time and within budget.
- › **Electrical System Skills:** Knowledge of integrating electrical systems with mechanical components, understanding circuit design, and ensuring compatibility.
- › **HVAC Systems:** Competence in designing, maintaining, and optimizing heating, ventilation, and air conditioning systems for energy efficiency and performance.

## 9. Mining engineers, metallurgists and related professionals

- › **Mining Engineering Skills:** Expertise in mine planning, mineral extraction, and using engineering principles to optimize mining operations.
- › **Geotechnical Engineering Skills:** Proficiency in analyzing soil and rock mechanics, conducting site assessments, and applying geotechnical methods to ensure safety and efficiency.
- › **Quality Control Skills:** Skills in monitoring mining processes, conducting inspections, and ensuring compliance with quality and safety standards.
- › **Engineering Tools:** Competence in using specialized tools and software for modeling, analysis, and simulation to support mining and metallurgical processes.

## 10. Power production plant operators

- › **Power Generation:** Expertise in operating and managing power generation systems, ensuring efficiency and reliability in energy production.
- › **Maintenance and Inspection:** Proficiency in conducting regular maintenance, performing system inspections, and identifying and resolving issues to maintain plant performance.
- › **Electrical Systems:** Skills in understanding and maintaining electrical circuits, power distribution systems, and troubleshooting electrical components.
- › **Mechanical Systems:** Knowledge of mechanical equipment, HVAC, and refrigeration systems, including maintenance and optimization for efficient operations.
- › **Inventory and Logistics:** Competence in managing inventory, coordinating logistics, and ensuring the availability of tools and equipment needed for plant operations.

## 11. Engineering professionals not elsewhere classified

- › **Engineering Techniques:** Extensive expertise in applying advanced engineering methods and techniques to solve complex problems and improve processes.
- › **Quality Assurance:** Proficiency in quality control practices, implementing testing protocols, and ensuring products meet industry standards.
- › **Regulatory Compliance:** Skills in adhering to industry regulations, ensuring compliance, and managing risk to maintain safety and quality standards.
- › **Manufacturing Processes:** Knowledge of manufacturing techniques, process optimization, and integrating automation to increase efficiency.
- › **Project Management:** Competence in planning, coordinating, and managing engineering projects, ensuring timely and successful completion.

## Top software tools

- 1. Chemical engineering:**  
Microsoft Office tools, SAP, Python, Minitab, JMP, MATLAB, Solidworks, HYSYS, Aspen, R, DeltaV
- 2. Civil engineering:**  
Microsoft Office tools, AutoCAD, MicroStation, Civil 3D, Revit, Bluebeam, Procore, HEC-RAS, ArcGIS, HEC-HMS, OpenRoads, Primavera, CAD
- 3. Computer network professionals:**  
Python, VMware, PowerShell, Splunk, AWS, Azure, Linux, ServiceNow, Terraform, Jira, SolarWinds, Cisco, Wireshark, Microsoft Office tools, Bash, SQL, Kubernetes, SIEM, Confluence
- 4. Draughtspersons:**  
AutoCAD, Revit, Microsoft Office tools, Solidworks, MicroStation, Navisworks, Civil 3D, SketchUp, CAD, Bluebeam, Inventor, Adobe Creative Suite, Rhino
- 5. Electrical engineering:**  
AutoCAD, Python, MATLAB, Microsoft Office tools, Revit, C/C++, ETAP, LabVIEW, SPICE, MicroStation, Altium, Perl, SKM, Simulink, Solidworks, SAP, HFSS
- 6. Environmental engineering:**  
Microsoft Office tools, Python, R, AutoCAD, GIS, MATLAB, SQL, EnergyPlus
- 7. Industrial and production engineering:**  
Microsoft Office tools, SAP, AutoCAD, Solidworks, ERP systems, SQL, Minitab, Tableau, CAD, Python, Oracle
- 8. Mechanical engineering:**  
Solidworks, AutoCAD, Revit, Python, MATLAB, Ansys, CAD, Creo, SAP, NX, CATIA, CMMS, C++
- 9. Mining engineers, metallurgists and related professionals:**  
Microsoft Office tools, AutoCAD, Vulcan, Deswik, SAP, Carlson, Surpac, ArcGIS, Minesight, Leapfrog Geo, Datamine, Civil 3D
- 10. Power Production Plant Operators:**  
Microsoft Office tools, SAP, CMMS, Maximo, SCADA, AutoCAD, PROMOD, PLEXOS
- 11. Engineering professionals not elsewhere classified:**  
Microsoft Office tools, Python, MATLAB, Minitab, SAP, C/C++, AutoCAD, Jira, SQL, SolidWorks, Simulink, DOORS, Revit

