

CHANDIGARH ENGINEERING COLLEGE LANDRAN (MOHALI)



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EDITOR'S COLUMN

The departmental Newsletter will definitely help to showcase the activities that are happening in the Department. It also helps in building up teamwork which is very much needed today in the competitive world. It provides a platform for exposing the merits and academic achievements of the faculties and students. This enhances the documentation culture of the institute. This would definitely create an impact in the mind of readers, by providing larger visibility and dimension to the campus. We hope that this culture of releasing Newsletter continue forever and become a quoted example for all other colleges to follow.



EDITOR'S IN CHEIF

MR.PAWAN NAIN

Vision of the Department

- ❖ To emerge as centre of quality education for creating competent mechanical engineers catering to the ever-changing needs of industry and society.

Mission of the Department

- M1** To provide quality education by constantly updating departmental resources and using effective teaching learning methodology.
- M2** To promote research practices in the field of mechanical engineering in pursuit of academic excellence and for the benefit of society.
- M3** To establish industrial collaborations for imparting contemporary knowledge to keep pace with the technological challenges in the interdisciplinary and core areas of mechanical engineering.
- M4** To provide opportunities to the students for global exposure through international collaborations.
- M5** To nurture students through pre-placement training programs to succeed in campus placements and to provide guidance for entrepreneurship and higher studies.

Program Educational Objectives (PEOs)

Mechanical Engineering graduates will be able to:

- PEO1:** Develop dexterity to analyze and synthesize data and technical concepts for design, research, development, manufacturing and testing.
- PEO2:** Meet the present needs of industry effectively as practicing engineers.
- PEO3:** Embrace multidisciplinary view with an ability to work diligently as leader /team member on various projects with a focus on the economic, environmental and social feasibility of the project.
- PEO4:** Exhibit strong oral and written communication techniques along with mathematical and Scientific fundamentals to excel in all career related aspects.
- PEO5:** Engage in continuous self-improvement, personal enrichment and professional ethics through lifelong learning.

Expert Talks

Name of Event	Date of Event	Resource Person	Faculty Coordinator	No. of Participants	Venue
Expert talk on CAD/CAE	01/04/2019	Er.Pritam Prakash	Mr. Gurkirat Singh Bhatia	35 students	Seminar Hall, ME Deptt. CEC

Workshop

A Two days All India Workshop on “**Advanced Materials and their Machining**” sponsored by The Institution of Engineers (India), Punjab & Chandigarh State Centre Under the Aegis of Mechanical Engineering Division Board, IEI in association with the Department of Mechanical Engineering, Chandigarh Engineering College, Landran, Mohali was organized at Chandigarh Engineering College Landran on 9th and 10th April, 2019, More than 50 faculty members, Research Scholars and Industry Personnel registered for the Course.

The aim of this workshop was to discuss various issues regarding advancements in different types of materials, their industrial uses, research and development of new types of materials and their processing.



Publications

Pawan Kumar
AP, ME, CEC

Journal of computational and applied research in mechanical engineering

Title: Multi-Objective Particle Swarm Optimization of WEDM Process Parameters for Inconel 825

Abstract: With the increased diversity of the customer demand and complexity of the product Inconel 825 is widely used to meet the actual needs especially in aerospace industry. It is difficult-to-cut material because of its high toughness and hardness. The present research attempts to optimize the process parameters of wire electric discharge machining (WEDM) during cutting operation of Inconel 825. WEDM characteristics such as pulse-on time (Ton), pulse-off time (Toff), spark gap voltage (SV), peak current (IP), wire tension (WT), wire feed (WF) are taken into consideration. Performance was measured in terms of material removal rate (MRR), surface roughness (SR) and wire wear ratio (WWR). Central composite design (CCD) of response surface methodology (RSM) at α value of ± 2 was employed to establish the mathematical model between process parameters and performance measures. Multi-objective particle swarm optimization (MOPSO) algorithm has been used to find the optimal solutions called Pareto optimal solutions. It uses the concept of dominance to find the non dominated set in the entire population and crowding distance approach to find best Pareto optimal solutions with a good diversity of objectives. The confirmation experiments of MOPSO algorithm shows the significant improvement in MRR (27.934 to 31.687 mm² /min), SR (2.689 to 2.448 μ m) and WWR (0.027 to 0.030). SEM micrograph studies showed the number of cracks, pockmarks, craters, and pulled out material on the workpiece and wire electrode surface. Energy Dispersive X-ray analysis is performed to investigate the presence of elements on the work surface other than base material.

