

7.2.1 Job Dashboards

# Mechanical Engineer/Electrical Engineer

Megatrends impacting the Job Role in Short to Medium-Term

COVID-19	Multi-Skilling	Sustainable Construction/ Buildings	Value Chain Aggregation & Integration	Workforce Challenges
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Technology Trends impacting the Job Role in Short to Medium-Term

BIM Technology	Data Analytics & AI	Digital Twin	Remote Monitoring
VR/AR	5G, IoT & Smart Buildings	Modular Construction	

Impact Assessment

M

MEDIUM

degree of change in tasks

Today

This job role is responsible for managing the planning and development of projects, and develops mechanical and/or electrical engineering designs based on project requirements. Job holders are responsible for designing mechanical and electrical systems, conduct project assessments and provide solutions based on assessment results. Job holders also participate in tender process and assist with projects' cost and budgets, plan team's manpower and provides on-the-job coaching to junior staff.

In the Future

This job role may **leverage technology to manage planning and development of projects**, to enhance the efficiency and accuracy of simulation modelling and analyses, calculations, and to enhance the ease of coordination with relevant stakeholders such as utility providers and agencies. Job holders may see **continued focus on design development** and may need an understanding and application of technology to **interpret data findings and/or run computational models to provide feasible and creative solutions**. Job holders may also see **greater emphasis on keeping abreast of evolving trends and technologies**, so as to **incorporate new technologies into engineering design projects**.

Job Tasks Today	Impact at Task-level / Future view of Job Tasks	Time Horizon
Define project scope and requirements	<div>M</div> <ul style="list-style-type: none"><li>Job holders will continue to conduct feasibility studies and compile associated project risks, and may see technology (e.g., Data Analytics &amp; AI) <b>enhancing the generation of feasibility study outcomes to be more efficient and accurate.</b></li><li>Job holders may also need <b>data interpretation skills to interpret and evaluate data insights</b> from feasibility studies to <b>propose robust, data-driven solutions</b> to relevant stakeholders.</li><li>Job holders will be required to <b>leverage digital communication tools to coordinate with utility providers and agencies on project progress in a timely manner.</b></li></ul>	Short-term

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Job Tasks Today	Impact at Task-level / Future view of Job Tasks		Time Horizon
Conduct design development	M	<ul style="list-style-type: none"> <li>Job holders will continue to develop engineering designs, and may be expected to <b>leverage technology to augment the design process to be more efficient and effective</b> (e.g., Data Analytics and RPA can automate load analyses and calculations).</li> <li>With evolving tools and platforms for design submissions, job holders will need to <b>understand and utilise required tools for submission purposes</b>.</li> <li>Job holders may need to be <b>aware of and incorporate latest trends</b> (e.g., sustainability and maintainability considerations) <b>in design development</b>, and take into consideration latest regulations for project requirements, technical aspects relevant codes and standards as well as good practices.</li> <li>Technology (e.g., Data Analytics &amp; AI) may augment simulation modelling and analysis processes. Job holders will need to be <b>equipped with skills to interpret analyses outcomes to manage design changes and services coordination</b>, and <b>apply to complex modelling and analyses</b>.</li> </ul>	Short-term
Perform tendering processes	M	<ul style="list-style-type: none"> <li>Job holders may also be expected to <b>use digital tools to augment the efficiency in development of baseline budgets, schedules and project success metrics</b>.</li> </ul>	Medium-term
	L	<ul style="list-style-type: none"> <li>Job holders may need an understanding of <b>smart contracting technology</b> (e.g., Blockchain) to <b>prepare tender terms, drawings and specifications on alternative platforms</b> and conduct pre-qualification and assessments for tender selection.</li> </ul>	Medium-term
Monitor project execution	M	<ul style="list-style-type: none"> <li>Job holders will still need to develop shop drawings, installation methods and equipment and materials schedules, and may be <b>expected to leverage technology</b> (e.g., RPA and AI) to <b>accelerate segments of the development work</b> (e.g., information gathering across the approval process).</li> <li>Job holders may also need an <b>understanding of real-time data captured of the construction process and how to interpret it efficiently</b>, so as to be <b>monitor execution and liaise effectively with contractors</b> to resolve the necessary defects.</li> <li>Job holders will still oversee testing and commissioning, and will need to be <b>familiar with digital tools and platforms</b> (e.g., BIM Technology) and <b>building project records for the handover process</b>.</li> </ul>	Short-term
Manage people and organisational function	M	<ul style="list-style-type: none"> <li>Job holders may see <b>increased emphasis on on-the-job coaching to support the adoption of digital tools and platforms</b>.</li> <li>Job holders may need an <b>understanding and application of collaborative tools and platforms</b> (e.g., BIM Technology) to track work progress.</li> </ul>	Short-term

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The following TSCs/CCSs have been identified as in-demand/emerging for the job role going forward:

In-demand Technical Skills and Competencies		
Analytics and Computational Modelling	Building Information Modelling Application	Computational Design
Construction Technology	Critical Thinking	Data Collection and Analysis
Design for Maintainability	Design for Manufacturing and Assembly	Green Building Strategy Implementation
Integrated Digital Delivery Application	People Management	Project Risk Management
Regulatory Submission and Clearance	Stakeholder Management	Technology Scanning
Emerging Technical Skills and Competencies		
Environmental Sustainability Management	Programming and Coding	Sustainable Engineering
Tunnel Engineering Management		
Emerging Critical Core Skills		
Transdisciplinary Thinking		