

MECHANICAL ENGINEERING DEPARTMENT

POST GRADUATE RESEARCH PROJECTS

RESEARCH PROJECTS (PG CAD-CAM) (AY:-2017-18)

1. Active Foot Complex Design for Biped Robot
2. Machine Tool Head Design for Thread Milling Machine
3. Optimum Trajectory Planning Analysis of Spatial Dual Arm Manipulator
4. Design and Development of Unfurlable Reflector for Spacecraft Payload
5. Geometrical design and analysis of profile for three screw rotary pump
6. FEA of Limpet type and Conventional type Mild Steel Glass-Lined Vessels

RESEARCH PROJECTS (PG THERMAL) (AY:-2017-18)

1. Effects of Sub cooler on Cooling Performance of Inverter Variable Refrigerant Flow (IVRF) type Air conditioning System.
2. Design and development of cryogenic vessel for liquified natural gas.
3. CFD Analysis of bubbling Fluidized bed gasifier.
4. Hydroelectric cell.
5. Design and experimental investigation of bubbling fluidized bed gasifier with low grade coal and waste agro biomass.
6. Prediction of overread conductor SAG using linear and non linear CIGRE analytical method.
7. Modelling and performance evaluation of solar operated agro-produce drying unit.
8. Production and stabilization of biomass derived bio oils for thermal application.
9. Performance enhancement of a counter flow induced draft cooling tower.

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RESEARCH PROJECTS (PG CAD-CAM) (AY:-2016-17)

1. Design Automation & Analysis of Single Row Deep Groove Ball Bearing.
2. Constitutive Model Selection And Mechanical Characterization Of Aluminium Alloy (LM6) MMS.
3. Effect of actual strain on stiffness and dent resistance of drawn part
4. Development of laboratory module for manufacturing cylindrical and flat components using electroforming process.
5. Trajectory planning and Analysis of Spatial Dual Arm Manipulator.

RESEARCH PROJECTS (PG THERMAL) (AY:-2016-17)

1. Thermal analysis of Solar Drying
2. Thermal analysis of cryoprobe
3. Energy analysis of freeze Drying of agricultural products
4. H₂ production and storage
5. Thermal analysis of cryocooler
6. Thermal modelling of torrefication of biogas
7. Heat transfer analysis of Aqua ammonia refrigeration system
8. Energy analysis of PCM
9. Thermal Analysis of frost formation on vaporizer

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RESEARCH PROJECTS (PG CAD-CAM) (AY:-2015-16)

1. Analysis of stress induced due to misalignments in a planetary gearbox.
2. Design of diaphragm used in clutch of heavy-duty vehicles.
3. Constraint, velocity and force analysis of 3-RRR manipulator using screw theory.
4. Fault finding and modification of agitator assembly for mixing of fluids.
5. Analysis of filter-dryer coil support system subjected to thermo mechanical fluctuating load.
6. Analysis and modification of fixtures for cover of 395 and 400-twin clutch.
7. Design of rotor for wiped film evaporator.
8. Analysis of metal flow behaviour in FSW for dissimilar metals (CU-SS).
9. Lower extremity dynamic analysis using multi-body approach.
10. Simulation of bird strike phenomenon on jet engine blade..
11. Redesigning of XC-16 helical gearbox casing.
12. Design of skid steer loader cabin tilt mechanism and ergonomics study of cabin.

RESEARCH PROJECTS (PG THERMAL) (AY:-2015-16)

1. Thermal analysis of wax melting system using solar heat pipe evacuated tube collectors
2. Pyrolysis of biomass residue on fixed bed reactor
3. Design and development of standalone domestic application of hydrogen
4. Thermal analysis of vacuum freeze drying
5. Design and performance analysis of impingement cooling of blade for gas turbine
6. Experimental, numerical analysis and development of flexible conductive link for space application
7. Experimental Investigation on Liquid Nitrogen Cryoprobe
8. Design of High Pressure Waste Heat Recovery Boiler downstream of Sponge Iron Kiln
9. Performance on heat pipe
10. multi phase flow
11. Design and performance analysis of smokeless chulla
12. Development and analysis of circulating fluidized bed gasifier
13. Design and development of fuel cell
14. Performance Enhancement of cooling tower analyzed by CFD analysis.
15. Multi phase flow
16. Design and investigation of PV thermal technology with CPC
17. Development and experimental study of small scale biogas plant
18. Performance analysis of boiler & turbine for thermal power plants as per ASME performance test & benchmarking of power plant.
19. Cleaning and cooling of producer gas comes from downdraft gasifier
20. Design and performance analysis of thermosyphon based refrigerator

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RESEARCH PROJECTS (PG CAD-CAM) (AY:-2014-15)

1. Design and analysis for 100 T hook block for steel plant double girder EOT crane.
2. Improving volumetric accuracy by error modelling and its compensation for vertical machining centre.
3. Finite element analysis for evaluating potential use of wire rope barrier considering biker's safety.
4. Design and analysis of hoisting mechanism for single failure proof eot crane.
5. Bending analysis of thin plates.
6. Design and stability analysis of motorized RAMSHORN hook pulley block.
7. Tube sheet weld overlay analysis.
8. Development of lobe profile of external lobe pump.
9. Design analysis and optimization of hydraulic loader.
10. Design and development of manually operated pneumatic robot.
11. Comparing aggressiveness of small car bumpers for a pedestrian lower extremity using FEM.
12. Design and analysis of mounded bullet tank.
13. Vibration and fatigue analysis of composite materials.
14. Finite element analysis and testing of space born components subjected to far field pyro-shock.
15. Design and analysis of Automated PREPREG system for fibreglass reinforced composites.

