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DEPARTMENT OF MECHANICAL

MECHANICUS

K. E. Society's
Rajarambapu Institute
of Technology,
Rajaramnagar.
(An Autonomous Institute)
(Diploma 2nd Shift)
Islampur, Dist. Sangli,
Maharashtra, India - 415414.
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MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION , MUMBAI HAS AWARDED

Excellent

GRADE TO DEPARTMENT OF MECHANICAL ENGINEERING, RIT, RAJARAMNAGAR (DIPLOMA 2ND SHIFT) FOR THEIR PERFORMANCE IN A.Y. 2017-18

JOBS WITH SMILE

100% Placement

From the Editor's Desk

The search for the best approach to education has led educators to explore many different teaching techniques, ranging from the traditional lecture class to various experimental approaches such as active learning. Active learning as a way of improving student learning in the classroom by involving the student directly in the learning process. Faculties feel comfortable with lecturing and consider it an effective means of transmitting large amount of information. According to faculty, heavy course contents, limited time span and large classes prohibit active learning. Therefore, the reform of instructional practice at engineering education needs attention, it is important to promote student learning. For academic year 2018-19, I used various active learning techniques like Muddiest Point, Reciprocal Teaching, Jig Saw and one my innovative technique is Gauge Your Preparation. By the use of all these active learning techniques various benefits were obtain in terms of Result, Average marks received by the students and level of understanding of subject.

Prof. N. C. Gaikwad
(Lecturer, Mechanical Engg. Dept.)
Diploma 2nd Shift

Department Vision

To be a department that develops skilled Mechanical engineers to meet ever changing industrial and social needs.

Department Mission

- To empower the students with technical knowledge in Mechanical Engineering .
- To encourage students for higher studies in recognized institutes.
- To enrich students with sound skill sets through effective interaction with industries, entrepreneurs and alumni.
- To develop ethical & professional values among students with societal and environmental concern.

Article of Faith

Programme Educational Objectives (PEOs)

PEO 1. Provide socially responsible, environment friendly solutions to Mechanical engineering related broad-based problems adapting professional ethics.

PEO 2. Adapt state-of-the-art Mechanical engineering broad-based technologies to work in multidisciplinary work environments.

PEO 3. Solve broad-based problems individually and as a team member communicating effectively in the world of work.

Program Outcomes (POs)

PO 1. Basic knowledge: Apply knowledge of basic mathematics, sciences and basic engineering to solve the broad -based Mechanical engineering problems.

PO 2. Discipline knowledge: Apply Mechanical engineering knowledge to solve broad-based mechanical engi neering related problems.

PO 3. Experiments and practice: Plan to perform experiments and practices to use the results to solve broad-based Mechanical engineering problems.

PO 4. Engineering tools: Apply relevant Mechanical technologies and tools with an understanding of the limita tions.

PO 5. The engineer and society: Assess societal, health, safety, legal and cultural issues and the consequent re sponsibilities relevant to practice in field of Mechanical engineering.

PO 6. Environment and sustainability: Apply Mechanical engineering solutions also for sustainable development practices in societal and environmental contexts.

PO 7. Ethics: Apply ethical principles for commitment to professional ethics, responsibilities and norms of the practice also in the field of Mechanical engineering.

PO 8. Individual and team work: Function effectively as a leader and team member in diverse/ multidisciplinary teams.

PO 9. Communication: Communicate effectively in oral and written form.

PO 10. Life-long learning: Engage in independent and life-long learning activities in the context of technological changes also in the Mechanical engineering and allied industry.

Program Specific Outcomes (PSOs)

PSO 1. Modern Software Usage: Use latest Mechanical engineering related softwares for simple design, drafting, manufacturing, maintenance and documentation of mechanical engineering components and processes.

PSO 2. Equipment and Instruments: Maintain equipment and instruments related to Mechanical Engineering.

A number of programs like Guest Lectures, Industrial visits and training workshop from various Institutional, Organization and Industrial Experts in the field were organized by department for in-depth understanding of the subjects.