Pawan Kumar
AP, ME, CEC

Journal of Physics: Conference Series

Title: Experimental analysis of WEDM machined surface of Inconel 825 using single objective PSO

Abstract. The present research focuses on the analysis of surface topography of Inconel 825 superalloy, machined with Wire Electrical Discharge Machining. Surface texture analysis includes cracks, craters, pockmarks, heat affected zone and recast layer thickness. Particle swarm optimization used response surface methodology (RSM) to find the optimum combination of WEDM characteristics viz. pulse on time, pulse off time, gap voltage, peak current, wire tension and wire feed. Surface crack density (SCD) and recast layer thickness (RCLt) are the output responses. The results manifest that pulse on time, peak current and gap voltage are the most influential parameters for surface topography. At optimum combination of process parameters, the value obtained for SCD is $0.000423 \mu\text{m}/\mu\text{m}^2$ and RCLt is $8.044 \mu\text{m}$. Under optimized conditions, surface topography of the machined specimen is improved that makes it suitable for implementation in industry. Keywords: WEDM; Inconel 825; Surface crack density; Recast layer thickness; RSM; PSO

ARTICLE

Constructing the Future with Flying Robots

There are drones for package delivery, drones for search and rescue, drones for sensing, and drones for photography, among others. Now another application for drones has taken another step closer to reality: Drones for construction. Researchers at the Swiss Federal Institute of Technology (ETH) Zurich have demonstrate that the [flying robots](#) they customized and programmed can then build a rope bridge between scaffolding without human intervention, and the bridge can support the weight of a person walking across it. According to the researchers, flying machines offer a number of advantages over machines traditionally used to construct buildings and other objects because they can fly in and around existing objects and access places that may be difficult for non-aerial robots “We’ve done research and a lot of different projects with flying machines for a long time,” says Federico Augugliaro, lead robotic researcher on the project. Augugliaro, who recently was awarded a Ph.D. in science from ETH Zurich, and earlier earned an M.S. in robotics, systems and control from the same university, has been working on flying machines as part of his academic work. Another earlier project included dancing quadcopters that demonstrated coordinated flight for a swarm of flying machines, and ability to hover “One area we decided to explore was [flying machines](#) interacting with their environment and [to do so by building] a structure that cannot be built in other ways by machines,” Augugliaro says. With the bridge it was to showcase that flying machines can build a structure that is load-bearing. Instead of something more abstract, we went for a bridge because it is really tangible. You need a flying machine to make it work because you have to go around the structure and within the structure, and a crane or other grounded machine cannot do that.” “We had to solve different things and develop, for example, the rope-deploying mechanism and create some new algorithms.”The team used existing flying machines, which they customized with various components such as electronics and the rope-deploying mechanism to connect the scaffolding anchor points.



ACHIEVEMENTS



Team-Neophytes from department of mechanical engineering, CGC Landran participated in the go kart challenge at Chandigarh University. Team cleared the technical inspection, skid pad, autocross and acceleration test. In endurance team got 5th position. The astonishing as well as effective performance was delivered by whole team in the event. Team got 1st position in the Autocross. Our team driver Nikhil Dogra of 6th semester received appreciation from the event judges as well as college management. Our team received Rs 5000 for winning 1st position in autocross.

The students from Mechanical Engineering and MBA attended the 10 days international virtual summer school. The 10 days training helped the students to enhance their communication skills as well as develop good leadership skills. The course was an integration of various online assignments wherein the students were assigned in a group with international students. In end the students awarded with international certification on successfully completing this course



Enhancing Careers through
our Global Endeavours

CGC LANDRAN



The students from department of mechanical engineering got selected for AICTE Vishwakarma awards and showcase their innovative ideas in front of AICTE Chairman. They got appreciations from AICTE for their innovative ideas. They develop e-book for the students. They receive appreciations from the AICTE Chairman (Prof. Anil D.Sahasrabhudhe).



The students from mechanical engineering department participated in the “TOI CHALLENGE 2019”.They got 1st position in the “Times of India challenge 2019”. The team “M3N” innovates and develops a new system for removing all waste from the rivers. They develop an “unnamed machine” which eradicated all the wastes from the river. Their innovation and novelty helped them to achieve the grand success. The team flourished the fame of the college as well as the whole department.



LIST OF PATENTS BY TEACHERS AS WELL AS STUDENTS IN 2018-19.

