

## INTRODUCTION

Die-casting is a metal casting process, wherein the molten metal is injected at very high pressure to produce parts with good dimensional accuracy. To cast the parts at high pressure, a die casting machine is used. This application finds uses in many areas such as Automobile, Aviation, Telecommunication, hydraulics & pneumatics parts, electrical and so on. A few examples to mention are Two-wheeler engine crank cases, cover kick starters, cylinder head, cylinder barrel, four-wheeler Alloy wheels, 2 wheeler front and rear wheel hub, 2-wheeler carburettor, earth moving equipment hydraulic valves, 4 wheeler air brake parts, to name a few.

The die-cast die & mould design is an iterative process that determines the contour of die cast parts and affect its properties. Following a systematic design process will always lead to better outcomes. This program shall cover how to design a die-cast part suitable for high pressure die-casting, wherein guidelines are given for ensuring trouble free casting production of parts.

Keeping this in mind, IMTMA is organizing a 5 day training programme to impart training on Diecast (PDC) parts die design.

## FOCUS AREAS

The program shall focus on the following topics:

- Basic concepts of the PDC die-casting process
- Understanding the Cold chamber machine and PQ<sup>2</sup> (flow characteristics) of the machine
- Study of part drawing and / or 3D model and understanding the product’s end-requirement
- Basic guidelines for designing the die-casting die
- Parting line geometry
- Feed and runner system
- Thermal balancing the die
- Ejection system of the casting
- Mechanical strength requirement and fulfilment in the die design
- How to do process FMEA and build the die-design anticipating the likelihood of defects in advance
- Simulation and course correction to reduce rejection
- Case study with sharing of experience

## KEY TAKE AWAYS

At the end of the program, a participant shall:

1. Learn the machine characteristics and importance of PQ<sup>2</sup> diagram
2. Understand on how to decide the gate based on the product castings' end requirements
3. Understand how to decide the parting line
4. Know how to calculate the gate area, runner area, selection of Plunger diameter
5. Know the minimum and maximum FILL-RATIO to be designed for the given casting part
6. Understand the efficient method of designing the cooling circuit for the die inserts
7. Know how to calculate the Deflection of the housing and how to overcome
8. Get an understanding of the die casting defects in the design stage and avoid
9. Know how to read the simulation results and take remedies in the die design

## FEE PER PARTICIPANT (PER LOGIN)

**Rs. 10000/-**  
+18% GST

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

**USD 300/-**  
**Overseas Participants**

**Group Concession : 10% for 3 to 5 and 15% for 6 and more delegates being nominated from the same company**

## FACULTY

This programme will be conducted by Mr Padmanarayanan, a technology professional with over 5 decades of high quality experience in the areas of High pressure die-casting, gravity diecasting, Low pressure diecasting, SMED, Setting up tool rooms, productivity improvement and rejection reduction. During his professional career, he was associated with several companies such as Sundaram Clayton, Semco Electric, Columbia Wheel manufacturing, Eqic Dies and moulds, Rapsri Engineering Industries, Dietech India, AR Die Casts, Hyderabad Engineering Industries, and Endurance Technologies.

He possesses over 60 certifications in areas such as Six sigma, Cost of quality, TQM tools, Understanding benchmarking methods, Time management, Quality management and several other areas.

### For Registration Contact

**Nishant Singh**  
**Programme Coordinator**  
9823174010  
[nishant@imtma.in](mailto:nishant@imtma.in)  
**Dhananjay Talmale**  
9767164221  
[ghananjay@imtma.in](mailto:ghananjay@imtma.in)

### Contact Address

**INDIAN MACHINE TOOL MANUFACTURERS' ASSOCIATION**  
Plot 249F, Phase IV, Udyog vihar, Sector - 18,  
Gurgaon - 122015  
Tata no- +91-124-6463101  
Tel : 0124 4014101 - 04  
Fax : +91-124-4014108

