**Characterization Of Silicon Carbide Reinforced Aluminum Matrix Composites By Using Stir Casting Method**

**ABSTRACT**

**The objective of this work is to study about the wear characteristics, microstructure and the mechanical properties of cast silicon carbide (SiC) reinforced aluminum matrix composites (AMCs). AMCs of varying SiC content (0, 3 and 7 wt.%) were prepared by stir casting process. Wear performance, microstructure, hardness, tensile strength and compressive strength of the prepared composites were analyzed. The results were analyzed and it showed that adding SiC reinforcements in aluminum (Al) matrix increased wear resistance, tensile strength and compressive strength and 7 wt. % SiC reinforced AMC showed maximum wear resistance, tensile strength and compressive strength. Microstructural observation revealed clustering and non-homogeneous distribution of SiC particles in the Al matrix. Pin-on-disc wear test indicated that reinforcing Al matrix with SiC particles increased wear resistance.**

**Investigation on Machining Characteristics of Al 6061 Hybrid Metal**

**Matrix Composite Using Electrical Discharge Machining**

**ABSTRACT**

**It is necessary to develop a new modern manufacturing process and machining techniques to ensure the high surface finish and metal removal rate of the composite. The most of the problem is raised in machining of composite due to the high hardness and stiffness. The research work is mainly concentrate on the effect of Electrical Discharge Machining (EDM) parameters on the predominant machining criteria. The aluminium based metal matrix composite reinforced with silicon carbide, aluminium oxide and E- glass fiber are fabricated by stir casting technique. The Al based metal matrix composite reinforced with 5 % wt of Al2O3, 3% wt of SiC and 2% wt of E-glass short fiber are used as work material, the copper material is used as an electrode. The input parameters are selected in EDM like current, pulse on time and pulse off time to measure the metal removal rate**

**(MRR), tool wear rate and surface roughness. The optimal conditions of input parameters are found by using Box-Benhken design of experiments of response surface methodology (RSM).**

**Optimization of CNC Turning Process Parameters for**

**Prediction of Surface Roughness by Factorial Experimentation**

***ABSTRACT:***

**In the present investigation an attempt is made to evaluate the effect of certain cutting variables on surface roughness in plain turning of medium carbon steel AISI 1055 under cutting condition. Cutting speed, depth of cut, feed and cutting flow rate are selected as the influencing parameters. The experiments are conducted by factorial experimentation medium carbon steel AISI 1055 was machined using adhesive bonded tool and compared the performance with brazed tool. The cutting condition of turning parameters was determined by Design of experiment method to find the optimal levels and to analyze the effect on the turning parameters.**

**Wear Analysis of Aluminum Based Composites by Stir Casting Process**

***ABSTRACT:***

**This literature considers the major use of aluminium due to its superior property low density, ductility, electrical and thermal conductivity. Firstly important properties are find which explore use of aluminium in many industrial applications keeping the limitations in mind. So the composites materials fabricated by stir casting by using different types of reinforcement materials are the better replacement with aluminium. Wear behaviour of composites materials made by stir casting are reviewed in this literature and also the effect of the wear parameters on the properties**

**of aluminium composites.**

 **EFFECT OF SHAPE SIZE AND CONTENT ON THE EFFECTIVE THERMAL CONDUCTIVITY BeO FILLED POLYMER COMPOSITES**

***ABSTRACT:***

**Particulate filled polymeric composites with enhanced thermo-physical properties are highly in demand in electronic industry. This project presents a numerical and analytical investigation on the thermal conductivity enhancement of Beryllium oxide filled polymer composites.**

**In the numerical study, the finite-element package ANSYS is used to calculate the conductivity of the composites. Three-dimensional cube-in-cube and sphere-in-cube lattice array models are used to simulate the microstructure of composite materials for various filler size and concentration. This study reveals that the incorporation of Beryllium oxide particulates results in improvement of thermal conductivity of polymer resin. The experimentally measured conductivity values are compared with the numerically calculated ones and it is found that the values obtained for various composite models using finite element method (FEM) are in reasonable agreement with the experimental values.**

**A Review on Optimization of Cutting Parameters of Different Engineering Materials for Surface Roughness in Turning Process**

***ABSTRACT:***

**The influence of cutting parameters in the turning process mainly affects the surface roughness and machining time of product. Surface roughness is an important factor at the point of view quality of the product. The important cutting parameters in turning process mainly cutting speed, feed rate, depth of cut, spindle speed affect the surface finish of the finished material. This paper reviews the optimization of cutting parameters in turning process using Taguchi method. Taguchi method is an powerful tool of optimization. A specially designed orthogonal array of taguchi is used to investigate the effect of cutting parameters through the small number of experiments.**

**ANOVA (Analysis of variance) is used to find out which input parameters significantly affect the performance characteristics. Signal to Noise (S/N) ratio is used to measure the variations of experimental data. The analyzed data is used to find out optimum cutting parameters level and also used to find out most contributing factor.**