MECHANICAL ENGINEERING DEPARTMENT

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RESEARCH PROJECTS (PG THERMAL) (AY:-2014-15)

1. Numerical modelling and analysis of fouling in PHE using milk.
2. Design and experimental analysis of smokeless cook stove.
3. Design, Fabrication and Performance analysis of 5 Ton air cooled scroll chiller.
4. Heat transfer in parabolic through solar collector with porous receiver.
5. Performance analysis and simulation of evaporator plate of bulk milk cooler.
6. Exergo-economic analysis of captive power plant.
7. Energy storage system for cooling and heating application.
8. Investigation on heat transfer enhancement for mini-channel heat sink using nanofluid.
9. Design and experimental analysis of small down draft gasifier.
10. Numerical modelling and simulation of forced convection drying of moist object.
11. Parametric study and numerical modelling of Single PEM fuel cell.
12. Numerical simulation of investment casting.
13. Design and simulation of secondary refocusing mechanism based on Thermal actuation.
14. Design and experimental analysis of biomass fluidized bed gasifier.
15. Numerical modelling of frost formation on flat plate.
16. Performance analysis of fluidized bed gasifier using different bed materials.
17. Study and design small capacity air-conditioning system based on vapour absorption principle using solar energy.
18. Vertical pre-heater boiler used in cement industry.
19. CFD simulation of cyclone separator and experimental validation.
20. CFD analysis of shell and tube heat exchanger.

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RESEARCH PROJECTS (PG CAD-CAM) (AY:-2013-14)
1. Function generation using Double arm manipulator.
2. Design and development of 2-way gravity diverter valve for discharge of granular material from one point to another in chute and free-fall application .
3. Knowledge base engineering approach for design automation (case study : pressure vessel).
4. Analysis and Mass Optimization of Epi-cyclic Gear Train Housing.
5. Design,Development and Analysis of Pressure Relief Valve for Process Industries.
6. Optimization of journal bearing using bearing surface texture.
7. Modeling, structural analysis and optimization of WM30 sand preparation rotary machine.
8. Analysis and Optimization of Front Frame Mechanism of 811 Load Haul Dumper.
9. Optimization of process parameters of resistance spot welding process by using various methods .
10. Design and Kinematic Analysis of a Delta Robot.
11. Computer Aided Design and manufacturing analysis of a diaphragm valve.
12. Fatigue analysis of leaf spring.
13. Analysis & Optimization of Gearbox Housing.
14. Experimental investigations of friction stir welding for dissimilar materials.
15. Analysis of Stresses Induced in Gears of an Epi-Cyclic Gear Train using Finite Element Analysis.
16. Buckling Analysis of Single Ply Composite Plate with cutout.
17. Design and development of automated shot peening mechanism for gears machining of Composites.
18. Development of swinging bucket mechanism in blasting chamber of shot blasting machine.
19. Design and analysis of positive displacement pump for process industry.

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RESEARCH PROJECTS (PG THERMAL) (AY:-2013-14)

1. Design and optimization of shell and tube heat exchanger.
2. Thermal analysis of cryo-adsorption cryopump at warm up and cooled down.
3. Extruder screw element and barrel design of extruder system.
4. Design analysis of chilling plant..
5. Catalyst based Fluidised bed gasification of agro & industrial waste.
6. Design development and performance analysis of solar assisted waste water evaporation technology.
7. Double bellow design for valve technology of cryopump.
8. Experimental and energy analysis of double pipe heat exchanger for parallel & counter flow double pipe heat exchanger.
9. Exergy analysis of a refrigeration plant.
10. Solar dryer.
11. Study of heat load on cryopump for varying emissivity of component material.
12. HVAC system design and equipment selection for various application.
13. Design and performance evolution of cold room for dairy products.
14. Performance analysis of air cooled chiller with R22 and R407C.
15. Vapour Absorption Refrigeration System.
16. Design optimization of turbo machinery using CFD.
17. Studies on Iron transport & fluid flow in Electro Deionization process.
18. Design and thermal analysis of Ambient Air Vaporizers.
19. Modelling & simulation of a solar still with phase change material & experimental validation of the same.
20. Optimum temperature and shape for freeze drying of any product.
21. Nano Fluids.
22. Design and development of wood downdraft gasifier for thermal application.