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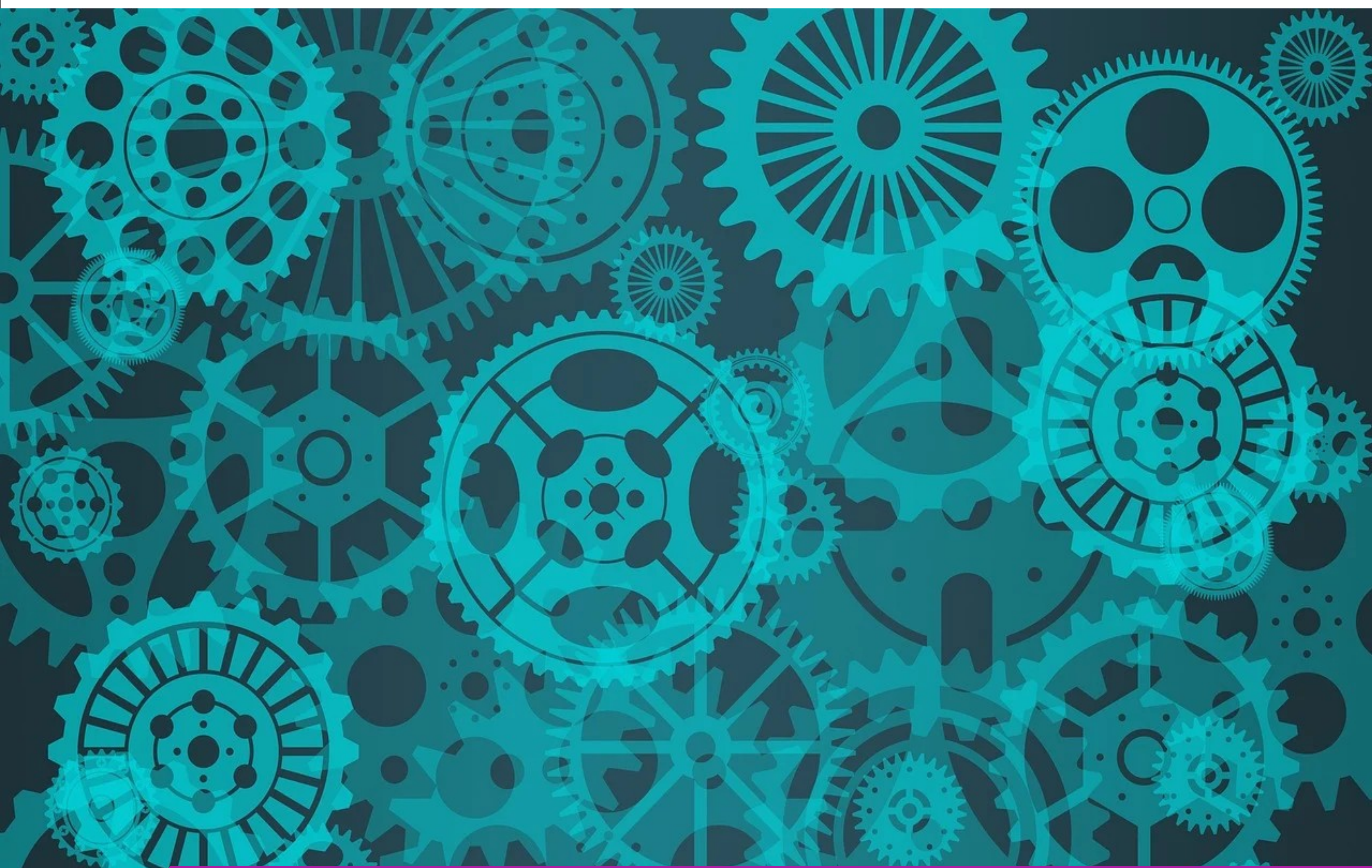

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**TAME 001**


**Author** Santosh Atole


**Paper Title** EXPERIMENTAL INVESTIGATION OF HEAT TRANSFER AUGMENTATION IN TRIANGULAR DUCT WITH RECTANGULAR WING


**Abstract**: - This paper includes the study of heat transfer augmentation in triangular duct with rectangular wing with experimentally. The air as working fluid because due to high thermal resistance. The longitudinal vortex generator is the promising technique to enhancement of heat transfer. The longitudinal vortices are produced due to pressure difference generated between front and back surfaces of the vortex generator. An innovative design of triangular shaped duct with rectangular wing vortex generator is mounted on the bottom surface of duct for augmentation of heat transfer rate in plate- fin heat exchanger. The range of Reynolds number is 4*103 to 22*103 taken for development of turbulent zone. As the solution is converged after certain number of iteration, the values of pressure drop, Nusselt number, average temperature and friction factor are calculated for different angle of attack and for different pitch and compared same parameter for plain duct without rectangular wing.