## Salary

The salary data indicates a wide range of earnings across engineering roles. Computer network professionals have the highest average yearly salary at USD \$135,387, followed closely by roles in civil engineering at \$120,232 p.a. and chemical engineering at \$115,440 p.a. Power production plant operators, on the other hand, have the lowest average salary at \$85,657 p.a. This distribution suggests that roles involving specialized technical skills, such as in computer networks and civil engineering, tend to command higher salaries compared to more operational roles.



Figure 35: United States Job Salaries

## Employer report

The table below provides an overview of key employers/recruiters in the United States of America's engineering job market, detailing the number of job postings and sample job titles for each employer.

Table 22: United States Employer Report

	Employer	Job Post Count	Sample Job Titles
1	Jobot	3,359	Hybrid remote structural forensic engineer, principal electrical engineer, project manager (concrete restoration)
2	Northrop Grumman	2,151	Principal engineer design tool, principal Linux/windows systems administrator, Sr. principal counterfeit prevention engineer
3	CyberCoders	1,797	Heavy civil construction (project manager), BIM coordinator (mechanical construction), structural design engineer
4	Leidos	1,736	Transmission line project engineer, streaming video engineer, drafter
5	AECOM	1,604	Water/wastewater/stormwater conveyance technical lead, assistant project manager, entry level environmental engineer
6	WSP USA	1,542	Substation estimator, lead mechanical engineer, environmental remediation engineer
7	Stantec	1,418	Transportation engineer, instrumentation & controls engineer (water), senior project manager
8	SpaceX	1,329	Propulsion engineer, PCB process operations technician, sourcing specialist (EE components)
9	Michael Page	1,199	Manufacturing engineer stamping, commercial construction project engineer, design build construction project manager
10	SNC-Lavalin	1,182	Electrical engineer, coastal/environmental engineering project director, assistant civil engineer



# Universal Skill Requirements per Engineering Discipline

Across all jobs and markets analyzed, there were over 181,000 technical skills identified. This section combines the most sought-after ones within each engineering discipline, taking into consideration the seven markets reviewed. The skills have been grouped into clusters that describe their nature in order to view them with greater ease.

## 1. Chemical engineering

- › **Chemical Engineering:** Proficiency in core chemical engineering principles like thermodynamics, fluid mechanics, and chemical process design.
- › **Process Engineering:** Skills in optimizing processes, using simulation tools, and implementing automation for efficiency across various market demands.
- › **Laboratory and Analytical Skills:** Competence in conducting experiments, data analysis, and adhering to safety protocols and standards.
- › **Regulatory Compliance and Quality Assurance:** Emphasis on compliance with global safety and environmental regulations and maintaining high-quality standards.
- › **Project Management:** Abilities in managing large-scale projects, budget control, and using project management software effectively.

## 2. Civil engineering

- › **Design and Engineering Skills:** Expertise in structural, environmental, and transportation engineering, supported by CAD and BIM tools.
- › **Project Management and Planning:** Strong capabilities in planning, risk assessment, and managing contracts and budgets for construction projects.
- › **Field Inspections and Surveying:** Skills in site management, conducting inspections, and ensuring quality compliance with local regulations.
- › **Sustainability and Environmental Management:** Focus on integrating sustainable practices, managing environmental impact, and understanding water and waste systems.
- › **Safety and Compliance:** Knowledge of global safety standards and experience in implementing safe practices on construction sites.

