

**Last date for registration 04 December 2024**

## INTRODUCTION

The programme is focusing on the **design of rotor shafts**, we will explore a comprehensive range of design options for these pivotal components, particularly significant in the realm of automotive electric drives.

We will first establish a foundational understanding of rotor shafts, explaining their defining characteristics and functional roles within the broader context of engineering applications.

We then move on to the various design methods available for rotor shafts. These include solid, welded and rotary swaged variants. Each of these approaches has its own advantages and disadvantages and requires careful consideration.

The programme also focused on the key role of material selection in achieving robust and high performance shaft designs. We will evaluate various material options and examine their mechanical properties in terms of strength, durability, and machinability. We will also look at considerations for wall thickness increase and fibre flow within the material.

One part of the training will highlight the transitional period marked by the emergence of solid and assembled, mainly welded, shafts as an interim solution to different material requirements. This lesson will highlight both the merits and challenges of their design, as well as the innovative solutions engineers devised during this period.

Armed with these insights, we will outline the design principles underlying the manufacture of cold extruded and rotary swaged rotor shafts and describe their comparative advantages and limitations compared to alternative manufacturing techniques.

Finally, we will get to know the material behaviour during cold forming in order to develop rotor shafts that are characterised by faster production rates and higher reliability in their automotive application.

The programme will be enriched by real-world case studies, illustrating the efficacy and adaptability of these design paradigms in practical settings.

## FOCUS AREAS

- Understanding Rotor Shafts: Defining Characteristics and Special Requirements
- Exploring Wall Thickness Increase and Fiber Orientation: A Theoretical Overview
- Solid and Assembled Shafts: Reasons and Applications
- Extruded and Rotary Swaged Shafts: Benefits and Limitations
- Illustrating Modern Rotary Swaged Designs: An Exemplary Case

## KEY TAKE AWAYS

**After undergoing the programme, the participants will be able to -**

- develop a robust foundational understanding of rotor shafts, including their defining characteristics and functional roles within various engineering applications.
- will become proficient in a diverse spectrum of design methodologies for rotor shafts, encompassing solid, welded, and rotary swaged variations.
- will gain expertise in evaluating various material options and scrutinizing their mechanical properties such as strength, durability, and machinability.
- will understand the merits and challenges inherent in different rotor shaft designs
- apply their newfound knowledge to real-world engineering challenges effectively

## PARTICIPATION FEE

**Rs. 6600/-**

+18% GST

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

**USD 260/-**

**Overseas Participants**

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

## PARTICIPANT PROFILE

Engineers and technicians tasked with handling inquiries to produce customer-designed rotor shafts.

At a minimum, participants should have a proficient understanding of technical drawings and have undergone theoretical and practical training in metalworking.

## FACULTY

This program will be conducted by **Mr. Peter Karch**.

**Mr. Peter Karch**, is a seasoned Fels engineer with over 20 years of expertise in the automotive industry, including 15 years focused on rotary swaging and axial forming. As a Technology Expert, he has specialized in developing advanced programs for renowned OEMs across Europe and globally.

With his extensive knowledge and dedication to innovative solutions, Peter is a highly regarded expert and valued dialogue partner in his field.

### 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.