

Centre for Machine Tools & Special Purpose Equipments (C-SPM)

Product Design
& Engineering

Product Manufacturing
& Development

Product Assembly
& Testing

Materials &
Metallurgy

Product Design & Engineering (PDE)

The core activity of this department is design & engineering of Advance Technology products and Special purpose machines. For the last 5 decades, PDE has been actively involved in delivering its services to various industries such as Machine Tool, Auto-components, Aerospace, Ship building, Space, Textile, etc.

Expertise & Experience

- Highly qualified Design manpower is a rich combination of expertise & experience with both national & international exposure
- Skill sets include Precision Machine Design, Mechatronics, Hydraulics, Pneumatics, FEA, FMEA, MBD, Electrical & Control systems.

Services Offered

- Special & Advanced Technology Product Development
- Engineering Services – Design verification, Design calculations, FE analysis, Virtual simulations
- Design Consultancy / Design Auditing
- Research streams from ongoing projects to facilitate PG/PhD projects for the academic fraternity.

Value Added Features:

- New Product Development support offered by CMTI spans Project Incubation to Product conceptualization, design & engineering to Product Realization to Pre-production trial runs to Product commissioning & support.
- Product Development value chain at CMTI encompasses Design, Manufacture, Inspection, Assembly, Quality, Testing & Validation, Condition monitoring competencies & facilities.

Facilities

Advanced CAD/CAM/CAE packages (UG-NX, Solidworks, ANSYS, Hypermesh, MSC-ADAMS, AutoCAD, KISSSOFT, MATLAB)

Product Manufacturing & Development (PMD)

Value Added Services provided in

Manufacturing Engineering

CMTI has a team of engineers & scientists having comprehensive experience in product development & caters to sponsored and R&D projects in manufacturing technology.

CMTI also provides consultancy services in product realization.

CAD/CAM:

CMTI provides services in

- Generation of CNC Part Programs and prove out upto 5 axes machining
- CAD to part Inspection in CMM for measurement of complex profiles
- Training programs in CNC part programming and CAD/CAM services.

Tools & Tooling:

CMTI has developed expertise over the last 5 decades offering customized solutions in the areas of machine tools, cutting tools, moulds & dies, jigs and fixtures, propellers, machine elements like ball screws etc.



Machining of Tyre Treads -
Cryogenic Machining



Complex parts



Co-rotating Screw
Elements



Propeller
Machining



Precision
Ball-screws



CAD to part
Inspection

CENTRAL MANUFACTURING TECHNOLOGY INSTITUTE

Tumkur Road, Bangalore – 560 022



Product Assembly & Testing

Product Assembly & Testing (PAT) plays an important role in integration of the manufactured items, sub assemblies, boughtout item into a desired, productive, technology oriented finished product.

Expertise & Experience

- Enriched with best known assembly technology procedures and tools to build product.
- Well versed with providing automation features with interactive controls using advanced and latest control systems.
- Development of PLC & SCADA logics

Services Offered

- Assembly and testing services in the field of Mechanical, Electrical, Control system & Hydraulics.
- Furnishing and assembling electrical, Console and control cabinets with best practices.
- Commissioning the products at customer site.
- AMC activity for the delivered products to customer
- Provides turnkey solutions in the field of automation.

Materials & Metallurgy

Chemical Analysis

- Chemical composition of metals & alloys
- Coating thickness measurement
- Corrosion test: Salt Spray Chamber
- Oil analysis



Lab model OES



Viscometer

Metallurgical Analysis

- Hardness measurement for all scales (HRC, HRA, HRB, Vickers, Brinell, Micro Vickers, Portable hardness tester for big jobs)
- Microstructure analysis to characterize phases, case depth, grain size, inclusion rating, coating thickness along the cross-section & porosity analysis.
- Failure analysis of metallic engineering components through SEM fractography studies

C-SPM: Products at a Glance

Machine Tools



Centreless Bar Turning M/c



Centreless Grinding M/c



Engraving Machine



Goliath Facing & Taper Boring M/c

Auto Components Sector



CNC Piston Ring Finish Turning and Grooving Machine



CAM Turning M/c

Advanced Technology Products



Parallel Kinematics M/c



Diamond Turning M/c

Inspection Systems



Multi Gauging System



Flexible Inspection System

Textile Machinery



High Speed Shuttleless Rapier Loom

Control System



Console



PLC Cabinet