## 3. Computer network professionals

- › **Networking and Security:** Proficiency in configuring and securing networks, implementing cybersecurity measures, and managing infrastructure.
- › **Cloud Technologies and Virtualization:** Skills in cloud computing, virtualization, and deploying services on platforms like AWS, Azure, or Google Cloud.
- › **Technical Support and Troubleshooting:** Strong abilities in diagnosing and resolving network issues across diverse environments.
- › **Programming and Automation:** Experience in automating network tasks using scripting languages and developing software for network optimization.
- › **Compliance and IT Service Management:** Familiarity with ITSM practices, risk management, and ensuring compliance with data protection regulations.

#### 4. Draughtspersons

- › **CAD and Design Tools:** Proficiency in AutoCAD, Revit, and other 3D modeling software to produce precise engineering drawings.
- › **Drafting and Technical Documentation:** Skills in interpreting and creating technical plans, managing documentation, and maintaining version control.
- › **Construction and Material Knowledge:** Understanding construction methods, materials, and industry standards to produce practical and compliant designs.
- › **Manufacturing and Fabrication:** Knowledge of CNC programming, welding techniques, and working with fabrication processes in different markets.
- › **Software Proficiency:** Familiarity with office productivity software and specialized engineering tools for effective collaboration.

#### 5. Electrical engineering

- › **Power and Energy Systems:** Skills in designing and maintaining electrical systems, renewable energy integration, and grid management.
- › **Project and Risk Management:** Experience in planning electrical engineering projects, managing risks, and ensuring compliance with industry standards and regulations.
- › **Software and Programming Skills:** Proficiency in simulation software, SCADA, and programming for embedded systems and control applications.
- › **Telecommunications and Signal Processing:** Knowledge of network systems, signal processing techniques, and modern communication technologies.
- › **Electronics and Control Systems:** Expertise in designing electronic circuits, working with PLCs, and managing control systems for automation.

#### 6. Environmental engineering

- › **Environmental and Sustainability Practices:** Skills in water treatment, waste management, and integrating sustainable technologies into projects.
- › **Regulatory Compliance and Safety:** Understanding environmental regulations, conducting risk assessments, and ensuring projects meet global compliance standards.
- › **Data Analysis and GIS:** Competence in analyzing environmental data, using GIS tools for mapping, and driving data-driven decision-making.
- › **Project and Resource Management:** Abilities in managing environmental projects, allocating resources efficiently, and implementing sustainable practices.
- › **Field and Laboratory Techniques:** Proficiency in conducting fieldwork, laboratory analysis, and developing environmental impact assessments.

#### 7. Industrial and production engineering

- › **Manufacturing and Process Optimization:** Expertise in Lean, Six Sigma, and other process improvement methodologies to enhance efficiency.
- › **Project and Supply Chain Management:** Skills in coordinating production projects, managing supply chains, and optimizing inventory.
- › **Automation and Technical Systems:** Experience in integrating automation technologies, robotics, and using technical skills to streamline production.
- › **Quality Assurance and Compliance:** Emphasis on maintaining quality standards, performing audits, and ensuring regulatory compliance.
- › **Data Analysis and Reporting:** Abilities in using data to drive continuous improvement, generate reports, and make informed business decisions.



## 8. Mechanical engineering

- › **Mechanical Design and Analysis:** Proficiency in designing mechanical components, using FEA software, and developing efficient system designs.
- › **Manufacturing and Machining Skills:** Experience with CNC machinery, material science, and optimizing manufacturing workflows.
- › **HVAC and Building Systems:** Skills in designing and maintaining HVAC systems, focusing on energy efficiency and sustainability.
- › **Project and Quality Management:** Competence in leading projects, implementing quality control processes, and using management software tools.
- › **Safety and Regulatory Compliance:** Understanding safety standards, risk management, and ensuring engineering designs adhere to regulations.

