



Centre for Advanced Manufacturing and Materials Processing (CAMMP)



Sri Chandrasekharendra Saraswathi Vishwa Mahavidyalaya
(Deemed to be University)
(University u/s of UGC Act 1956) (Accredited with 'A' Grade by NAAC)
Kanchipuram – 631561,
Tamilnadu, India.

Centre for Advanced Manufacturing and Materials Processing (CAMMP)

INTRODUCTION

India is one of the fastest growing economies in the world. Typically, our nation is facing many challenges that are mainly reflecting in economic model of GDP (Gross Domestic Product). In order to tackle such challenges as part of the academic institutions to develop important new technologies, products and services that help to solve major challenges (economic, environmental and social). To narrow focus on this view, CAMMP is a physical model for developing the next generation of engineers, designers and technicians for our fast growing nation. To put it differently, the production and processing of complex parts in the aerospace, automobile and bio-medical sectors are rapidly increased recent years. The plenty of conventional routes and techniques are available to manufacture parts. However, many disadvantages exist such as high consumption of power, lengthy production time and operators health issues etc. Nowadays, many advanced manufacturing technologies are available to overcome these limitations. However, these are partly at research level. In such a way, the research centre focusing on some advanced level of manufacturing techniques and processing of materials research and finding the research solutions for helping our industrial as well as research communities.

OBJECTIVES:

More specifically this centre has set out the following objectives:

- To encourage and promote a meaningful research covering in the potential areas of manufacturing and materials.
- To accommodate a quality drive research and encourage problem specific for addressing the current requirements of national and regional needs.
- The centre planned to create a joint venture of our Indian MSME's (Ministry of Micro, Small and Medium Enterprises) for practising and make a confidence for our students to develop as entrepreneur in the area of manufacturing engineering.
- To extend the existing research facilities for consultancy services in the manufacturing and material testing aspects.
- To do collaborative research works with nearby industries.
- Over the period of time, the centre will be upgraded to centre for potential of excellence.

ACTIVITIES:

- Prepare the proposals and submitting to various government agencies like DST(Department of Science and Technology), DST Nano mission, NRB (Naval Research Board), IE (Institution of Engineers) India, and UGC (University Grant Commission) etc.
- Organising finishing school programmes, workshops, seminars and short term courses.
- Admitting of full time Ph.D scholars to work in this centre.
- Contribute the research work to the societies in the evidence of publication in reputed and referred journals.
- Launching of new e-Journal in the Thermal, Manufacturing and Materials field.
- Maintain the profile of the research for NAAC and NBA accreditation purposes.
- Modernising the centre further to compete in the international level.
- The centre will effectively work with support of advanced process simulation tools , such as DEFORM 2D/3D, ABAQUS, CREO and CAM software.

FOCUS AREAS:

The focused areas covered in the novel disciplines of

a) Advanced Manufacturing Process

- Hard Machining
- Ball and Roller Burnishing
- Friction Stir Welding
- Thermal drilling
- Nd-YAG Laser Cutting
- Plasma Arc Cutting
- Magnetic Abrasive Finishing
- Abrasive water Jet cutting
- Wire Cut EDM
- Additive Manufacturing (FDM and SLS process)
- Injection Molding
- Shot Peening and etc

b) Materials Processing

- Tribology analysis of surfaces
- Processing of shape memory alloys
- Heat treatment simulations of materials

- Processing of Titanium and Nickel based Super alloys
- Synthesis and processing of Natural Composites
- Synthesis and processing of Nano based Composites
- Mechanical Testing and evaluation of Composites and etc

INFRASTRUCTURE (For Research and Consultancy)

Presently the CAMMP centre is well equipped with the more sophisticated machines and facilities as follows:

1. CNC Turning Centre



Salient Features

- Capable to Turning, Roller and Ball Burnishing upto 4500RPM with varying speed and feed conditions.
- To perform machining with MQL(Minimal Quantity Lubrication) system for analysing the behaviour of cooling and lubrication effect of oil.
- To perform the machining with Vortex Air cooling for analysing the cooling effect of chilled air.
- To do experiments using Taguchi and RSM based approaches for the researchers.
- Capable to do machining of wide range of Metal matrix composites, Natural fibre composites, and super alloys.
- Possible to measure the responses like MRR, surface roughness, power and cutting temperature etc.
- Can be used for finishing school program, certificate course and entrepreneurship development.

2. CNC XLTURN Trainer



Salient Features

- Can be used for finishing school program, certificate course and entrepreneurship development.
- Demonstrate the intelligent manufacturing control.

3. MITUTOYO Surface Roughness Tester



Salient Features

- The roughness tester is used to measure the surface roughness of machined surfaces.

4. IR Thermometer



Salient Features

- Used to measure the temperature in the cutting operations and etc.

5. Tool Maker's Microscope



Salient Features

- This microscope can be used for measuring the cutting tool wear and etc.

6. Muffle Furnace



Salient Features

- A furnace used for heat treatment and sintering purposes.
- All type of heat treatment to perform using this furnace.

7. Computerized UTM machine



Salient Features

- The computerized UTM machine can be used for evaluating the mechanical properties of Traditional to Advanced materials.
- It can be also used for compression molding purpose while developing the composites.
- The metal testing range used in this machine as soft to hard material.

8. Hardness Testing Machines



Salient Features

- The Vickers micro, Rockwell, Brinell hardness machines equipped with to measure respective hardness for research purpose.

9. Impact Testing Machine



Salient Features

- The machine used to perform the impact analysis of variety of materials as per the ASTM standard.

10. Design Expert DOE Software

Salient Features

- The software can be used for Design of Experiment purposes.

11. Abaqus Software(Student Version)

Salient Features

- The software can be used for performing the FE simulation of manufacturing process.
