



**KAKATIYA INSTITUTE OF TECHNOLOGY & SCIENCE**

*(An Autonomous Institute under Kakatiya University, Warangal)*

Opp : Yerragattugutta, Bheemaram (V), Hasanparthy (Mandal), WARANGAL - 506 015, Telangana State, INDIA.

काकतीय प्रौद्योगिकी एवं विज्ञान संस्थान, वरंगल - ५०६ ०१५ तेलंगाना राज्य, भारत

కాకతీయ సాంకేతిక విజ్ఞాన శాస్త్ర విద్యాలయం, వరంగల్ - 506 015. తెలంగాణ రాష్ట్రం, భారతదేశము

**DEPARTMENT OF MECHANICAL ENGINEERING**

# PG RESEARCH LAB Mechanical Research Laboratory

Faculty in-charge:

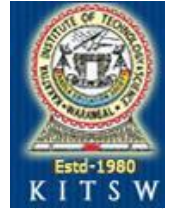
**Sri M. ANIL KUMAR**

*Assistant Professor*

Mobile: 9989000646

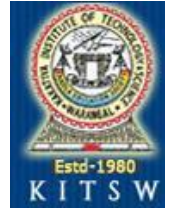
Email: [mak.me@kitsw.ac.in](mailto:mak.me@kitsw.ac.in)





## About the Center:

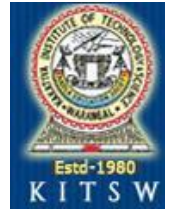
- Mechanical Research (MR) laboratory is provided for carrying out research work with about 40 systems. All the systems are installed with software's like CREO 2.0, ANSYS and AutoCAD. UG, PG and research scholars, utilize this Mechanical Research laboratory for carrying out their research and for preparing reports for the Seminar, mini project and major project works or dissertation work.
- Mechanical Research laboratory is open to all the department faculty and students beyond class hours..
- Through interdisciplinary collaboration, the lab addresses real-world engineering challenges spanning fields like renewable energy, automotive engineering, and aerospace technologies.
- Its research endeavors not only enhance understanding of mechanical phenomena but also drive innovation, fostering the development of cutting-edge solutions to meet evolving societal and industrial needs.



# The primary functions of the center:

- 1. Concept Development:** Generating innovative design concepts through computational modeling and simulation to address engineering challenges.
- 2. Performance Evaluation:** Analyzing the performance of mechanical systems and components using advanced simulation techniques, such as finite element analysis (FEA) and computational fluid dynamics (CFD).
- 3. Optimization:** Conducting optimization studies to enhance the efficiency, reliability, and functionality of mechanical designs through iterative analysis and refinement.
- 4. Interdisciplinary Collaboration:** Collaborating with other engineering disciplines to tackle multidisciplinary problems and explore synergies between different areas of research.
- 5. Technology Development:** Developing and validating new simulation tools and methodologies to push the boundaries of mechanical engineering research and innovation.
- 6. Education and Training:** Providing opportunities for students and researchers to gain expertise in design, analysis, and simulation techniques through hands-on projects and training





## Major software list with description

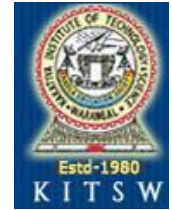
S. No.	Major Software	No. of Users	Cost of the Software Rs. in Lakhs
1.	ANSYS 14.0	25	3.5
2.	Creo	30	3.8)



## Types of projects / research carried out with description:

Sl. No.	Academic Year	Project Guide	Title of the Project
1	2018-19	Sri CH. Karunakar	Design and analysis of four-legged robot using strandbeest mechanism
2		Dr. G. Ganesh Kumar	Design, manufacturing and simulation of a centrifugal pump for artificial heart
3		Sri K. Kishor Kumar	Finite Element Analysis of basalt and abelmoschus esculentus fiber reinforced hybrid polymer matrix composite and optimization of design parameters using anova technique.
4		Sri A. Hari Kumar	Fem analysis of single flute clutch using e-glass epoxy and aluminum metal matrix