**Microstructure and Corrosion Resistance of HVOF Sprayed 316L Stainless Steel and Hastelloy C Coatings**

***ABSTRACT:***

**In order to develop dense corrosion resistant coatings by thermal spraying, 316L stainless steel and Hastelloy C alloy powders were sprayed by an HVOF thermal spraying apparatus onto a mild steel substrate. The microstructure, pore size distribution, composition and corrosion resistance of the obtained coatings were evaluated experimentally. Corrosion resistance in seawater was examined by monitoring the impedance and corrosion potential of samples immersed in artificial seawater at 300 K over a period of more than 3 months and also by polarization measurement. It was found that the stainless steel coatings composed mainly of plastically deformed particles and some splats that were molten at the impact. By increasing the combustion pressure, the porosity measured by a mercury porosimeter was reduced to below 1%. In comparison, Hastelloy C deposits sprayed under a standard condition were so dense that their porosity could not be measured by the porosimeter. The polarization curves and the results of impedance monitoring exemplified that the Hastelloy C coatings possess much superior corrosion resistance to the stainless steel coatings in seawater, which was attributed mainly to the higher density and better adhesion of the Ni-base alloy coatings.**

**Wear Characterization of Aluminium/Sic/Al2O3**

**Hybrid Metal Matrix Composite Using Taguchi Technique**

***ABSTRACT:***

***Aluminium Al6061T6 alloys are mainly used in the application of automobile and aeronautical applications. An attempt has beenmade to increase the tribological property of an Al6061 alloy by adding SiC and Al2O3 particulates as reinforcements. The particle size of SiC particles is 400μm. Hybrid metal matrix composite is prepared by Stir casting route and Friction and wear test is done by pin-on-disc method. Al6061T6 hybrid composites are used in automobile components for reliable, long life and***

***high performance. Experiments were conducted based on the plan of experiments generated through Taguchi’s technique. A L27 Orthogonal array was selected for analysis of the data. Purpose of investigation is to find the influence of applied load, sliding speed and sliding distance on wear rate, as well as the coefficient of friction during wearing process was carried out using ANOVA and regression equation. The objective of the model was chosen as “smaller the better” characteristics to analyse the dry***

***sliding wear resistance. Results show that applied load has the highest influence on the wear rate followed by sliding speed and sliding distance. Sliding distance has the highest influence on the wear rate followed by applied load and sliding speed.***

**AN EXPERIMENTAL INVESTIGATION ON THE DEEP DRAWING**

**PROCESS OF STEEL-BRASS BIMETAL SHEETS**

**ABSTRACT**

**Deep drawing, as an important sheet metal forming process, is widely used in different industries. In this research work, the deep drawing process of laminated sheets is experimentally studied. Composite blanks,**

**made of stainless steel and brass sheets, were deep drawn by means of a 600 Kn Instron testing machine. With this regard, the effects of various parameters such as blank holder force, blank diameter, blank stacking sequence, frictional and connection conditions of two layers on the forming load and material flow were investigated. The distribution of thickness strain in each layer of the deep drawn component was also calculated.**

**Experimental Investigation and Analysis of Mechanical Properties of Palm fibre reinforced Epoxy composites and Sisal fibre reinforced Polyester composites**

**ABSTRACT**

**The objective of this paper was investigated to evaluate tensile, flexural and Impact properties of Palm fibre reinforced Epoxy composites (PFRP) and compared with Sisal fibre reinforced Polyester composites (SFRP). Untreated chopped Palmyra Palm fruit fibrewas used as reinforcement in Epoxy resin matrix and chopped sisal fibre was used as reinforcement in Polyester resin matrix. The chopped palm fibrereinforced composite were prepared in volume fractions (Vf) such as 10 %, 20 % and 30 % of specimens by using Epoxy and the chopped sisalfibre reinforced composite were prepared in volume fractions (Vf) such as 10 %, 20 % and 30 % of specimens by using Polyester. The specimens are tested for their mechanical Properties strictly as per ASTM procedures. Static analysis is performed by FEA based software ANSYS R15 with design constraints as Equivalent stress, Shear stress and deflection.The experimental result and analysis shows that the fibrevolume fraction increases the tensile, flexural, Impact strength and modulus of the fibre reinforced composites.**

**Optimization of Turning Parameters of En-8 Steel Cylindrical Rods Using Taguchi Methodology**

**ABSTRACT**

***In this research the experiments were performed by using material specimens of EN8 to know the effect of different machining parameters on tool wear. The main objective of this study was to investigate the effect of cutting parameters and the work piece on the tool wear during a machining of EN8 material. The quality of work piece material is main contributing factor as spindle speed, depth of cut and feed rate which may be influence by tool wear through cutting operation. The experimental design was formed based on Taguchi’s Technique. An orthogonal array L(3)9 and Analysis of Variance are employed to investigate the turning conditions and machining was done using coated tool insert with specific density of 7.8 Kg/m3.***