**Keywords**: - Heat Exchanger, Rectangular wing, Reynolds number, Nusselt number, Friction Factor.


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| | **Author** | Electricity Generation through Gravity Fed Water Pipes | |
| | **Paper Title** | Rupesh G. Telrandhe, Anil G.  Gawande, Ajay N. Ingale | |
| **TAME 002** | **Abstract**: - In a time of rising climate change crises there is a more pressure than ever to find effective energy harvesting method in order to secure our future. In today’s word automobile sectors are introducing new technologies to run vehicles with the help of electricity. Objective of this project is to create self-sustainable  system to generate electricity. Converting kinetic and pressure energy of flow of water which runs the turbine assembly couple to generator sequentially located in the channel of water. Water flow in the domestic pipes as kinetic energy has that potential to generate electricity for use and storage purpose in addition to perform routine activities such as a laundry, cook, bath etc. In this project, The high water pressure and flow inside the pipe from utility main tank that use for those usual routine activities is also using to rotate small scale hydro-turbine which is attached to pipeline at calculated required height to drive generator for electrical power generation. This project is one step towards generating clean and renewable hydro energy. Paper describes development of Pico hydro generation system and efficient utilization of water energy. Hence, this project is conducted to develops a hydro-generation system using consumed water distributed to houses has an alternative energy source for residential use. The generated power will be stored in the battery sources for the future use which will also satisfies the domestic needs. This project is implemented under the sort of environmental condition where the velocity of water flow is higher.<br><br>**Keywords**: - Hydraulic Turbine, Losses in Pipes<br><br>**Reference**<br>1. B. Kowalska, D. Kowalski, M. Kwietniewski & J. Rak, The concept of using energy generated by water flowing in pipes to power devices monitoring the water supply network Proc. of the 3 International Conference on Design, Construction, Maintenance, Monitoring and Control of Urban Water Systems (UW 2016).<br>2. Roshan Varghese Rajan, K. Suresh, Sanu ipe, Arjun K. Kurup and Aby M. George, Pico-hydro electric power generation from residential water tank, proc. of int. j. chem. sci.: 14, 2016, 421-426 0972-768x, www.sadgurupublications.com.<br>3. N. J. Kumbhar, Patil Pravin, Zunjar Aditya , Salokhe Rohit4, Patil Sonam, Design and implementation of micro hydro turbine for power generation and its application, proc. .of International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395 -0056 Volume: 03 Issue: 02 \| Feb-2016 www.irjet.net p-ISSN: 2395-0072.<br>4. Lalitha.S, Micro-Generation of Electricity From Tap Water, Proc. Of International Journal of Emerging Technology and Advanced Engineering | | |

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| **TAME 003** | **Author** | Ashvin Deogade | |
| | **Paper Title** | Investigation of Effect on Stresses in Rotating Disc with Non Central Circular Holes | |
| | **Abstract**: - In the present work the problem of circular disc with a central hole and a symmetrical array of non-central holes subjected to rotation are analysed using Finite Element Method. The Stress Concentration Factors (SCF) is derived for various geometric parameters like, R2/R1, d/2R1, R b / (R2-R1) and number of holes (N). It is seen that, as the number of holes increases, the SCF decreases. The results are compared with the analytical solution given by H.E.Ang and C.L.Tan.<br><br>**Keywords**: Disc, Non central hole, Stress concentration, FEM<br><br>**Reference**<br>1. H.E.Ang and C.L.Tan, 'Stress Concentration at Holes in Thin Rotating Discs', Journal of Strain Analysis Vol.23, No.4, P. No. 223-225,1988<br>2. FESSLER, H. and THORPE, T. E. 'Optimization of Stress Concentrations in Rotating Discs', Journal of Strain Analysis, Vol.2, P.No.152-358,1967<br>3. FESSLER, H. and THORPE, T. E. 'Reinforcement of Non-central Holes in Rotating Discs', Journal of Strain Analysis, Vol.2, P.No.317-323, 1967<br>4. H.E.Ang and C.L.Tan, 'Stress Intensity Factors for Cracks at Holes in Thin Rotating Discs', International Journal of Fracture, 40, P.No.R3-R11, 1989.<br>5. TAN, C. L. and FENNER, R. T. 'Elastic Fracture Mechanics by the Boundary Integral Equation Method', Proc. R. Soc. Lond., A369, P. No. 243-260, 1979 | | |
| **TAME 004** | **Author** | Yogesh Joshi, Dinesh R Zanwar | |
| | **Paper Title** | Performance analysis of parallel uniform rectangular fin and cylindrical pin fins for heat sink application | |
| | **Abstract**: - The paper involves steady state heat transfer analysis of parallel | | |

uniform plate and cylindrical pin for the heat sink application. Both comparative study has been done by using aluminium alloy and copper alloy. Both heat sink with their material allow to produce constant heat flux from the base as 50 Watt. Temperature distribution and total directional heat flux for each material has been mentioned with their magnitude. At 50 Watts of power obtaining from the base copper alloy shows the better results as compared to the aluminum alloy. Study also shows the advantage of parallel uniform rectangular heat sink over the cylindrical pin fin heat sink.

