



# Gmech Group

## Engineering Consultation Sector

Sector Portfolio



BIM

QD

DE

BE

CD

## About Us

**GMECH consult** is a consultation office focusing mainly on the pharmaceutical industry to deliver a complete consultation solution starting from conceptual design, basic engineering, process engineering, detailed engineering, procurement assistance, documentation & validation, FAT & SAT QD , through our talented team which consists of pharma. experts with more than 12 years in the pharmaceutical projects dealing with various regulations requirements (WHO, EMEA, FDA , etc...) and other global regulatory compliant facilities as per GAMP design. Well trained and experienced design engineers in various fields (Civil, Electrical , mechanical, and software) who can understand the client's project needs and apply it professionally.

We design, engineer & build facilities with due consideration to overall plant efficiency & compliance utilizing cost & energy saving parameters thereby reducing the overall footprint and optimizing operating cost without any compromise on compliance or final quality of the product.



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## Concept Design

**Conceptual Design (CD)** aims to find out the most feasible solution for the facility. During this exercise, GMECH along with client will conceptualize, analyze various options and freeze on the most feasible one. GMECH will provide the BIMing details on behalf of the client :

- Basis of Design.
- Process Flow Diagrams.
- Project Time Schedule.
- Plant Layout, Sections.
- Man, Material, Product & Waste Movement.
- HVAC Concept note.
- Electrical Concept note.
- Utility Concept note.



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# Basic Design

**Basic Engineering (BE)** will be done for the facility. The basic engineering is the elaboration of the Conceptual Design (CD) into a package, defining the process requirements, the associated equipment and project facilities. The documentation that is produced during the Basic Engineering & detailed design will be sufficient for the suppliers and contractors to give technical-commercial quotations for the various equipment, clean rooms, HVAC black utilities, clean utilities, electrical, Instrumentations, automation, warehouse, packaging equipment, flooring, other support functions etc.

The scope of QD within Basic Engineering is listed below:

- Project Time Schedule
- Budgetary Costing  $\pm 10\%$ .
- Process Equipment List.
- Utility Equipment List.
- Equipment Arrangement Plans.
- Preferred Supplier list/ Equipment List.
- Conceptual layout ( General layout).

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## Basic Design Continued

- Equipment/Component/Instrument Specifications, Technical sheets & Data Sheets.
- HVAC Air flow & Schematic diagrams.
- HVAC Equipment Arrangement.
- HVAC Piping Execution/ Equipment Specifications.
- AHU Zoning & Room Pressurization Scheme.
- Air outlets layout.
- Preliminary RCP and Modular Panel Layout.
- HVAC summary sheet.
- Personnel flow layout.
- Material flow layout.
- Electrical load summary.
- LV Power design.
- Effluent flow estimations & Drain layout.
- City water supply layout.
- Lighting calculations.
- Electrical equipment's/fittings/instruments – Technical sheets/Data Sheets.



BE

CD

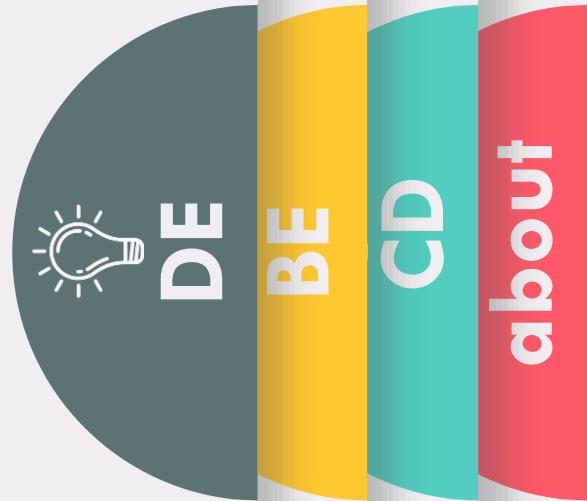
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## Detailed Design

Detailed Engineering (DE) involves the finalization of all the documents, such as GA drawings, specifications, P&ID's, piping drawings, isometrics, electrical schematics, RCP drawings, HVAC-drawings, etc., so that the factory can be built and installed according to these documents.

