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From HOD's Desk:

It gives me immense pleasure to convey my best wishes to the publication team of Mech Times - a newsletter of Department of Mechanical Engineering at Sant Longowal Institute of Engineering and Technology, Longowal. The students, faculty and staff members of the department are always proactive in taking new initiatives in technical, cultural and social arena. I understand the Newsletter will certainly help in showcasing the activities going on in the department. It acts as a communication channel among the alumni, faculty members, staff, students and experts in the field of Mechanical Engineering.

I hope this newsletter will serve the purpose of reflecting all activities of the department and inspiring every one of the department to contribute for the best.

I wish persistence and continuity to publication of the newsletter.

Dr. Rajesh Kumar
Head of Department

From the Editorial Board:

Our hearty welcome to the first issue of Mech Times-a half yearly newsletter of Department of Mechanical Engineering. This issue is a brief account of important events and activities during Jan 2020 to June 2020 of the Mechanical Engineering Department. The primary objective of the News letter is to disseminate information of the department.

We are very much grateful to the Honorable Director, SLIET and the HOD, Mechanical Engineering for their continued encouragement, inspiration and support extended for the release of the first Issue of "Mech Times". We are also thankful to faculty, staff and students of the Mechanical Department for timely and valuable inputs.

We hope the maiden issue of newsletter should inspire all of us for a new beginning enlighten with hope, confidence and faith in everyone to tread over the road ahead..... Happy Reading !

Dr. Vivek Kumar
Editor

About Sant Longowal Institute of Engineering and Technology

The Sant Longowal Institute of Engineering & Technology (SLIET) was established by Ministry of Human Resource and Development (MHRD), Govt. of India in the year 1989 and was formally inaugurated on 20th December 1991.

The institute is an autonomous body, fully funded by Govt. of India and controlled by SLIET society, registered under Societies Registration Act, 1860. The institute awards its own Certificates, Diplomas, Undergraduate and Postgraduate approved and recognized by AICTE, New Delhi. Ph.D. programmes have also been started after it attaining status of Deemed to be University.

It was formulated that the institute, besides catering to the needs of formal education would undertake an arduous task to prepare the skilled and qualified manpower for self-employment. Further, the institute would take up a strategic research and development activities which along with entrepreneurship will help in extending the efforts of the institute in imparting education to the unemployed and working population by updating and upgrading their technical skills. The institute was thought to cater to then existing 3-tier system to modern industry, which incorporates workers, technicians and engineers.

Department at a Glance:

The Department of Mechanical Engineering offers a Bachelor of Engineering programme, two Master of Technology programmes, and Ph.D. programme. Five Integrated certificate-Diploma (ICD) courses are also being offered covering major areas of mechanical engineering to produce skilled manpower for shop floor in industry.

At present, there are 40 faculty members in the department, who besides their regular activities of teaching, do research and interact with industries for training and consultancy work. Faculty is actively involved in different sponsored projects funded by DST, MHRD, AICTE, etc. Financial assistance is also being received to carry out Rural Development Activities. Patents are also to the credit of the faculty of the department.

The department has formed SLIET Mechanical Engineering Society (SMES) to accelerate academic activities of students and faculty. The SMES is regularly organizing technical activities like seminars, student competitions and Industrial visits at regular intervals for the benefit of the students. ISHRAE student Chapter is also running in the department. Indian Welding Society (IWS), has its local centre in the department. Chapter of Institution of Engineers is also active and organizing many events on regular basis. There is an exchange program of students between MIT-SETU of USA and SLIET Longowal for academic and cultural exchange.

Vision of Department

The department shall strive to act as a podium for the development and transfer of technical competence in academics, impart appropriate skills, entrepreneurship, and research in the field of Mechanical Engineering to meet the changing need of society.

Mission of Department

1. To provide modular programmes from skill development to the research level.
2. To impart technical education and training in innovative state-of-the-art technology in the field of mechanical engineering.
3. To disseminate knowledge and information by organizing seminars/ workshops/short-term courses in a planned manner.
4. To provide extension services to rural society, industry professionals, institutions of research, and higher learning in the field of mechanical engineering.
5. To interact with the industry, educational and research organizations, and alumni in the fields of curriculum development, training, and research for sustainable social development and changing needs of society.

