

Production Engineer

National Occupational Standard Summary



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Production Engineer

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Definition of occupation | **Production Engineer**

The Production Engineer is responsible for determining how a product will be manufactured, commissioning the manufacturing centre/plant, and continuously improving/optimizing the production process throughout the product life cycle in order to improve efficiency, lower costs, maintain or improve quality, and increase yields. They are also in charge of decommissioning and/or repurposing production equipment and technology at the end of a product life cycle.

The Production Engineer may be involved in determining the steps and processes in manufacturing a product at scale, designing manufacturing cells/centres to optimize production resource use, designing new production tooling and equipment, qualifying vendors and suppliers in the production supply chain, detailing specifications for sub-components and materials, working with production personnel to improve production output, and serving as a technical resource for solving production problems.

They may serve as a point of contact for the media and represent their organization at industry forums and events.

Level of education, training or designations requirements

Typical Education Required	Secondary	College	Bachelor	Master	PhD
Typical Starting Experience	0-5 yrs.	5-10 yrs.	10-15 yrs.	15-20 yrs.	20+ yrs.

- Bachelor's degree in engineering/P. Eng. is generally required (chemical, bio, mechanical, automated systems, electrical, or industrial engineering degrees are all applicable, depending on the type of product being manufactured)
- Minimum five years of experience in a manufacturing/production environment is typical
- PMP certification is an asset
- Strong understanding of Lean manufacturing principles and continuous improvement processes
- Strong understanding of quality management systems (QMSs) and the related standards and their interpretation

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- Strong understanding of material handling and supply chain principles
- Experience with root cause analysis techniques to investigate and resolve production nonconformances
- Proficiency with applicable computer software packages for technical/engineering design and drawing, office productivity (Microsoft Office Suite), project management, and supply chain management software is generally required

This role works in the following subsectors:

Applicable To	Bio-Health	Agri-Bio	Bio-Industrial	Bio-Energy
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The level of complexity of the role is:

Span of Complexity Levels	Foundational	Operational	Specialist/ Management	Expert/Executive
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PRODUCTION ENGINEER COMPETENCY SUMMARY

Competencies	Complexity Level Required			
	1 Foundational	2 Operational	3 Specialist/ Manager	4 Expert/ Executive
Core				
Production Process Design				
Production Optimization				
Technical				
Production Start-up and Commissioning				
Supply Chain Qualification				
Production Accounting				
Industry Regulatory				
Health, Safety and Environmental Management				
Product Safety Compliance Management				
Personal and Professional				
Leadership				
Communication				
Collaboration/Teamwork				
Technical Problem Solving				
Critical Thinking				

Core competencies

Production Process Design

Applies engineering and production knowledge to prepare detailed manufacturing plans for products to ensure that safety, quality, productivity, and cost/profitability targets are met.

Production Optimization

Applies knowledge of Lean production and quality management processes to collaborate with production facilities in support of the identification, development, and execution of the continuous improvement of production processes in order to reduce costs and improve production efficiency.

Technical competencies

Production Start-up and Commissioning

Applies engineering expertise to design and commission the plant tooling and equipment necessary for production start-up and launch, as well as subsequent production at scale.

Supply Chain Qualification

Applies knowledge of quality management systems (QMSs) to assist supply chain management personnel in the vetting and qualification process for suppliers of necessary components, materials, and services required for production at scale.

Production Accounting

Applies knowledge of production/managerial accounting processes in order to develop and improve performance metrics for production lines, creating managerial visibility into production performance and variances.

Industry regulatory competencies

Health, Safety and Environmental Management

Participates in the company health, safety, and environmental (HSE) management program within their department and works in accordance with company standards and jurisdictional and industry requirements in order to ensure that HSE performance meets expectations.

Product Safety Compliance Management

Participates in development and implantation of policies and processes to ensure compliance with applicable product safety regulations.

Personal and professional competencies

Leadership

Contributes to an effective engineering team by fostering a positive, collaborative work culture that delivers measurable value to internal and external stakeholders and contributes to the achievement of business goals and objectives.

Communication

Uses appropriate written, verbal, and non-verbal communication and listening techniques to clearly communicates upwards, downwards, and laterally within the organization in order to ensure understanding and enable execution for the successful achievement of organizational goals and performance metrics.

Collaboration/Teamwork

Actively participates in or leads multi-disciplinary, inter/intra-departmental teams in order to generate ideas and solutions, solve problems, and improve overall organizational performance.

Technical Problem Solving

Applies experience and specific knowledge to act as a technical resource and key decision maker in solving technical problems related to production and manufacturing. This can include reactive problem solving (fixing things that have gone wrong) and proactive problem solving (developing mitigating actions and modifying procedures and processes to ensure the problems do not occur/reoccur).

Critical Thinking

Analyzes data to reach objective conclusions, defends position on complex issues, clarifies issues, and transfers ideas to new contexts, ensuring recommendations are supported by relevant facts, in order to facilitate improved decision-making.

USE NATIONAL OCCUPATIONAL STANDARDS TO:

- ✓ Build a job description
- ✓ Plan professional development
- ✓ Map career progression and succession planning
- ✓ Benchmark compensation

View the full National Occupational Standards at biotalent.ca/NOS

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