## Types of projects / research carried out with description:



1.	2019-20	Sri. Abhay Lingayat/V.Vinod Kumar	Experimental and numerical investigations of heat transfer behavior of air flow in solar air collector and performance
2		Dr. G. Srinivasa Rao	Modelling and analysis of helical gear
3		Dr. G. Srinivasa Rao	Numerical Analysis and Simulation of Composite Spur Gear
4		Sri A. Hari Kumar	Failure and Non-Linear Analysis of the piston of a diesel engine.
5		Dr. K. Sridhar	Numerical Simulation of the micro combustion chamber



## Types of projects / research carried out with description:

1.	2020-21	Dr. J. laxman	Static analysis of aerofoil
1.		Dr. K. Eswaraiah	Static & thermal analysis of a gas turbine disc
1.		Dr. E. Ramesh	Comparison of different turbulence models for turbulent flow in ducts
1.		Sri V. Rakesh	Design And Static Structural Analysis On Different Types of Shell Structures
1.		Sri CH. Karunakar	Design and Analysis of Single Plate Clutch
1.		Sri A. Hari Kumar	Design and Dynamic analysis of Leaf Spring
1.		Sri K. Kishor Kumar	Design and Analysis of GO KART Chassis
1.		Sri S. Sripathy	Design and Analysis of Automobile Wheel
1.		Sri V. Srikanth	CFD Analysis of Exhaust Manifold of Multi-Cylinder Petrol Engine
1.		Sri V. Rakesh	Design and Performance Analysis of Centrifugal Pump Impeller
1.		Sri V. Rakesh	Design and Thermo-structural analysis on different types of shell structures
1.		Ms. G. Sumithra	Stress Analysis on Spur Gear using ANSYS

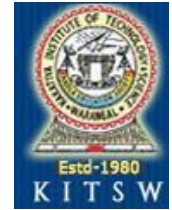




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11		Sri V. Rakesh	Design and Thermo-structural analysis on different types of shell structures
12		Ms. G. Sumithra	Stress Analysis on Spur Gear using ANSYS

## Types of projects / research carried out with description:



1	2021-22	Sri P. Anil Kumar	Modelling and Structural Analysis of a Heavy Vehicle Chassis for Different Alloy Materials at Different Optimum Loads
2		Sri S. Sripathy	Design and Analysis of automobile wheel
3		Sri M. Anil Kumar	Design & analysis of an automotive radiator for an enhanced liquid cooling system
4		Sri CH. Karunakar	Static structural analysis using iso geometric analysis and comparative study with finite element analysis



## Types of projects / research carried out with description:

1	2022-23	Sri CH. Karunakar	Heat transfer analysis of shell and tube heat exchanger
2		Sri S. Anil Kumar	Finite Element Method of connecting rod using different materials
3		Sri M. Anil Kumar	CFD simulation and heat transfer analysis of a radiator with nano fluids and carbon foam
4		Smt. P. Anitha	Structural and thermal analysis of ic engine piston made of three materials using Ansys
5		Ms. P. Divya	Design and Analysis of thermal distribution in Fins of compressor
6		Sri V. Rakesh	Comparative study of isogeometric analysis with finite elements Analysis
7		Dr. E. Ramesh	Analysis of an SAE BAJA Roll Cage
8		Dr. J. Laxman	CFD analysis at varied liquid flows through orifice meter and venturi meter
9		Sri A. Hari Kumar	Design and analysis of front and rear wing for a formula student car
10		Sri K. Kishor Kumar	Design and analysis of composite monocoque chassis for formula student car
11		Dr. T. Manoj Kumar	CFD Analysis of External Flow Vortex Shedding for flow over a Ribbed and Grooved Cylinder
12		Sri P. Anil Kumar	FEA and structural analysis on Aircraft wing by using ANSYS and CFD
13		Sri S. Anil Kumar	CFD based performance analysis of solar air heater



Thank you!!!!!!