Faculty List

Professors

1. **Amandeep Singh Shahi**
2. Dr. Arvind Jayant
3. Dr. Jagtar Singh
4. Dr. Kulwant Singh
5. Dr. P.K. Singh
6. Dr. Pardeep Gupta
7. Dr. Raj Kumar Yadav
8. Dr. Rajesh Kumar
9. Dr. Ravindra K. Saxena
10. Dr. Shankar Singh

Associate Professors

1. Dr. Amrik Singh
2. Dr. Anil Kumar Singla
3. Dr. J.S. Gill
4. Dr. Manoj Kumar
5. Dr. Rakesh Kumar
6. Dr. Indraj Singh
7. Er. M.A. Akhtar
8. Er. Suresh Chandra Verma

Assistant Professors

1. Ankita Omer
2. Divesh Bharti
3. Dr. Anuj Bansal
4. Dr. Harish kumar Arya
5. Dr. Mohd. Majid
6. Dr. Sunil Kumar
7. Dr. Vivek Kumar
8. Dr. Yogesh Verma
9. Er. Jonny Singla
10. Er. Lalit Ahuja
11. Er. Sumit Kumar
12. Er. Surinder Kumar

Expert Lectures Conducted in the Department

1. An **Expert Lecture on “Overview of Tyre Technology”** was delivered by Sh. Ravi Shanker of Ralson India Ltd., Ludhiana in the Mechanical Engineering Department on **7th February 2020** for the students of ICD, BE and M.Tech. Programme. The event was Co-ordinated by Dr. Rakesh Kumar, Associate Professor, Mechanical engineering Department.



2. A Two days workshop on “Industrial Motivational Campaign for youth” has been organized by Department of Mechanical Engineering during 19-20 February 2020. Following resource persons have delivered the expert talk.

S.No.	Name	Organization.
a.	Er. Rajesh Jain, General Manager	National Small Industries Corporation Limited (A Govt. of India Enterprise) Technical Services Centre-Rajpura (Punjab) under Ministry of MSME, Govt. of India
b.	Er. Joginder Singh, Development Officer	National Small Industries Corporation Limited (A Govt. of India Enterprise) Technical Services Centre-Rajpura (Punjab) under Ministry of MSME, Govt. of India
c.	Mr. Mukesh Kumar Verma, Assistant Director	Ministry of Micro, Small & Medium Enterprises(MSME),Ludhiana Govt. of India
d.	Er. Ranjeet Singh Development Officer	District Industries Centre (DICs), Malerkotla, Sangrur Govt. of India
e.	Mr. Harjinder Singh, SBI Sangrur.	Rural Self Employment Training Institutes (RSETI)- State bank of India, Sangrur
f.	Er. Arvind Singhy, Entrepreneurship Trainer	School of Research, Education and Entrepreneurship Development, Zirakpur Punjab

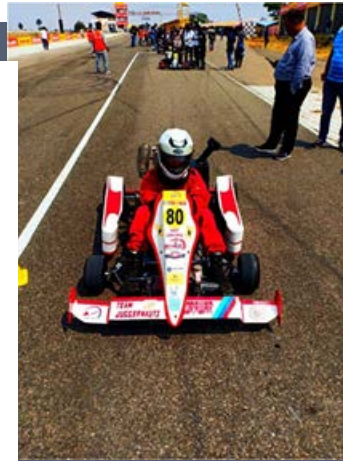


3. A Training Programme on “Computer Aided Drafting” was organized by Mechanical Engineering Department from 10-12th February 2020 in Central Computing Lab for the students.

4. A two days workshop on “How to Prepare Business Plan and Detailed Project Report” was organized by Department of Mechanical Engineering during 02-03rd March 2020 for ICD final year students. The event was Co-ordinated by Dr. Rakesh Kumar, Associate Professor, Mechanical engineering Department. Er. Arvind Singhy, Entrepreneurship trainer was the resource person for the above event.