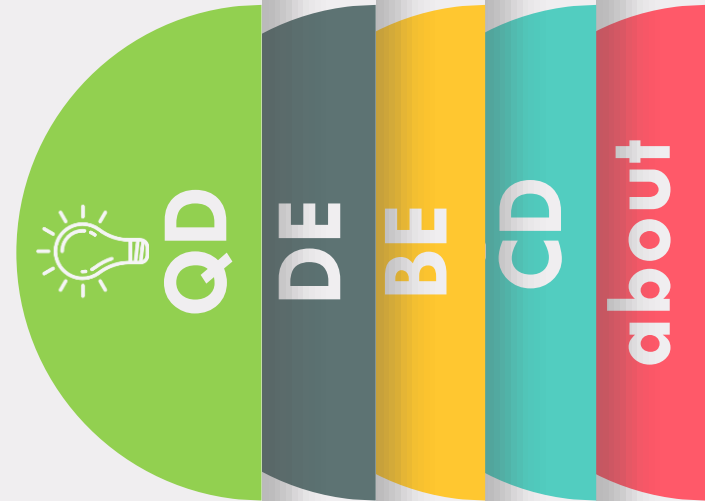
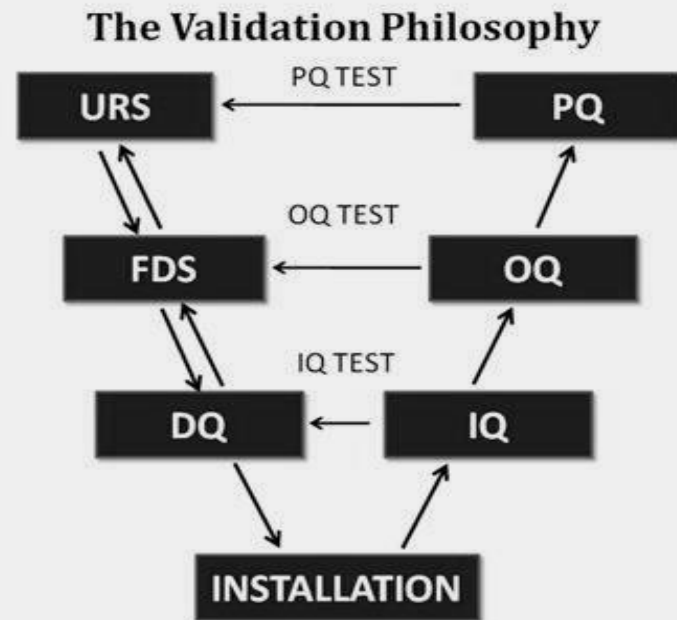
The scope of QD within Detailed Engineering is listed below:

- Vendor GA drawings & shop drawings review and approvals of equipment.
- Review of design / engineering calculation / Approvals
- Generation of DQ.
- Development of Piping and Instrument Diagrams (P&ID) released for construction.
- Development of detailed piping layout - clean & Black
- Development of detailed electrical drawings.
- Review and Approval of RCP & modular panel layout.
- Revision of BOQ.



# Qualification Documentation

Qualification Documentation (QD) ( Optional) includes the Validation Master Plan (VMP). GMECH BIM “V model” validation strategy has shown below. Based on validation philosophy, GMECH will review and comment on the qualification protocols (DQ, FAT, SAT, IQ and OQ) of the different suppliers and contractors.

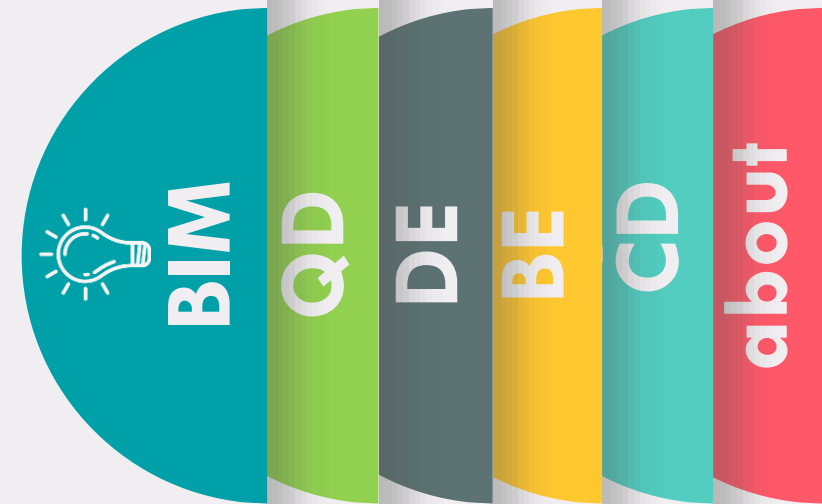


# Building Information Management

We use software REVIT and Navisworks to develop solid 3 dimensional (3D) design of the facility. Our engineers have a wide experience using this software. It provides very accurate information on routing, position etc., which greatly assists in controlling time & cost of execution at site.

The benefits are as under:

- Generation of very accurate BOQ
- Generate clash free drawings.
- Reduce the overall time of project implementation.
- Ensure quality throughout the project execution.
- Ensure consistency in complete life cycle of project.
- Gives highly integrated impression of the project.
- Make project communication extremely easy.
- Increase the negotiation power of the client with various vendor/contractors (decrease variations).
- Extremely useful during inspection & audit of the facility





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