PIE NO	S.No	NAME OF DEPARTMENT	NAME OF THE INVENTOR	TITLE OF THE PATENT	PATENT NUMBER	Date of filing of provisional application
PIE 56	1	Mechanical AND ECE	Dr. Ruchi Singla (Prof. & Head ECE) 2. Harpal Singh (Prof.) 3.Surinder Singh(Assistant Prof.) 4. Gaurav kumar(Assistant Prof.) 5 Satvir Singh(Assistant Prof.) 6.Vishal Gupta(Student of ECE) 7. Shikha Chawla(Student of ECE) 8. Nitin Sharma(Student of ECE) 9. Khushvir rishi(Student of ECE) 10.Deepali Kasrija(Student of ECE) 11.Kartik Puri(Student of ME) 12. Sahil Sachdeva(Student of ME) 13.Ishan Chopra(Student of ME)	180 degree Furrow flight	06/06/2017	201711019863
PIE 51	2	Mechanical	ANKIT SINGH,SAEED BHATIA,AMRESH KUMAR,HARVINDER SINGH,RACHIN GOYAL	Third Eye-Quadcopter	06/06/2017	201711019864
	3	Mechanical	Dr vikas dhawan ,Rachin Goyal,Amresh Kumar,Aman Kumar,Brijesh Juneja,Nitesh Kumar,chetan	Harvest Reaper	01/08/2017	201711027333
	4	Mechanical	Shubham mahajan, Manoj Kumar, Vikas Dhawan, Amresh Kumar, Rachin Goel	Advanced Barrage System	01/08/2017	201711027335
PIE 49	5	Mechanical	Shubham mahajan, Manoj Kumar, Rachin Goel, Amresh Kumar, Harsimran Singh	Bridge Saftey Method	01/08/2017	201711027334
PIE 53	6	Mechanical	Akhil Kumar, Rhythm Dogra, Dr. Vikas Dhawan, Amresh Kumar	MODIFICATION OF INLET VALVE IN SI ENGINES PIE-53	19-12-17	201711045958
PIE 58	7	Mechanical and ECE	Sanket Sharma,Uddish Kapoor,Sahil Dr. Mohit Srivastava	RAILWAY COACH SYSTEM	26/03/2018	201811011162

PIE 59	8	Mechanical,EC E and IT	Dr. Mohit Srivastava,Dr. Shashi Bhushan,Abhishek,,Himanshu,A bhinandan,Archit,Rakshita,Manis ha Rana,Minal Parmar	PORTABLE FERTILIZER DISPENSING TOOL	26/03/2018	2018110111 63	25/03/2019
PIE 103	9	Mechanical, ECE and Applied Science	Mohd Jafar,Naman Goyal, Dr. Amit Gupta,Dr. Mohit Srivastava, Anju Chauhan	NOISELESS HORN SYSTEM FOR VEHICLES	29/03/2018	2018110119 13	25/03/2019
PIE 55	10	Mechanical	Dr. Vikas Dhawan,Dr. Vinod Rohilla, Amresh Kumar, Siddhant sambyal,Rajat Sharma	ROLLER BASED MECHANISM FOR PREVENTING BED SORE	29/03/2018	2018110120 34	27/03/2019
PIE 100	11	Mechanical	VIBHI PUPREJA	DEVICE FOR GENERATING ELECTRICITY USING EXHAUST GASES	04/05/2018	2018110170 30	02/05/2019
PIE 108	12	Mechanical	Hardiq Verma	SMART WIRELESS CHARGING SYSTEM	04/05/2018	2018110170 32	02/05/2019
PIE 95	13	Mechanical	Dr. Vikas Dhawan Amresh Kumar Shubham Mahajan	SAFETY SYSTEM FOR VEHICLES	NA	2018110220 25	12/06/2018
PIE 96	14	Mechanical	Dr. Vikas Dhawan Amresh Kumar Shubham Mahajan	AUTOMATIC PRESSURE CONTROL VALVE FOR TYRES	NA	2018110220 26	12/06/2018
PIE 109	15	Mechanical	Mrityunajaya Vashishtha	AUTOMATED MAGNETIC ENGINE	12/06/2018	2018110220 24	11/06/2019
PIE 117	16	Mechanical	Manjit Singh Vikasdeep Singh Mann Sanidhya Jaiswal	SYSTEM FOR SEAT EJECTION	NA	2018110220 28	12/06/2018
PIE 129	17	Mechanical	Dr. Sanjeev Sharma Dr. Rajdeep Singh Hardiq Verma Ravikant Divakar Sharma	COMMUNICAT ION BASED VEHICLE SECURITY SYSTEM AND A METHOD FOR THE SAME	NA	2018110278 60	24/07/2018
PIE 148	18	Mechanical	Puneet Sikka,Tejpratap Singh,Ravinder Sigh,Prabhsimran Singh,Magandeep Singh Bhogal,Tavinder Pal Singh	DEVICE FOR CLEANING BOTTOM SURFACE OF WATER BODIES	NA	2018110307 96	16/08/2018
PIE 163	19	Mechanical Computer science and IT	Ankit Singh,Vijay Singh,Anmol Aneja,Manish Dubey	FAULT DETECTION SYSTEM FOR RAILWAY TRACKS	NA	2018110309 53	17/08/2018
pie 164	20	Mechanical,CS E and IT	Ankit Singh,Vijay Singh,Anmol Aneja,Manish Dubey	AUTOMATIC RAILWAY CROSSING 21BARRIER SYSTEM AND A METHOD THEREOF	NA	2018110412 96	31/10/2018