Expert's Talk

Expert Lecture by Prof. Arvind Pranjape, On "Power Plant Engineering"

Expert Lecture by Prof. Naresh Shingate, on "Design Softwars and its applications"

Guest lecture on Personality Development by Mr. N. A. Soman

Guest Lecture on "Awareness of Importance of Sports" by Prof. A. A. Kale

Expert Lecture on "Recent Trends in Automobile Industry" by Prof. S.S. Jadhav

Expert Lecture on "Effective Pa- per Writing Skills and Interview Techniques" by Prof. S.S. Jadhav

Confluence with Industries

Industrial visit at MIDC Miraj

Industrial Visit to Power Control Electro Systems Pvt. Ltd

Industrial Visit to Jagdish Engineering Works, Miraj

Industrial Visit to Shriram Foundary Pvt. Ltd., Shiroli MIIDC

Industrial Visit to Rajarambapu Sugar Factory,

Rajaramnagar

Student's Corner

Ultra Efficient Jet Engines

Shreyash J. Sagaonkar
SY Mech
Roll no. 4217

Pollution by aviation is one of the major causes of global temperature increase and Ocean acidification caused by the release of carbon dioxide and other greenhouse gases into the upper part of Earth's atmosphere. Globally around 8.3 million people fly daily, twice the total in 1999, burning almost 500,000 metric tons per day. With no much advancement in the alternate fuel research currently same old gasoline is being used causing ever increasing pollution, and many in industry believe the pathway to cleaner jets is through advances in engine technology rather than cleaner fuel.

allows improvements in propulsive efficiency across a range of flight. GTF was then renamed as PW1000G, the first in new line of "Pure Power" engines.

That's the main idea behind tomorrow's aircrafts with engines that are much lighter, quitter, durable and more energy efficient than the conventional turbofan engines used today in commercial airliners today. Pratt & Whitney is an aerospace manufacturer which has introduced a new series of engines called 'Pure Power' which uses an internal gearbox to slowdown the speed of the fan. The technology effectively saves 16% on fuel consumption compared to the airliners with conventional engines. Soon afterwards Advanced Technology Fan Integrator (ATFI) project commenced using the engine PW308 at the core but along with a new gear box and a single stage fan. It had it's first run on March 16, 2001. This led to the geared Turbofan program which was developed with German MTU Aero Engines. In addition to Turbofan, initial design included variable area fan nozzle which In the Pure Power 1000G engine family, a state of the art gear system separates the engine fan from the low-pressure compressor and turbine, allowing each of the modules to operate at their optimum speeds. This enables the fan to rotate slower and while the low pressure compressor and turbine operate at high speed, increasing engine efficiency and delivering significantly lower fuel consumption, emissions and noise. This increased efficiency also translates to fewer engine stages and parts for lower weight and reduced maintenance costs. This high-bypass geared turbo fan engine is 16% more fuel efficient as well as being up to 75% quieter. It has a 3:1 gearbox between the fan and the low pressure spool, each spinning at its optimal speed of 4000-5000 rpm for the fan and 12,000-15,000 rpm for spool, the high pressure spool is spinning at more than 20,000 rpm. The 30,000 hp gearbox is designed to run lifelong with no scheduled maintenance other than changing oil.

Additive Manufacturing Approach

Mayur V. Mulik
TY Mech
Roll no 4307

3D Printing - Origin

1981 – First article about 3D printing technology (Hideo Kodama of Nagoya Municipal Industrial Research Institute

1984 – First functioning 3D printer (Charles Hull, inventor of stereolitography, 3D System co-funder)

1990s – Introduction of new printing technologies, like Fused Deposition Modeling and Selective Laser Sintering

2000s – Introduction of new printing materials (biocompatible materials, metals, wax and even cells)

Last few years – great diffusion of 3D printing technology

3D Modeling Software

There are many different 3D modeling software tools available. Industrial grade software can easily cost thousands a year per license, but there's also open source software you can get for free. We often recommend beginners to start with Tinker cad. Tinker cad is free and works in your browser, you don't have to install it on your computer. Tinker cad offers beginner lessons and has a built-in feature to get your 3D model printed via a 3D print service**.** Now that you have a 3D model, the next step is to prepare the file for your 3D printer.

Slicing: From 3D Model to 3D Printer

Slicing is dividing a 3D model into hundreds or thousands of horizontal layers and is done with slicing software. Some 3D printers have a built-in slicer and let you feed the raw .stl, .obj or even CAD file. When your file is sliced, it's ready to be fed to your 3D printer. This can be done via USB, SD or internet. Your sliced 3D model is now ready to be 3D printed layer by layer.