## 9. Mining engineers, metallurgists and related professionals

- › **Mining Operations and Planning:** Expertise in mine planning, mineral extraction techniques, and resource management for efficient operations.
- › **Geotechnical and Geological Analysis:** Skills in rock mechanics, site surveying, and using geotechnical data to ensure safety and productivity.
- › **Mechanical and Process Engineering:** Proficiency in maintaining and optimizing mining equipment and processes, with a focus on sustainability.
- › **Quality Control and Safety:** Emphasis on quality management, safety protocols, and adhering to environmental regulations across global markets.
- › **Data Management and Analysis:** Abilities in collecting and analyzing geological data, forecasting trends, and optimizing resource use.

## 10. Power production plant operators

- › **Power Systems and Maintenance:** Skills in operating and maintaining power generation equipment, focusing on reliability and efficiency.
- › **Electrical and Mechanical Systems:** Knowledge of maintaining electrical circuits, HVAC systems, and optimizing mechanical components.
- › **Safety and Compliance:** Emphasis on following safety protocols, conducting risk assessments, and ensuring compliance with industry regulations.
- › **Inventory and Logistics Management:** Competence in managing spare parts, coordinating logistics, and ensuring operational readiness.
- › **Automation and Control Systems:** Experience with SCADA, PLCs, and automated systems to monitor and improve plant operations.

## 11. Engineering professionals not elsewhere classified

- › **Project Management and Oversight:** Skills in managing diverse and complex projects, including strategic planning, resource allocation, and efficient project delivery. Proficiency in contract management and operational oversight is crucial for success across multiple sectors.
- › **Technical and Engineering Skills:** Broad technical competence in general engineering practices, troubleshooting, and maintenance operations. Knowledge spans areas such as HVAC, electrical systems, plumbing, and problem diagnosis for effective repairs.
- › **Quality Control and Process Improvement:** Emphasis on quality assurance, conducting inspections, optimizing processes, and implementing quality control measures to ensure compliance with industry standards.
- › **General Computer Skills:** Proficiency in using office software (e.g., Microsoft Excel, Word, SAP), general IT literacy, and familiarity with specialized engineering software for data management and technical documentation.
- › **Safety and Compliance:** Knowledge of safety protocols, risk management, emergency response (like first aid), and adherence to health and safety standards, such as occupational health and safety (OHS) requirements.

# Overview on Engineering Skills

Engineering skill requirements across the key markets analyzed in this report, namely Australia, New Zealand, South Africa, UK, Canada, Ireland, and USA, demonstrate a strong emphasis on a blend of **technical expertise**, **project management** capabilities, and **compliance with safety and regulatory standards**.

While certain core skills like CAD, AutoCAD, and data analysis are widely required, each country places different emphasis on specific tools and methods. For example, SCADA and automation tools appear to be crucial for electrical engineers in Australia and South Africa, while data analysis and process optimization are more relevant in the USA.

In addition to technical skills, soft skills play an important role across all engineering disciplines and markets.

Skills such as communication, teamwork, problem-solving, and adaptability are consistently valued and appear frequently in the listings. Qualities like attention to detail, proactive thinking, and a commitment to continuous learning are also highlighted in many engineering and related job postings. To view a comprehensive list of the soft skills identified across all markets and disciplines visit the [EIT website](#).

Holistically, the engineering market is becoming data-driven and technology-oriented, requiring professionals to integrate traditional engineering with advancements in software tools, automation, and sustainable practices.

It is important to note that these insights are based on an analysis of the available job postings, reflecting hiring opportunities around August-September 2024 that may not capture the comprehensive market demand.

The engineering profession, including technicians, technologists, and other engineering-related roles, is evolving and adapting a more holistic approach that values interdisciplinary knowledge. As industries worldwide embrace digital transformation and sustainability efforts, engineers must continuously upskill to remain effective in their roles.

# Conclusion

The engineering job market is filled with diverse opportunities, driven by advancement in infrastructure, technology, and specialized industry demands. Global demand for civil, electrical, and mechanical engineers is high, with these disciplines consistently showing a high volume of job openings across all major markets.

Particularly in countries like Australia, the USA, and the UK, civil and mechanical engineers are essential for ongoing infrastructure and industrial projects.