Students Achievements

1. SLIET Team 'JUGGERNAUTS' comprising of 24 members (of GME & GWT branch) participated in 7th Go Kart Design Challenge Season(GKDC) (2019-20), at Kari Motor Speedway, Coimbatore, Tamil Nadu from February 10, 2020 to February 14, 2020. The team designed and fabricated the 'Go Kart' at SLIET under the guidance of Prof. Shankar Singh, Faculty Advisor. The SLIET 'Team Juggernauts' (Kart No. #80; JORAWAR) performed well at Kari Motor Speedway, awarded by Best Team Captain Award and secured the following ranks –
 - a. Design Evaluation – 1st
 - b. Disassemble Test – 2nd
 - c. Acceleration – 4th
 - d. Skid-pad – 3rd
 - e. Endurance – 4th
 - f. OVERALL – 3RD



2. Mr. Jastej Singh, research scholar working under the supervision of Prof. A.S. Shahi in the Department of Mechanical Engineering has been conferred with the "Young Scientist Award" for the Year 2019 by the Punjab Academy of Sciences, Patiala in Section-D (Engineering Sciences) at 23rd Punjab Science Congress held at Sant Longowal Institute of Engineering & Technology (SLIET),

Non Teaching Staff

Senior Technician

1. Mr. Naresh Kumar

Technician

1. Mr. Inder Pal
2. Mr. M.L. dhiman
3. Mr. Navinder Singh
4. Mr. Shashi Ranjan Kumar
5. Pinderjit Singh
6. Sukhdeep Singh

DEO

1. Mr. J.P. Singh

MTS

1. Mr. Harbans Singh
2. Mr. Makhan Singh
3. Mr. Sunil Dutt

3. SLIET team 'Junkyard Warriors' (21 team members) under the guidance of Dr Shankar Singh, Professor (Mechanical) as Faculty Advisor (FA) conceived, designed and fabricated a four-wheeled single-seater all-terrain vehicle (ATV). The team participated at 13th edition of Mahindra BAJA SAE India 2020 held at Chitkara University, Chandigarh from 05th –08h March` 2020 and baged 'Pride of Punjab' Award alongwith cash prizes.



Faculty Projects

1. Professor Rajesh Kumar is working on AICTE Funded Project on “Development of fault identification system for water turbine making use of vibration signal and artificial intelligence” amounting Rs 17 Lakhs.
2. Dr. Vivek Kumar and Dr. Sunil Kumar are working on TEQIP-III funded project on “Development of Smart System for monitoring surface roughness in turning process” of Rs 2.10 Lac.
3. Mr. Surinder Kumar is working on TEQIP-III funded project on “Tribological Investigation of Synthesized nanoparticles based composite lubricant” of Rs. 1.00 Lac.
4. Mr. Anuj Bansal completed a TEQIP-III funded project “Design and development of cavitation test rig to analyze the cavitation erosion of Hydro-machinery steels under surface modifications”. The amount sanctioned towards the project was Rs. 1.00 Lac.

Students Project

1. “Design and Fabrication of Obstacle Avoidance Drone”, funded by TEQIP – III, Rs. 49,240/-, (2020), Faculty Advisor: Prof. Shankar Singh.
2. “Design and Fabrication of Stair Climbing Trolley”, funded by TEQIP – III, Rs. 42,000/-, (2020), Faculty Advisor: Prof. P. K. Singh.
3. “Design and Fabrication of PID Controlled Digital Thermocole Pattern Cutting Device”, funded by TEQIP – III, Rs. 33,276/-, (2020), Faculty Advisor: Dr. Rakesh Kumar.
4. “Design and Fabrication of Voice Controlled Intelligent Wheel Chair”, funded by TEQIP – III, Rs. 74,250/-, (2020), Faculty Advisor: Prof. R. K. Saxena.

Activities during lockdown

1. Mechanical Department has designed a concept to convert a normal wash basin into leg press wash basin. The same is in place in the washroom on ground floor in the Mechanical Engineering department and is in operation.
2. The department has developed an automatic sanitizer spray facility and installed the same in corridor of the ground floor in the department.