**Keywords: - Heat** sink, Al alloy, Cu Alloy.

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**TAME 005**

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| **Author** | Pramar Bakane |
| **Paper Title** | Conceptual design of self-energizing clutch actuator system |

Abstract: - As improving fuel efficiency has become an issue in the field of automotive industry, the developments of advanced transmission technologies such as automated manual transmissions (AMTs) and dual clutch transmissions (DCTs) have led to the incentives of energy efficiency. However, the control performance is not quite satisfactory since the dry clutch systems used in conventional transmissions are generally suitable for manual operation by a driver rather than automated controls. To cope with such problems, this paper suggests a novel design for a clutch actuator system suitable for automatic transmissions. System characteristics composed of self- energizing mechanism and the electromechanical device are presented to analyze self-energizing effect and the stiffness of actuator system. Also, the dynamic model and control system for clutch positioning are given.

**Keywords:** - Transmission system, automated, dual clutch, self energizing mechanism

**Reference**

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<tr><td rowspan="3">TAME 006</td><td>Author</td><td>Optimization of friction stir welding process parameter</td><td></td></tr>
<tr><td>Paper Title</td><td>Mayur Gaur, Prashant Awachat</td><td></td></tr>
<tr><td colspan="2">Abstract: - Friction Stir Welding can be defined as a solid-state welding process that is applied in welding materials that are similar and dissimilar. This process is advantageous because it leads to sound welds and does not lead to complications including cracking which is associated with fusion techniques of welding. In order to commercialize the process of friction stir welding, research must be carried out for characterization and the establishment of process windows. Hence, many researchers have been inspired by this process to attempt joining dissimilar materials. Residual stresses are formed in friction stir welded work piece. Formation of residual stresses in rigidly clamped work piece occurs due to expansion during heating and contraction during cooling. The presence of such residual stress in a weld plate affects its distortion behavior and ability to sustain applied loads while maintaining structural integrity. The study of residual stress evolution is essential in predicting the performance of the weld. Additionally, efforts have to be made to reduce the residual stresses and distortions. However, studies on residual stress in FSW steels are limited to its prediction and very few attempts have been made to investigate parameters affecting its magnitude and to optimize the thermo-mechanical process<br><br>Keywords: - Friction Stir Welding, Residual stresses, dissimilar material<br><br>Reference<br>1. Abbasi, Mahmoud & Keivani, Rasoul. (2015). Thermal analysis of friction stir welding process and investigation into affective parameters using</td><td></td></tr>
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| **TAME 003** | **Author** | Ashvin Deogade | |
| | **Paper Title** | Investigation of Effect on Stresses in Rotating Disc with Non Central Circular Holes | |
| | **Abstract**: - In the present work the problem of circular disc with a central hole and a symmetrical array of non-central holes subjected to rotation are analysed using Finite Element Method. The Stress Concentration Factors (SCF) is derived for various geometric parameters like, R2/R1, d/2R1, R b / (R2-R1) and number of holes (N). It is seen that, as the number of holes increases, the SCF decreases. The results are compared with the analytical solution given by H.E.Ang and C.L.Tan.<br><br>**Keywords**: Disc, Non central hole, Stress concentration, FEM<br><br>**Reference**<br>1. H.E.Ang and C.L.Tan, 'Stress Concentration at Holes in Thin Rotating Discs', Journal of Strain Analysis Vol.23, No.4, P. No. 223-225,1988<br>2. FESSLER, H. and THORPE, T. E. 'Optimization of Stress Concentrations in Rotating Discs', Journal of Strain Analysis, Vol.2, P.No.152-358,1967<br>3. FESSLER, H. and THORPE, T. E. 'Reinforcement of Non-central Holes in Rotating Discs', Journal of Strain Analysis, Vol.2, P.No.317-323, 1967<br>4. H.E.Ang and C.L.Tan, 'Stress Intensity Factors for Cracks at Holes in Thin Rotating Discs', International Journal of Fracture, 40, P.No.R3-R11, 1989.<br>5. TAN, C. L. and FENNER, R. T. 'Elastic Fracture Mechanics by the Boundary Integral Equation Method', Proc. R. Soc. Lond., A369, P. No. 243-260, 1979 | | **14-18** |
| **TAME 004** | **Author** | Yogesh Joshi, Dinesh R Zanwar | |
| | **Paper Title** | Performance analysis of parallel uniform rectangular fin and cylindrical pin fins for heat sink application | **19-25** |