Additive manufacturing ⇒ Creates objects through a sequential layering process

Step 1 – From CAD model to .STL file)

Step 2 - Virtual slicing

Step 3 - Printing

Examples of 3D Printing - Dental products ,eyewear ,design (lamps, furniture etc.) ,reconstructing bones and body parts in forensic pathology.

Friction Stir

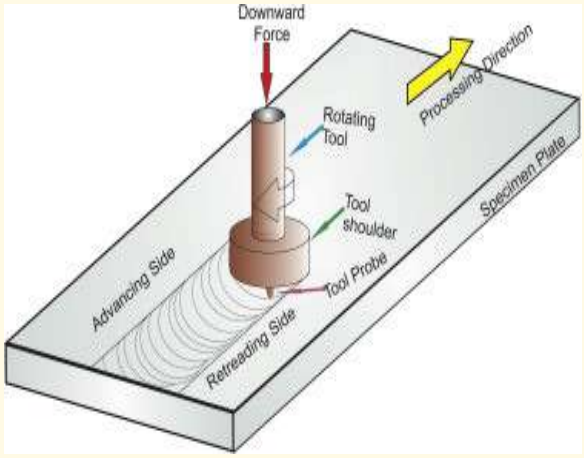
Swati D. Khambe
T.Y. mech
Roll no. 4325

Introduction

Friction Stir Processing (FSP) is an innovative and eco-friendly technique to prepare a surface composite or surface processing of material. This technique is originally abstracted from the „friction stir welding"a solid state welding technique which was invented and patented by „The Welding Institute"(TWI)in 1991. In present study, copper has been processed by the FSP technique. Copper plates are processed with FSP to enhance its mechanical properties. While processing, Zn and graphite powders are added individually on the plate surface in definite amounts. Both the powders are applied in the groove cut on the copper plate surface. Composition of each ingredient powder is optimized on the results of tensile properties in the processed plates. Effects of Zn and graphite addition are discussed and compared in terms of the tensile properties shown by respective processed plates.

Methodology

A plate of 5 mm thick copper is cut in to a size of 150*150 mm pieces. Process parameters are kept assquare tool pin profile, 1000 RPM rotating speed of tool, 63 mm/min translational speed of machine bed and 20 tilt angle. Groove depth and width has dimensions 2 x 2mm.



Highlights

Comparative study of effect of two different powders mixing in friction stir processed zone. Ingredient powder is optimized on the results of tensile properties in the processed plates. Mechanical properties are analyzed after processing. All tensile specimens are break from the intersection of HAZ and TMAZ.

Study outcomes

Outcomes of the study revealedthat tensile strength is more in theprocessed platein case of graphite as compare to Zn.

Various Student Centered Activities

Farewell Function

State Level Technical Events

Interactions with Parents

Tree Plantation

"Street Play" - Indepenence Day

Personality Development Program

Project Competition

Placements & Out house Interactions by Department

Placement Record

Sr no	Name of Company	No. of Students Placed	Package (LPA) No.
1	Bharat Forge Ltd, Pune	08	1.77 LPA
2	Precision Seals Manufacturing Ltd , Pune	08	1.44 LPA
3	Cummins India	04	1.44 LPA

Research & Publication

Sr. No.	Name of the Faculty	Title of Publication
1.	Ms. S. M. Waghmare	Development and Experimental Validation of a Machine Condition Monitoring System
2.	Ms.. K. S. Kulkarni	Development of weed extractor for sugarcane farming

Placement Assistance – Linking opportunities with Talent

Sr no	Name of the Faculty	Module description	Contributing Host
1	Mr. R. S. Mali	Industrial Training Program	Bharat Forge
2	Mr. N. C. Gaikwad	Industrial Training Program	Saj Test Plant Ltd. Pune
3	Mr. S. H. Patil	Industrial Training Program	Saj Test Plant Ltd. Pune
4	Mr. V. V. Jadhav	Education	Central Institutes Education of Plastic Engineering and Technology

OUR TOPPERS
A.Y. 2018 -19

	SECOND YEAR			THIRD YEAR	
1st	PATIL ANIKET DINKAR	83 %	1st	SAGARE PRANAV P.	91.82 %
2nd	PAWAR RAJATKUMAR R.	82.13 %	2nd	PATIL VISHWAJEET S.	87.41 %
3rd	MOTE ASHUTOSH V.	79.5 %	3rd	MASAL SOURABH SHARAD	86.76 %