Modified Wash Basin



An automatic sanitizer spray

Short term Courses/ FDP/Webinars attended by faculty

1. Prof. Shankar Singh has attended following FDP/Webinars
 - a) FDP 'Outcome Based Education Software' on 14th May, 2020.
 - b) 'Coronavirus, product design and the supply chain - prepare to think differently' webinar on 28th May, 2020.
 - c) Webinar on Fundamentals of Computational Fluid Dynamics on 9th June, 2020 (10.00 to 11.00 am).
 - d) Webinar on "Manufacturing of Advanced composite materials and their Applications", 9th June, 2020 (12.00 – 1.00 p.m).

2. Dr. Vivek Kumar has attended the following DP/STTP and self paced course
 - a) A one week short term training programme on “ PLC, Drives and Industrial Automation” organised jointly by Department of EIE and ECE, Sant Longowal Institute of Engineering and Technology, Longowal during 2-6 March, 2020.
 - b) A One-week online FDP on “MATLAB Applications in Engineering and Science” during 27th April -1st May 2020, organized by GEC Karad and REC, Azamgarh.
 - c) A One-week online FDP on “Machine Learning and Deep Learning Applications in Engineering and Science” during 16th-20th May 2020, organized by GEC Karad and REC, Azamgarh.
 - d) A One-week online FDP on “Pedagogy of Scientific Writing, Reporting and Scholarly Networks” during 19th-23th June, 2020, organized by Feroze Gandhi Institute of Engineering and Technology, Raebareli.
 - e) Successfully completed the following self Paced course
 - i) MATLAB Onramp
 - ii) Simulink Onramp
 - iii) Machine Learning Onramp
 - iv) Deep Learning Onramp

3. Mr. Sumit Kumar has attended a One-week online FDP on “Pedagogy of Scientific Writing, Reporting and Scholarly Networks” during 19th-23th June, 2020, organized by Feroze Gandhi Institute of Engineering and Technology, Raebareli.

4. Mr Lalit Ahuja has attended a one week short term training programme on “ PLC, Drives and Industrial Automation” organised jointly by Department of EIE and ECE, Sant Longowal Institute of Engineering and Technology, Longowal during 2-6 March, 2020.

Faculty Publications:

1. Kumar, Anil, C. P. Gandhi, Yuqing Zhou, Rajesh Kumar, and Jiawei Xiang. "Improved deep convolution neural network (CNN) for the identification of defects in the centrifugal pump using acoustic images." *Applied Acoustics* 167 (2020): 107399.
2. Kumar, Anil, Yuqing Zhou, C. P. Gandhi, Rajesh Kumar, and Jiawei Xiang. "Bearing defect size assessment using wavelet transform based Deep Convolutional Neural Network (DCNN)." *Alexandria Engineering Journal* 59, no. 2 (2020): 999-1012.
3. Kumar, Anil, C. P. Gandhi, Xiaoyang Liu, Yi Liu, Yuqing Zhou, Rajesh Kumar, and Jiawei Xiang. "A novel health indicator developed using filter-based feature selection algorithm for the identification of rotor defects." *Proceedings of the Institution of Mechanical Engineers, Part O: Journal of Risk and Reliability* (2020): 1748006X20916953.
4. Kumar, Anil, C. P. Gandhi, Yuqing Zhou, Rajesh Kumar, and Jiawei Xiang. "Latest developments in gear defect diagnosis and prognosis: A review." *Measurement* 158 (2020): 107735.
5. Kumar, A., and R. Kumar. "Development of LDA based indicator for the detection of unbalance and misalignment at different shaft speeds." *Experimental Techniques* 44, no. 2 (2020): 217-229.
6. Singh, Pradeep K., Kanish Kumar, and Pardeep Saini. "Optimization of surface roughness and hole diameter accuracy in drilling of EN-31 alloy steel—A TGRA based analysis." *Materials Today: Proceedings* 26 (2020): 2961-2971.
7. Singh, Pradeep K., Pardeep Saini, and Deepak Kumar. "Multi response optimization of CNC end milling of AISI H11 alloy steel for rough and finish machining using TGRA." *Materials Today: Proceedings* 26 (2020): 2564-2573.
8. Mann, Harjeet S., and Pradeep K. Singh. "Energy recovery ducted turbine (ERDT) system for chimney flue gases-A CFD based analysis to study the effect of number of blade and diffuser angle." *Energy* 213 (2020): 118501.
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11. Singh, Sarpreet, Deepak Kumar Goyal, Parlad Kumar, and Anuj Bansal. "Laser cladding technique for erosive wear applications: a review." *Materials Research Express* 7, no. 1 (2020): 012007.
12. Bansal, Anuj, Jagtar Singh, and Harpreet Singh. "Erosion behavior of hydrophobic polytetrafluoroethylene (PTFE) coatings with different thicknesses." *Wear* 456 (2020): 203340.
13. Singh, Amrinder, Anuj Bansal, Jagtar Singh, and Anil Kumar Singla. "Effect of Cryogenic Treatment on Mechanical and Metallurgical Properties of SS410." In *Manufacturing Engineering*, pp. 221-229. Springer, Singapore, 2020.
14. Saini, Sumit, Shankar Singh, Kulwant Singh, and Abhishek Singh. "Some studies into weldability of rice husk ash aluminium matrix composites using TIG welding." *Materials Today: Proceedings* 24 (2020): 298-307.

