



PLANNING PHASE

CONCEPTION - IDENTIFICATION OF A NEED;

New Products	New Ideas	Improvements	Solve Problems
Cost Reductions	New Components	Refinements.	Business Plans.

RESEARCH - INFORMATION GATHERING;

Market Research	Competition	Investigation	Trade Shows
Patent Search	Define Components	Budgetary Studies.	Reports

FEASIBILITY and ECONOMIC EVALUATION;

Market Strategies	Development Costs	Production Costs	Project Goals
Distribution	Timing Strategies	Evaluation Reports	Project Risks
Management Decision	GO or NO GO.	Focus Groups	Compliances

IMPLEMENTATION PLAN;

Project Funding	Facilities	Manpower Required	Capital Equipment
Project Budget	Investors	Schedule Plan	Assignments.

DEVELOP PRODUCT SPECIFICATION;

Design Requirements	Functions	Feature List	Ergonomic Interface
Appearance	Compatibility	Performance	Physical Size
Environment	Product Life	Reliability	Sustainable Materials
Manufacturability	Serviceability	Power Requirements	Agency Approvals
Durability	Mechanical Loads	Annual Quantity	Graphics.

PHASE I - DESIGN CONCEPTS

Industrial Design	Idea Generation	Human Factors	Mechanical Concepts
Rough Sketches	Marker Renderings	Component Search	Presentations
Control Drawings	Appearance Models	Material Section	Design Reviews.

PRELIMINARY DESIGN and PROTOTYPING;

Concept Inputs	Engineering Interface	Start CAD Layouts	Breadboards
Work Design Details	Experiments	PBC Documentation	Testing
Shop Drawings	First Prototypes	Special Order	Design Reviews.

PHASE II - DESIGN ENGINEERING

Prototype Updates	3D CAD Layouts	Make Data Base	Mechanical Details
Finalize Components	PCB Fab Drawings	Parts Lists	Calculations
Shop Drawings	Develop Software	Design Reviews	Forms & Fits
Engineering Model	Test & Evaluate	Graphic Layouts	FEA Studies

PHASE III - ENGINEERING DOCUMENTATION

Detail Drawings	Bills of Materials	Graphic Artwork	Special Parts
Build PCB Models	Photo Seccessions	Vendor Sourcing	Proof Models
Assembly Drawings	Service Manuals	Trade Shows	Agency Submission
Plotting & Prints	Drawing Checking	Final Design Review	Drawing Updates
Order Packaging	E/C Release	Pre-Product.Release	Tooling Release

TEST ENGINEERING;

Failure Analysis	Environmental	Shock & Vibration	Thermal Testing
EMI/FCC Testing	Life Cycle	Test Reports	Drawing Updates

PHASE IV - PRODUCTION & MANUFACTURING LIAISON

ENGINEERING PILOT RUN;

Under Engineering Supervision, built a small number of units for manufacturing shake down and Production Control, also units for Beta Test at selected customers for feed back.

PRE-PRODUCTION RELEASE;

Purchasing will order a controlled number of parts for a production pilot run to fine tune Manufacturing processes, set up Production Control, ready warehouse facility, and train assembly personnel, and implement any final Engineering Changes.

PRODUCTION RELEASE;

Project now in full production to meet Marketing sale forecasts, shipping and distribution Requirements.

VALUE ENGINEERING PROGRAMS;

Design Engineering and all other Departments working together to support an on going Value Engineering Program for product improvements and refinements in Design, Quality, Reliability, Performance to assure continuing cost savings and profit goals.

Gary Hart Designs

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