Data shows that a significant concentration of roles is at the entry and intermediate levels, providing accessible pathways for early-career professionals while offering a steady progression into mid-level positions.

Education remains crucial, with a bachelor's degree being a foundational requirement for most roles analyzed in this occasion. Additionally, earning relevant certifications is increasingly valuable, especially for those seeking to pursue more technical or specialized positions. These credentials can enhance employability and provide an edge in a competitive market.

To stay relevant and effective in the role, engineers must focus on continuous upskilling. Employers are prioritizing proficiency in software tools like computer-aided design, alongside expertise in regulatory compliance, data analysis, and project management. Adapting to these evolving demands will be key for engineers looking to advance and remain relevant in a rapidly changing industry landscape.

Overall, the engineering market offers vast potential growth, yet success comes from a proactive approach to professional development. As industries continue to transform, engineers must embrace lifelong learning and adapt to new trends to make meaningful impact. With the right combination of education, skills, and adaptability, the future is waiting for those ready to seize the opportunities ahead.



I firmly believe in Nelson Mandela's mantra that ***"Education is the most powerful weapon which we can use to change the world."*** In today's competitive engineering job market, staying ahead means embracing new and exciting technologies. Therefore, I encourage you to actively pursue lifelong learning, nurture creativity, and automate the mundane to reach new and exciting levels in the engineering and technology space. Be curious, courageous, and critical in your thinking; the future belongs to those who thrive in ambiguity and dare to challenge themselves.

**Steve Mackay - PhD**

EIT Dean of Engineering

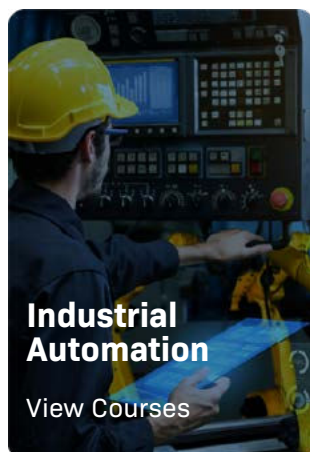
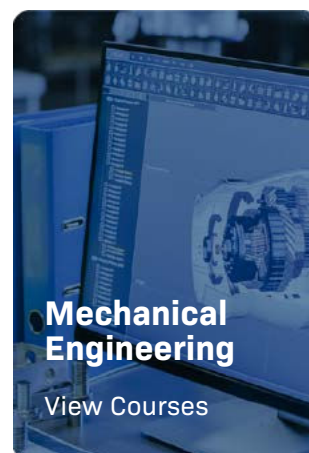
# About the Engineering Institute of Technology

The Engineering Institute of Technology (EIT) is a leading engineering and technology education and training provider, offering [online](#) and [on-campus](#) programs. Our wide range of courses are driven by industry experts to ensure students (whether starting out or in the workforce) develop the knowledge and skills they need to succeed in the ever-evolving world of modern engineering.

## Engineering courses and training - upskilling in engineering

EIT offers a large range of engineering courses spanning various fields to meet the needs of current and future engineers. Their curriculum is designed to provide students with a solid foundation in the fundamentals of engineering and the opportunity to explore more advanced topics in their specialization. Please browse the main study areas we offer below.

*Learn more about engineering courses by clicking into the field of interest below.*



# Appendix A

## International Standard Classification of Occupations (ISCO) Engineering Jobs Classification

### 1. Chemical engineering

Chemical engineers and related professionals design, develop, and oversee chemical processes used in various industries, including oil refining, pharmaceuticals, food processing, and synthetic materials. They focus on optimizing production processes, ensuring safety and environmental compliance, and managing chemical plant operations.

#### Common Tasks:

- › Conduct research and develop commercial-scale chemical processes.
- › Design chemical plant equipment and ensure production meets safety standards.
- › Oversee the maintenance and repair of chemical plant equipment.
- › Optimize production variables like temperature and pressure.
- › Ensure compliance with safety regulations and environmental standards.
- › Estimate production costs and prepare reports for management.