15. Verma, Anmol Singh, Shankar Singh, and Abhishek Singh. "An Exploratory Investigation and Optimization of Taper Cutting Operation with Wire Electro Discharge Machining." *Materials Today: Proceedings* 24 (2020): 388-397.
16. Kumar, Sunil, Gayatri Brahma, Prabhkiran Kaur, and Brijesh Kumar Gupta. "A case study on quality improvement of connecting rod assembly line using Six Sigma DMAIC cycle." *International Journal of Six Sigma and Competitive Advantage* 12, no. 2-3 (2020): 234-249.
17. Savanth, T., Jastej Singh, and J. S. Gill. "Laser power and scanning speed influence on the microstructure, hardness, and slurry erosion performance of Colmonoy-5 claddings." *Proceedings of the Institution of Mechanical Engineers, Part L: Journal of Materials: Design and Applications* 234, no. 7 (2020): 947-961.
18. Saxena, Ankit, and Ravindra K. Saxena. "Thermomechanical Analysis of Al-7075 to Predict Residual Stresses by Using 3D Finite Element Simulation." In *Advances in Mechanical Engineering*, pp. 281-293. Springer, Singapore, 2020.
19. Singh, Gurdeep, Ravindra K. Saxena, and Sunil Pandey. "Finite Element Based Prediction of Transient Temperature Distribution, Heat Affected Zone and Residual Stresses in AISI 304 Stainless Steel Weldment." In *Advances in Mechanical Engineering*, pp. 307-320. Springer, Singapore, 2020.
20. Singh, Bharat, Piyush Singhal, Kuldeep K. Saxena, and Ravindra K. Saxena. "Influences of Latent Heat on Temperature Field, Weld Bead Dimensions and Melting Efficiency During Welding Simulation." *Metals and Materials International* (2020): 1-19.
21. Singh, Rajinder, R. K. Saxena, Kishore Khanna, and V. K. Gupta. "Assessment of creep in composite disc having exponential, hyperbolic and uniform thickness profiles." *Materials Today: Proceedings* 26 (2020): 1972-1976.
22. Jasra, Yogeshwar, Sorabh Singhal, Rohit Upman, and Ravindra K. Saxena. "Finite element simulation of stress corrosion cracking in austenitic stainless steel using modified Lemaitre damage model." *Materials Today: Proceedings* 26 (2020): 2314-2322.
23. Bindal, Tarun, Ravindra K. Saxena, and Sunil Pandey. "Analysis of joint overlap during friction spin welding of plastics." *Materials Today: Proceedings* 26 (2020): 2798-2804.
24. Singh, Gurdeep, Ravindra K. Saxena, and Sunil Pandey. "An examination of mechanical properties of dissimilar AISI 304 stainless steel and copper weldment obtained using GTAW." *Materials Today: Proceedings* 26 (2020): 2783-2789.
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27. Yadav, Sandeep, Sorabh Singhal, Yogeshwar Jasra, and Ravindra K. Saxena. "Determination of Johnson-Cook material model for weldment of mild steel." *Materials Today: Proceedings* 28 (2020): 1801-1808.
28. Rattan, Anmol, Yogeshwar Jasra, and Ravindra K. Saxena. "Prediction of bending behavior for laser forming of lime coated plain carbon steel using finite element method." *Materials Today: Proceedings* 28 (2020): 1943-1950.
29. Jayant, Arvind. "Decision Support Framework for Smart Implementation of Green Supply Chain Management Practices." In *New Paradigm of Industry 4.0*, pp. 49-98. Springer, Cham, 2020.

