

# Engineering Design Process and its Common Stages

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## Commentary

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## ABOUT THE STUDY

Engineers frequently follow a set of phases known as the engineering design process when developing useful goods and procedures. Although the part(s) of the process that get iterated and the number of such cycles in any given project may vary, the process is highly iterative in that parts of the process frequently need to be repeated several times before another can be entered. The basic sciences, mathematics, and engineering sciences are used in a decision-making process (typically iterative) to transform resources in the best way possible to achieve a stated goal. The definition of objectives and criteria, synthesis, analysis, construction, testing, and assessment are some of the core components of the design process.

It's critical to realise that there are different ways to frame and express the engineering design process. Various terms used may overlap to varying degrees, which impacts whether processes are expressly mentioned or classified as "high level" versus "subordinate" in any specific model. This obviously holds true for any specific sample steps or sequences provided here.

## Research

Finding information and conducting research might take a lot of time at different phases of the design process (and even earlier). The needs of the market, costs, challenges and accomplishments linked with current solutions, as well as any relevant literature already in existence, should all be taken into account. The information's source

should be pertinent. Reverse engineering is a useful strategy if there are already existing products on the market. Additional information sources include the Internet, local libraries, public records, private organisations, trade publications, vendor catalogues, and available individual specialists.

### **Design requirements**

One of the most crucial steps in the design process is determining the design needs and doing requirement analysis, also known as problem definition (or as a related activity). This operation is frequently carried out concurrently with a feasibility analysis. Throughout the engineering design process, the design requirements govern the design of the product or process being created. They comprise fundamental elements such as the functions, features, and requirements, which are chosen after analysing user demands. Hardware and software specifications, maintainability, availability, and testability are a few design criteria.

### **Feasibility**

In some instances, a feasibility study is completed before the development of the schedules, resource plans, and estimates for the following phase. A feasibility study is a review and analysis of a proposed project's potential to assist in the decision-making process. It describes and evaluates potential solutions or strategies for getting the intended result. The feasibility study aids in reducing the project's scope in order to pinpoint the ideal case. A feasibility report is produced, and then a post-feasibility review is carried out.

We need to determine whether the engineer's proposal can move forward into the design phase using a feasibility assessment. This is based on two requirements: the project must be founded on a workable concept and it must stay below budgetary limits. During this part of the feasibility study, it is crucial to include experienced engineers with sound judgement.

### **Concept generation**

A concept study (conceptualization, conceptual design) is frequently a stage of project planning that entails coming up with concepts and weighing the benefits and drawbacks of putting those ideas into practise. Potential solutions must be found when an engineering issue or problem has been defined.