

## INTRODUCTION

Electric Motors play an important role in both in Industry and Household. Motors are used in industry for operating cranes, Blowers, Machines, Machine tools, Compressors, conveyors, Hydraulic & Oil pumps, Robots, Loco engines and host of other equipment. Domestic goods like washing machines, Mixers, Water pumps, Fans, lifts etc also need Motors.

Types of motors, Principle of working, Parts, Method of starting, speed control, Mounting Methods, Temperature rise, Insulation, Protection, Cooling methods, Duty cycles, Torque and speed characteristics, Efficiency and other aspects of motors are very important for all users in the industry. Proper understanding about all these topics, selecting suitable type and optimizing the size of motor for the required application is important. Proper sizing and optimization of motor will have long and trouble-free life and will also be energy efficient. Keeping this in view Indian Machine Tool Manufacturers' Association (IMTMA) is organising 2day workshop on **“Electric motors Application, selection, sizing and optimization” on 24 - 25 August 2023 at Pune.**

## FOCUS AREAS

- Electricity and Power Transmission.
  - AC and DC supply
  - Voltage and frequency
- Electric Motor Basics
  - Types of Motors
    - AC & DC Motor
    - Operating principle
    - Major parts
    - Characteristic curves and tables.
    - Speed control.
    - Advantages & Disadvantages.
    - Applications
    - Power, Torque and speed.
    - Duty cycle.
    - Efficiency
    - Temperature and Insulation class
    - Mounting
    - Shaft extension and loading.
    - Vibration class and severity
- Motor sizing:
  - Basic parameters:
  - Friction and Friction coefficient.
  - Load and force calculations
    - Horizontal, Vertical or inclined plane
  - Torque
  - Load/ Continuous torque
  - Acceleration torque.
  - Mass Moment of Inertia.
    - Calculation of inertia for different shapes.
    - Motor inertia and load inertia-Allowable limits
  - Motor torque and load torque-Allowable limits
  - Direct drive or Reduction drive.
- Case studies :
  - AC Motor selection.
    - Motors for cranes, conveyors, Blowers etc.
  - DC Motor selection
    - Motors for cold rolling/paper winding.
  - Servo motor selection.
    - Selection of motor for Machine tool Spindle and axis drives.
  - Stepper motor selection
    - Motor for Rotary table

## KEY TAKE AWAYS

**After undergoing the programme, the participants will be able to have overview of**

- Various types of Electric Motors used in Different industries.
- Working principle
- Understanding Motor characteristic curves and tables.
- Advantages and disadvantages of different motors
- Application and uses.
- Frame sizes.
- Duty cycles.
- Effect of Ambient temperature and Insulation class.
- Speed Control and their effects.
- Understand and estimate Force, Inertia, Torque and power.
- Understanding Motor loads
- Selection of Different types of motors.
- Selecting and Optimizing Motor for a given application.

## PARTICIPATION FEE

**Rs. 9500/-**

+18% GST

**IMTMA Members/ Micro Companies/ Individuals/  
Educational Institutions / Students/ IMTMA Non  
Members/ Others**

**USD 380/-**

**Overseas Participants**

**Group Concession : 10% for 3 to 5 and 20% for 6 and more delegates being nominated from the same company**

## PARTICIPANT PROFILE

This programme will benefit Engineers and personnel involved in design, Production, Procurement, Maintenance functions of all Manufacturing industries. Engineers from Machine Tool, Automobile & Auto ancillaries, Consumer Durables, Aerospace, Industry Machinery, Defence & Railway units, General Engineering and other Capital goods manufacturing industries also can participate.

## FACULTY

This program will be conducted by **Mr. P. Aruna Kumar**

**Mr. P. Aruna Kumar** is a Post graduate Mechanical Engineer with Machine tool specialization. He comes with over 21 years of domain expertise in Machine tool design, Assembly, Inspection and Testing. He is former DGM, Design and development, HMT Machine tool division, Bangalore. He has rich experience in Gears, Gear design, Gear cutting machine design, Gear metrology and other machine tool design,

He also got 15 years of experience in Assembly, inspection, Testing and servicing of AC and DC motors. He worked as DGM in IEC motors, Bangalore. Selection of Motors for industrial application is his passion.

### For Registration Contact

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**REGISTRATION :** Prior registration for participation is necessary. Number of participants is limited and will be accepted on 'First Come First Serve' basis. A Certificate of participation will be issued to participants.

**Important Information :** Participation fee includes, course material, working lunch and tea / coffee. Interested companies are requested to register online by clicking on 'REGISTER' button and by filling up the nomination authority and participant's details in specified form.