#### Example Occupations:

Chemical engineers, chemical engineering technicians, process control technicians, plastics technologists, fuel technologists, refinery process engineers.

### 2. Civil engineering

Civil engineers and technicians design, construct, and maintain infrastructure projects, such as roads, bridges, buildings, and water systems. They are involved in all stages of project development, ensuring that designs meet safety, environmental, and regulatory standards, while managing construction teams and overseeing project completion.

#### Common Tasks:

- › Design and plan the construction of infrastructure such as roads, bridges, and buildings.
- › Conduct soil and rock analysis for structural foundations.
- › Supervise the construction process to ensure it meets quality standards.
- › Organize the maintenance and repair of existing infrastructure.
- › Ensure compliance with safety and environmental regulations.

#### Example Occupations:

Civil engineers, civil engineering technicians, construction supervisors, geotechnical engineers, structural engineers, urban planners.

### 3. Computer network professionals

Computer network professionals design, implement, and manage network infrastructure to ensure seamless communication and data exchange. They focus on network performance, security, and troubleshooting. They also collaborate with electronics engineering technicians who assist in setting up and maintaining hardware systems.

#### Common Tasks:

- › Design and configure network systems, including hardware and software.
- › Monitor and optimize network performance.
- › Install and maintain network systems, troubleshooting issues as they arise.
- › Develop security measures to protect data and ensure system integrity.
- › Provide support for network emergencies and system upgrades.

#### Example Occupations:

Computer network professionals, electronics engineering technicians, network analysts, systems administrators, communications analysts.



## 4. Draughtspersons

Draughtspersons create detailed technical drawings and plans for construction, engineering, and manufacturing projects. They work closely with engineers and architects to translate conceptual designs into precise, technical illustrations using computer-aided design (CAD) tools.

### Common Tasks:

- › Prepare technical drawings based on designs from engineers and architects.
- › Use CAD software to produce and revise detailed plans for construction or machinery.
- › Create illustrations for technical manuals and other engineering documentation.
- › Collaborate with engineers to refine designs and ensure accuracy.

### Example Occupations:

Draughtspersons, CAD technicians, technical illustrators, architectural drafters, civil engineering drafters.

## 5. Electrical engineering

Electrical engineers and technicians work on designing, installing, and maintaining electrical systems and equipment, including power generation, distribution, and electronic devices. Their work ensures the safe and efficient operation of electrical systems in various settings, from large power plants to individual electrical appliances.

### Common Tasks:

- › Design and supervise electrical power generation and distribution systems.
- › Install and maintain electrical systems and ensure they comply with safety standards.
- › Conduct tests to ensure the efficiency and safety of electrical components.
- › Troubleshoot electrical issues and provide solutions for system failures.
- › Monitor electrical systems for optimal performance.

### Example Occupations:

Electrical engineers, electrical engineering technicians, electronics engineering technicians, electric power generation engineers, renewable energy engineers.

## 6. Environmental engineering

Environmental engineers and technicians focus on minimizing the environmental impact of industrial and construction activities. They design systems for pollution control, waste management, and sustainable practices. HVAC technicians play a role in creating energy-efficient heating, ventilation, and air conditioning systems that contribute to environmental conservation.

### Common Tasks:

- › Conduct environmental impact assessments and develop mitigation strategies.
- › Design systems for pollution control and resource management.
- › Monitor air, water, and soil quality to ensure compliance with environmental regulations.
- › Design and implement HVAC systems to improve energy efficiency and air quality.
- › Collaborate with other engineers to promote sustainable practices.

### Example Occupations:

Environmental engineers, HVAC technicians, air pollution control engineers, environmental analysts, sustainability engineers, renewable energy engineers.

## 7. Industrial and production engineering

Industrial and production engineers focus on optimizing manufacturing and production processes. They work to improve efficiency, reduce waste, and ensure the safety of industrial operations. This group also includes metals tradespeople and welding technicians, who work on the hands-on aspects of production and metal fabrication.