PIE 152	21	Mechanical	Hardiq Verma	SYSTEM FOR MONITORING AND CONTROLLING AIR CONDITIONERS	NA	201811048452	20/12/2018
PIE 151	22	Mechanical	Vikasdeep Singh Mann, Manjit Singh	METHOD OF GENERATING ELECTRICITY FROM CURRENT CARRYING WIRES	20/12/2018	201811048445	yet to be filed
PIE 149	23	Mechanical	Manjit Singh, Sanidhya jaiswal	UNMANNED AERIAL VEHICLE FOR EMERGENCY RESPONSE AND METHOD THEREOF	20/12/2018	201811048444	yet to be filed
PIE 265	24	Mechanical	Mohd Jafar	INTERACTIVE EDUCATION SYSTEM AND METHOD	NA	201911002349	19/01/2019
PIE 219	25	Mechanical	Manjit Singh, Sanidhya Jaiswal	FRICTION ENHANCEMENT SYSTEM FOR VEHICLES	NA	201911004144	01/02/2019
pie 244	26	Mechanical	Dr. Rajesh Sharma, Dr. Mukesh kumar, Pankaj Puri	ELECTROMAGNETIC BRAKING DEVICE	NA	201911004798	06/02/2019
pie 257	27	Mechanical	Rajesh Sharma, Sachin Shrivastav, Pawan Srivastav, Aman Kumar Verma, Badal Khatta, Nikhil Ahuja, Abhishek Singh, Akhil Rana, Abhishek, Vishal Kumar	FLEXIBLE ROBOTIC ARM DEVICE AND ITS METHOD THEREOF	NA	201911004795	06/02/2019
PIE 252	28	Mechanical	Vikas Verma, Mohd Jafar, Keshav Chaudhary, Tanmay Dhyani	ELECTRICITY GENERATING DEVICE	NA	201911012805	30/03/2019
PIE 246 TI FIL E PO R	29	Mechanical	Rajesh Sharma, Dr. Vikas Dhawan, Sachin Shrivastav, Pawan Srivastav, Lakhin Pahuja, Vishal Mittal, Mani Kumar, Diwakar Singh, Aman Kumar Verma, Prem Prakash, Deepak Singh, Badal Khatta, Ritikesh Kumar	PARACHUTE RELEASE APPARATUS AND A METHOD THEREOF	NA	201911012809	30/03/2019
PIE 251	30	Mechanical	Aakash Deep kaushik, Rajat Kumar, Amresh Kumar, Dr. Rachin Goyal, Dr. Vinod Rohilla, Vikas Sharma, Aneesh Goyal	SYSTEM FOR POWERING AIR CONDITIONERS USING EXHAUST HEAT	NA	201911012810	30/03/2019
PIE 351	31	Mechanical	Naman Goyal	RENTAL SYSTEM FOR BATTERIES	NA	201911017596	02/05/2019
PIE 212	32	Mechanical	Manjit Singh, Shobhit Kushwaha, Mrityunjay Singh Dev, Ravi Prakash Kumar.	NOISE ATTENUATING APPARATUS	NA	201911018914	11/05/2019

PIE 234	33	Mechanical	Mohd Jafar, Naman Goyal, Mrityunjaya Vashishtha, Mohit Kumar Mishra.	SOLAR POWERED SIEVE CUM WHEELBARROW	NA	201911018912	11/05/2019
PIE 268	34	Mechanical	Radhe Sham, Santosh Kumar, Rakesh Kumar	ELECTRIC SWITCH CUM EXTENSION BOARD DEVICE	NA	201911018931	12/05/2019
PIE 173	35	Mechanical	Rupinder Singh , Mrityunjaya Vashishtha , Mohit Kumar Mishra .	LIQUID CLEANING SYSTEM USING RENEWABLE ENERGY	NA	201911020658	24/05/2019
PIE 256	36	Mechanical	Mohd Jafar, Naman Goyal, Ravinder Singh, Vikas Verma	MULTIPURPOSE LIQUID STORING APPARATUS	NA	201911020656	24/05/2019