

SSMTC04 Design Engineer

1. Job role

TCF sub-sector	Cut and Sewn Products (Non-Garment)
Functional area	Product Design and Development
Job role	SSMTC04 Design Engineer
Job role description	Provides technical engineering expertise across the design, development, validation and implementation of cut and sewn non-garment products and systems within the Textile, Clothing and Footwear (TCF) industry. This role is identified as an emerging occupation within the Product Design and Development function of the cut and sewn products occupational framework. The Design Engineer supports the development of technically complex sewn and fabricated textile systems used across a broad range of applications including architectural textiles, transport interiors, industrial covers, defence equipment, marine systems, safety restraint systems, technical textile assemblies, load-bearing systems, composite textile products, infrastructure applications and specialised custom fabrication. The role is not limited to architectural textiles or load-bearing systems. Depending on enterprise focus, the Design Engineer may work on any technically engineered cut and sewn product requiring advanced understanding of textile behaviour, fabrication systems, structural performance, materials integration, manufacturing feasibility and compliance requirements. The position is responsible for translating functional, engineering and customer requirements into manufacturable product and systems solutions. This includes development of technical specifications, engineering calculations, seam and reinforcement design, material selection, prototype validation, production integration and systems performance assessment. The Design Engineer works closely with project managers, technical designers, CAD technicians, production teams, quality specialists, installation personnel, suppliers and clients to ensure engineered solutions are safe, compliant, manufacturable and commercially viable. The role also contributes to innovation, process improvement and development of advanced technical textile applications.
Performance expectations	• Designing technically compliant and manufacturable sewn product systems • Ensuring products and assemblies meet engineering, performance and safety requirements • Producing accurate engineering documentation, specifications and calculations

	• Supporting efficient fabrication and assembly processes • Validating product performance, seam integrity and material suitability • Ensuring compliance with applicable standards, codes and customer specifications • Supporting risk management and defect prevention activities • Coordinating effectively with cross-functional teams and stakeholders • Maintaining traceability and technical documentation throughout the engineering lifecycle
Specialisation	Technical textile engineering, fabricated systems design, reinforcement systems, seam engineering, materials integration, technical compliance, CAD-supported engineering and product validation
Application in other TCF sectors	Architectural textiles, defence systems, marine fabrication, automotive interiors, industrial textiles, transport infrastructure, mining systems, infrastructure protection, composites and technical textile applications

2. Key tasks and critical work functions

Key tasks	• Developing engineering solutions for cut and sewn textile systems • Translating customer, design and performance requirements into technical specifications • Performing structural, mechanical and performance calculations where required • Designing seam constructions, reinforcement systems and assembly methods • Selecting technical fabrics, composites, reinforcements, hardware and components • Producing CAD drawings, engineering layouts and fabrication documentation • Coordinating prototype development, testing and validation activities • Supporting fabrication, assembly and installation processes • Assessing product compliance against standards and specifications • Managing technical revisions, design changes and engineering records
Critical work functions	• Ensuring technical integrity and structural reliability of engineered systems • Maintaining compliance with engineering, safety and regulatory requirements • Preventing product failures, defects and performance issues • Ensuring alignment between engineering intent and production outcomes • Supporting manufacturability and operational efficiency • Maintaining technical traceability and documentation accuracy • Supporting innovation and continuous improvement initiatives • Delivering technically sound and commercially viable engineered solutions

3. Technical skills

Engineering analysis	Performing structural and performance analysis
Technical textile knowledge	Understanding textile behaviour, reinforcements and fabrication systems
CAD and digital engineering	Producing engineering drawings and digital models
Seam and assembly engineering	Designing sewn, welded and reinforced systems
Materials specification	Selecting technical fabrics, composites and hardware
Testing and validation	Supporting prototype testing and certification
Standards compliance	Applying Australian and international standards
Documentation	Maintaining engineering records and technical specifications

4. Generic Skills

Analytical thinking	Evaluating technical and engineering performance
Problem solving	Resolving design and fabrication challenges
Communication	Coordinating with technical and operational teams
Leadership	Supporting engineering and project coordination
Teamwork	Working across multidisciplinary environments
Time management	Managing engineering deliverables and deadlines
Adaptability	Responding to changing technical requirements
Professionalism	Maintaining engineering integrity and compliance

5. Emerging skills

Emerging skills	• Digital simulation and advanced modelling systems • Smart textiles and integrated functional systems • Advanced composites and hybrid textile structures • Sustainable engineering and lifecycle design • Industry 4.0 integration in fabrication and production • Parametric design and digital manufacturing workflows
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6. VET Qualifications and Skill Sets

Entry-level preparation	MEM60122 Advanced Diploma of Engineering or equivalent
Advanced development	Bachelor's degree in engineering

7. Job progression

Possible job progression	Technical Designer → Design Engineer → Senior Design Engineer → Engineering Manager → Technical Director
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8. Classification

Australian Qualifications Framework	Level 6-8
Australian Bureau of Statistics (ABS) Skill Levels	Skill Level 1
Open Source Classification of Occupations for Australia (OSCA)	Design Engineer - Cut and Sewn Products (Non-Garment TCF Sector)



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