### Common Tasks:

- › Analyze and improve manufacturing processes to maximize efficiency.
- › Establish standards for labor utilization and material handling.
- › Develop plant layouts and machinery specifications for optimal production.
- › Ensure quality control and safety in industrial settings.
- › Supervise metals trades and welding operations, ensuring standards are met.

### Example Occupations:

Industrial production engineers, welding technicians, metals tradespeople, industrial efficiency engineers, production managers.

## 8. Mechanical engineering

Mechanical engineers design, develop, and maintain machines and mechanical systems in industries such as automotive, aerospace, marine, and HVAC. They ensure that mechanical systems operate efficiently and safely, and are responsible for the maintenance and repair of engines and other mechanical components. HVAC and welding technicians, as well as motor and aircraft mechanics, also fall under this group.

### Common Tasks:

- › Design machinery and mechanical systems for industrial, automotive, and aerospace applications.
- › Supervise the installation, maintenance, and repair of mechanical equipment.
- › Ensure mechanical systems comply with safety and performance standards.
- › Test and troubleshoot mechanical devices to identify faults and optimize performance.
- › Collaborate on designing HVAC systems for energy-efficient buildings.

### Example Occupations:

Mechanical engineers, mechanical engineering technicians, marine engineers, HVAC technicians, welding technicians, motor mechanics, aircraft mechanics.

## 9. Mining engineers, metallurgists, and related professionals

Mining engineers, metallurgists, and related professionals focus on the extraction and processing of minerals and metals. They design mining operations, develop methods for metal extraction, and oversee the safety and efficiency of mining activities. Metallurgists work on refining metals and developing new materials, while technicians and tradespeople provide operational support.

### Common Tasks:

- › Plan and direct mining operations for the extraction of minerals and metals.
- › Design processes for the safe and efficient extraction of resources.
- › Supervise the maintenance and repair of mining equipment.
- › Develop methods for processing and refining metals.
- › Ensure safety standards are followed in mining operations.

### Example Occupations:

Mining engineers, metallurgists, mining and metallurgical technicians, extractive metallurgists, petroleum engineers, metals tradespeople.

## 10. Power production plant operators

Power production plant operators are responsible for the operation and maintenance of power plants, including equipment like reactors, turbines, and generators. They ensure the efficient production and distribution of electrical power and monitor systems to prevent equipment failure and ensure safety.

### Common Tasks:

- › Operate and monitor power generation systems, including turbines and generators.
- › Control power generation equipment to ensure efficient and stable power output.
- › Perform routine maintenance and troubleshooting to prevent equipment failure.
- › Monitor system performance and adjust operations to meet demand.
- › Ensure safety standards are maintained in power plant operations.

### Example Occupations:

Power production plant operators, electric power plant operators, hydroelectric power plant operators, nuclear power plant operators, solar power plant operators.

## 11. Engineering professionals not elsewhere classified

This category includes specialized engineering professionals who work in interdisciplinary fields, such as biomedical engineering, marine engineering, and other emerging fields. These professionals apply engineering principles to niche areas, such as healthcare, nuclear power, or marine salvage, developing innovative solutions to complex problems.

### Common Tasks:

- › Design and develop specialized engineering systems or products, such as medical devices or marine equipment.
- › Collaborate with experts from other fields to solve unique engineering challenges.
- › Develop safety protocols and compliance strategies for emerging technologies.
- › Conduct research and testing to improve or refine engineering processes.
- › Oversee the operation and maintenance of specialized engineering equipment.

### Example Occupations:

Biomedical technicians, marine engineers, nuclear engineers, optical engineers, safety engineers.

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<sup>i</sup> Only the jobs with full description were considered. Most jobs in the source analyzed required visiting a third-party website to view the full job description which was not viable under the current review process. The lack of data connected to job postings related to Chemical Engineers in Canada is noted as an anomaly, as the market does appear to have demand for these professionals. Future iterations of this report will explore this in more detail.

<sup>ii</sup> The volume of engineering-related jobs appears large as a proportion of the market's population. It was noticed that certain companies listed the same job ad as many times as locations it had available, which could partly account for the high volume. Older positions that have not been removed by employers yet remain active may also be contributing to the count.

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