# DEPARTMENT OF MECHANICAL ENGINEERING

# P E S COLLEGE OF ENGINEERING, MANDYA-571401

**REPORT**

**on**

# MECHANICAL ENGINEERING ASSOCIATION ACTIVITIES

# FOR THE YEAR 2020-2021

**Prepared by**

Dr. S V Anil kumar
Secretary-MEA

**REPORT**

**EVENT: TECHNICAL TALK**

**TOPIC: CO-PO Mapping in Engineering Academics**

**VENUE: CRC Seminar hall**

**DATE: 18th December 2020**

Mechanical Engineering Association, Department of Mechanical Engineering is conducting a Technical Talk on **CO-PO Mapping in Engineering Academics**′. The main aim of the programme is to train up the faculties in engineering academics and framing the syllabus. The faculties and students benefited by the program.

Dr S L Ajit prasad Resource person, Professor, Department of Mechanical Engineering, PESCE, Mandya were inspired the faculties for the engineering Academics and examination. Faculties also interacted with resource person and clarified the doubts and took the guidance about the preparation of syllabus. Dr S Ghanaraja, HOD preside the function. Dr S V Anil kumar sec-MEA welcomed and honoured the resource person. More than 35 Faculties of our department and other department faculties were participated in the programme.

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# Technical Talk

# under

## REPORT OF RESEARCH ENRICHMENT PROGRAM

## Department of Mechanical Engineering

## P.E.S. College of Engineering, Mandya -571401

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| **TECHINICAL TALK NO. 3** | **Date:** 07.07.2021<br>**Venue:** CRC Seminar Hall<br>Dept. of Mechanical Engg., PESCE. |  <br>**Dr. S V ANIL KUMAR**<br>Assistant Professor<br>Dept. of Mechanical Engg.<br>PESCE, Mandya |
| **Title of the talk**<br>Titanium alloy Brazed joints using low Temperature filler metal<br>**Google link:**<br>**https://drive.google.com/file/d/1iDtjjpBXmin5Huohjxg lAaEtNk8g38hq/view?usp=sharing** | | |


**Abstract:**

Titanium joining method follows welding, diffusion bonding, and brazing have been developed. Brazing is a method of permanently joining process which is suitable for similar and dissimilar metal joining applications. Brazing is ideal for joining dissimilar metals, because it involves the melting of the filler material only which eliminates the problems that occur when dissimilar metals are fused. The benefits of titanium brazing in comparison with other joining methods are: reduction of energy and heat input, reduction of residual stress, and a lighter weight structure with the absence of a heat affected zone.

Titanium brazing filler metals can be characterized as either high temperature or low temperature filler metals. High temperature filler metals are based on titanium based alloy systems or palladium based alloy systems. Low temperature filler metal can be classified into three groups such as silver based system, aluminum based system, and zirconium based systems, with brazing temperature below 800°C, thus avoiding thermal treatment above the α-β transformation. The use of a low temperature brazing filler metal is not only essential to produce a strong joint with desired microstructure, but also to reduce the total time along with the energy needed to braze the components.

This study also presents a review of titanium alloys and steel brazing methods using low temperature silver based filler metal. On the basis of literature, it is stated that titanium alloys can be joined with steel by means of furnace, vacuum furnace, electron-beam brazing, ultrasonic brazing, and friction stir brazing. Brazing of titanium with steel can be carried out by using vacuum furnace which offers distinctive benefits in excess to other brazing methods, including low residual stresses in the brazed joint. The silver based filler metals act as a buffer for stresses. Moreover, low pressure is

required within the bonding zone during the joining process. Titanium is a reactive metal that has a strong affinity towards oxygen to form titanium oxides.

# Technical Talk

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### Department of Mechanical Engineering

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| **TECHINICAL TALK NO. 3** | **Date:** 01.07.2021 | |
| | **Venue:** CRC Seminar Hall<br>Dept. of Mechanical Engg., PESCE. | |

**Title of the talk: Opportunities in Friction Stir Welding of Aluminium Composites**

**Google link:**

**https://drive.google.com/file/d/19khsJDKCf-CUmrzKvIu21BRBwWEoskjq/view?usp=sharing**

**Dr. Sadashiva M**
Assistant Professor
Dept. of Mechanical Engg.
PESCE, Mandya

**Abstract:**

The comprehensive body of knowledge that has built up with respect to the friction stir welding (FSW) of aluminium alloys since the technique was invented in 1991 is reviewed. It is demonstrated that FSW of aluminium is becoming an increasingly mature technology with numerous commercial applications. In spite of this, much remains to be learned about the process and opportunities for further research and development are identified. *Friction stir welding* presents a new technique for material joining and processing. Friction stir welding has enjoyed worldwide interest since its inception because of its advantages over traditional joining techniques including with overcomes melt-related problematic, such as *porosity and cracking in traditional welding*. FSW is a solid-state process involves benefits not only eliminates melt-type issues but also significantly decreases the temperature in the weld zone. This in turn limits formation of *intermetallic phases*. Because of these added advantages fabrication of aluminium and its alloy is a emerging field in modern era, so in this regarding matters, this technical talk focus on widely on aluminium, its alloy, composites, fabrication technique including and majorly focus on solid state welding called friction stir welding concept, principle, method , process parameters, tools, advantages, limitations and application. Also briefly discuss on current trends in FSW methods, optimization and challenges with respect to research.

# Technical Talk

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## Department of Mechanical Engineering

## P.E.S. College of Engineering, Mandya -571401

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| | **Date:** 07.07.2021 | |

| TECHINICAL TALK NO. 3 | **Venue:** CRC Seminar Hall<br>Dept. of Mechanical Engg., PESCE. |
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**Title of the talk**

Titanium alloy Brazed joints using low Temperature filler metal

**Google link:**

**https://drive.google.com/file/d/1iDtjjpBXmin5HuohjxglAaEtNk8g38hq/view?usp=sharing**

**Dr. S V ANIL KUMAR**
Assistant Professor
Dept. of Mechanical Engg.
PESCE, Mandya

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## EVENT: VALIDECTORY FUNCTION

## VENUE: CRC SEMINAR Hall

## DATE: 7th August 2021

Inaugurals of Mechanical Engineering Department activities and welcome function to fresher's of both PG and UG was organised by MEA on 7th August 2021 Dr H V Ravindra, Principal, PESCE was the chief guest. Dr S Ganaraja,

HOD preside the function. Mr Madan R M welcome the guests and Mr Abhinandan Jain, DS, MEA delivered vote of thanks. Cultural activities followed with the programme.