



# Cost Engineering

The profitability of your investment is largely influenced by the investment cost and the operational cost. The Competence Center Cost Engineering of Siemens Engineering & Consulting (EC) supports you during all phases of your project in the chemical and pharmaceutical industry plants.

Due to our origin from a major chemical and pharmaceutical company we own an extensive data base for the estimation of investment costs, paired with methods and suitable software tools, which are updated on a regular basis.

Depending on the maturity of the project our Cost Engineers can be supported by experienced colleagues from our engineering department to further define or elaborate the project.

Our Cost Engineers are able - even in the very early project phases - to provide a quick overview of the investment costs to be expected. Thereby they assist you in the creation of additional, economical considerations like for example the Total Cost of Ownership (TCO) or the Return of Invest (ROI), which are the basis for every investment decision.

A realistic estimation of the cost for equipment and machinery prices provides a suitable basis for the estimation of the investment costs. Based on our extensive data base from finished projects as well as from literature - costs for equipment and machines can be estimated realistically without time consuming budget offers from manufacturers.

The attainable precision of a cost estimation according to the project maturity is visualized in the graphic below.

To illustrate the attained quality of the estimation of the investment cost, an additional stochastic cost analysis can be offered by Siemens EC. The so called Monte Carlo Analysis provides a mathematical probability for a cost deviation based on project specific influences and project maturity. By such an analysis the cost segments which have a major impact on the deviation of the estimated investment costs, the so called regression sensitivity.

The illustration of the regression coefficients helps the project management to identify the cost drivers.

The Competence Center Cost Engineering is also active at the Dechema working group Cost Engineering and the AACE. (Association for the Advancement of Cost Engineering International)

### Interested? Contact us!

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### Your benefit

- Quick overview of the investment costs to be expected, even in early phases
- Generation of a basis for economical decisions
- Determination of main cost drivers within the project

### Our range of services

- Cost estimates for greenfield, brownfield or revamp projects
- Calculation of investment costs for foreign countries
- Calculation of investment costs for different production capacities
- Verification of cost estimates and offers
- Stochastic analysis of investment costs
- Budget estimate for the cost for equipment and machinery
- Cost estimates according to AACE
- Support of the profitability analysis of a project

Engineering phase	Expected interval of accuracy %	Typical value%
Concept Study	L: -30 bis -50 H: +30 bis +100	+/- 50 %
Process Design Package	L: -25 bis -30 H: +30 bis +50	+/- 30 %
Basic Engineering	L: -10 bis -25 H: +15 bis +25	+/- 15 %
Feed (Extended Basic)	L: -10 bis -20 H: +10 bis +20	+/- 10 %
Detail Engineering	L: -3 bis -10 H: +3 bis +15	+/- 5 %