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| | **Abstract**: - The paper involves steady state heat transfer analysis of parallel uniform plate and cylindrical pin for the heat sink application. Both comparative study has been done by using aluminium alloy and copper alloy. Both heat sink with their material allow to produce constant heat flux from the base as 50 Watt. Temperature distribution and total directional heat flux for each material has been mentioned with their magnitude. At 50 Watts of power obtaining from the base copper alloy shows the better results as compared to the aluminum alloy. Study also shows the advantage of parallel uniform rectangular heat sink over the cylindrical pin fin heat sink.<br><br>**Keywords: - Heat** sink, Al alloy, Cu Alloy.<br><br>**Reference**<br>[1]Y. Joshi and Dr. D. Ikhar, on " steady state heat transfer analysis of aluminium microprocessor,<br>IEEE xplore 8226232 Dec 2017.<br>[2] Yogesh Joshi , Dhananjay Ikhar (2015), "A Literature Review on Design and Performance analysis of Graphite metal as Heat sink for Microprocessor in CPU", (ISSN: 2321-5747)<br>International Journal on Mechanical Engineering and Robotics (IJMER)<br>[3] R.Mohan and Dr.P.Govindarajan. ―Thermal analysis of CPU with composite pin fin heat sinks,International Journal of Engineering Science and Technology ,Vol. 2(9), 2010, 4051-4062.<br>[4] Konstantinos-Stefanos P. NIKAS* and Andreas D.Panagiotou.―Numerical Investigation of Conjugate Heat Transfer in a Computer Chassis‖ Columbia International Publishing Journal of Advanced Mechanical Engineering (2013) 1: 40-57 doi:10.7726/jame.2013.1004.<br>[5] Y. Wang and K. Vafai, ―An experimental investigation of the thermal performance of an asymmetrical flat plate heat pipe, Int. J. Heat Mass Transfer‖, 43 (2000) 2657-2668 | |
| | **Author** \| Pramar Bakane | |
| | **Paper Title** \| Conceptual design of self-energizing clutch actuator system | |
| **TAME 005** | Abstract: - As improving fuel efficiency has become an issue in the field of automotive industry, the developments of advanced transmission technologies such as automated manual transmissions (AMTs) and dual clutch transmissions (DCTs) have led to the incentives of energy efficiency. However, the control performance is not quite satisfactory since the dry clutch systems used in conventional transmissions are generally suitable for manual operation by a driver rather than automated controls. To cope with such problems, this paper suggests a novel design for a clutch actuator system suitable for automatic transmissions. System characteristics composed of self- energizing mechanism and the electromechanical device are presented to analyze self-energizing effect and the stiffness of actuator system. Also, the dynamic model and control system for clutch positioning are given.<br><br>**Keywords:** - Transmission system, automated, dual clutch, self energizing mechanism<br><br>**Reference**<br>**[**1] G. Lechner, H. Naunheimer, S. Day, Automotive Transmissions: Fundamentals, Selection, Design and Application, Springer, 1999. | **26-30** |

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| **Author** | Mayur Gaur, Prashant Awachat |
| **Paper Title** | Optimization of friction stir welding process parameter |

Abstract: - Friction Stir Welding can be defined as a solid-state welding process that is applied in welding materials that are similar and dissimilar. This process is advantageous because it leads to sound welds and does not lead to complications including cracking which is associated with fusion techniques of welding. In order to commercialize the process of friction stir welding, research must be carried out for characterization and the establishment of process windows. Hence, many researchers have been inspired by this process to attempt joining dissimilar materials. Residual stresses are formed in friction stir welded work piece. Formation of residual stresses in rigidly clamped work piece occurs due to expansion during heating and contraction during cooling. The presence of such residual stress in a weld plate affects its distortion behavior and ability to sustain applied loads while maintaining structural integrity. The study of residual stress evolution is essential in predicting the performance of the weld. Additionally, efforts have to be made to reduce the residual stresses and distortions. However, studies on residual stress in FSW steels are limited to its prediction and very few attempts have been made to investigate parameters affecting its magnitude and to optimize the thermo-mechanical process

**Keywords: -** Friction Stir Welding, Residual stresses, dissimilar material

**Reference**

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