30. Lucky and Arya, Harish, "Improvement of low temperature impact toughness through flux modification for submerged arc welded low carbon steel E350 plates." *Indian Journal of Science and Technology* 13, no. 25 (2020): 2582-2592.
31. Saini, Sumit, and Kulwant Singh. "Some Feasibility Studies for Recycling of Steel Slag as a Useful Flux for Submerged Arc Welding." *Journal of Advanced Manufacturing Systems* 19, no. 02 (2020): 277-289.
32. Singh, Tejinder Pal, Anil Kumar Singla, Jagtar Singh, Kulwant Singh, Munish Kumar Gupta, Hansong Ji, Qinghua Song, Zhanqiang Liu, and Catalin I. Pruncu. "Abrasive wear behavior of cryogenically treated boron steel (30MnCrB4) used for rotavator blades." *Materials* 13, no. 2 (2020): 436.
33. Singh, Mandeep, A. S. Shahi, and Dilbag Singh. "Effect of weld groove volume on the mechanical and metallurgical performance of GTA welded martensitic stainless steel (AISI 410 SS) joints." *Materials Today: Proceedings* 28 (2020): 1580-1587.
34. Prakash, Adarsh, and A. S. Shahi. "Investigations on high temperature wear and metallurgical characteristics of Stellite 6 GTA (Gas Tungsten Arc) weld claddings." *Materials Research Express* 7, no. 2 (2020): 026509.
35. Singh, Jastej, and A. S. Shahi. "Metallurgical and corrosion characterization of electron beam welded duplex stainless steel joints." *Journal of Manufacturing Processes* 50 (2020): 581-595.
36. Malhotra, Dikshant, and A. S. Shahi. "Metallurgical, Fatigue and Pitting Corrosion Behavior of AISI 316 Joints Welded with Nb-Based Stabilized Steel Filler." *Metallurgical and Materials Transactions A* 51, no. 4 (2020): 1647-1664.
37. Shahi, A. S., and Dikshant Malhotra. "Effect of Dual Phase Stabilization via Varying Ti/Nb Ratios on the Pitting Behavior of AISI 347 Welds." In *Characterization of Minerals, Metals, and Materials 2020*, pp. 251-260. Springer, Cham, 2020.
38. Gupta, Munish Kumar, Mozammel Mia, Muhammad Jamil, Rupinder Singh, Anil Kumar Singla, Qinghua Song, Zhanqiang Liu, Aqib Mashood Khan, M. Azizur Rahman, and Murat Sarikaya. "Machinability investigations of hardened steel with biodegradable oil-based MQL spray system." *The International Journal of Advanced Manufacturing Technology* 108 (2020): 735-748.
39. Khanna, Navneet, Chetan Agrawal, Munish Kumar Gupta, Qinghua Song, and Anil Kumar Singla. "Sustainability and machinability improvement of Nimonic-90 using indigenously developed green hybrid machining technology." *Journal of Cleaner Production* 263 (2020): 121402.

**“To succeed in your mission, you must
Have single-minded devotion to your goal”**

-Dr. A. P. J. Abdul Kalam