# Engineer, quality

## Job description

Quality engineers work to ensure a product or service provides a high level of quality that meets customer expectation. The engineer will put in place a system to measure an organisation's performance and then report on its findings, liaising with managers and staff, and coordinating procedures to address any deficiencies.

Quality or quality assurance engineering involves ensuring that the different products leaving manufacturing and development agencies, companies or organisations are fully operational, effective and free from defects.

Verifying the quality and performance of the products in addition to troubleshooting the rectification of any existing errors or defects are the main duties of a QA engineer. The quality control engineer is responsible for analysing the product under various working conditions and confirming that the product delivers its promise. According to the nature of the product being tested, quality engineers may work in different settings. Being specialists, they use a product not just the way it is recommended but also in ways not intended helping them understand the common problems that users may encounter while using a product.

A quality engineer has the technical/engineering background to handle the day-to-day issues with product quality. While mainly associated with manufacturing plants where they design, install, and evaluate quality process-sampling systems, procedures, and statistical techniques, they work in a diverse range of industries including software or web development. Their work involves designing or specifying inspection and testing mechanisms and equipment; analysing production and service limitations and standards and recommending revision of specifications when indicated.

In addition they formulate or help formulate quality policies and procedures as well as conducting training on quality concepts and tools; they interface with all other engineering components within the company and with customers and suppliers on quality related issues.

## Work activities

- Developing and implementing quality management systems in manufacturing industries.
- Analysing, identifying and implementing manufacturing and/or business process improvements which will improve capability and performance.
- Creating and maintaining company documentation, such as quality manuals, and quality procedures.
- Troubleshooting problems or flaws in the item provided for testing.
- Meeting with members of the production team to offer recommendations and share results.
- Maintaining and controlling calibration records for all test and inspection equipment.
- Applying good manufacturing practice and observing that it is being adhered to.
- Performing tests and measurements using existing measurement equipment.
- Participating in teams to help make necessary improvements and changes to all process related issues in the production department.

## Work conditions

Travel: not a normal part of the working day unless responsible for multiple sites.

Working hours: regular factory/laboratory hours which will vary between industries but early starts and late finishes may also be required. In addition, weekend, shift work, and on-call work may be required in some industries.

Location: opportunities exist mainly in large towns and cities.

Opportunities for self-employment: not normally possible.

## Typical employers

A wide range of industries, particularly consumer goods and electronics.

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### Career development

Promotion to more senior level is possible. However, routes for career progression are not clearly defined.

### Salaries

Salaries will vary depending on employer and type of industry.

Republic of Ireland: Engineers working in manufacturing can expect to earn between €30,000 - €55,000.

Northern Ireland: Engineers working in manufacturing can expect to earn between £20,000 – £36,000.

## Entry requirements and training

### Specific degree subjects required

Much will depend on the product so an Engineers Ireland accredited engineering degree may not be required, if for example the quality engineer is in software engineering.

### Other relevant degree subjects

- Biochemistry
- Biotechnology
- Business/management
- Chemical engineering
- Communications engineering
- Electrical engineering
- Electronic/telecommunications engineering
- Food science/technology

- Information technology
- Materials science/technology
- Mechanical engineering
- Process engineering.

### Postgraduate study

Those who graduate from 2013 and wish to become Chartered engineers will need to hold an accredited Master Degree or equivalent. Bachelor degrees will, from 2013, satisfy the requirements for Institute of Engineers of Ireland membership only.

### Tips for applications

Process Engineering experience or Six Sigma/Lean project implementation experience are a distinct advantage.

### Skills and qualities

- Sound mathematical and technical skills.
- Good investigative and problem-solving skills with excellent attention to detail.
- Ability to think logically and methodically.
- Good interpersonal skills and organisational skills.
- Excellent verbal and written communication skills.
- Negotiating, supervisory and leadership skills combined with the ability to delegate.
- Decision making ability coupled with the ability to work independently and proactively.
- Knowledge of statistical packages and Microsoft Office systems normally required.

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