Optimization Of Process Parameters By Taguchi Method

For modeling and optimization of a MIG-CO2 welding process a Neuro-Genetic approach has been presented in this book. The effect of the process parameters namely, Current, Voltage, and Welding speed, upon the responses like: depth of penetration of butt-welded joints, material deposition rate, width of the HAZ zone are analyzed during this research work. Experiments have been carried out according to the Taguchi's experimental design. Finite Element Modeling has been used to find out the temperature

distribution on the surface of the specimen at a specific distance from the weld centre. For modeling the process and predicting responses Artificial Neural Network model of 'Feed Forward Back Propagation' type have been used. To have all the data in a same scale the experimental results have been normalized before being used in the Artificial Neural Network model. The process parameters have been optimized keeping in view that width of the HAZ zone and material deposition rate are minimized while the depth of penetration is maximized. To achieve the optimum solution of this multi objective Genetic Algorithm have been applied for simulation.

The objectives of the study are to identify the quality characteristics of machining by measuring surface roughness and material removal rate for optimization during the cutting operation; to evaluate the effect of input machining parameters on output response, surface roughness, and metal removal rate; to experimentally validate the optimum parameters for CNC milling machining application for alloy material and confirm the best conditions parameters for CNC milling machine.

Optimization of Process Parameters of Powder Mixed Electric Discharge machining for D2 Steel

Value Optimization Among Process Parameters of Mungbean Sheller

Using Response Surface Methodology

An expert system approach for selection and optimization of machining process parameters

Friction Stir Welding of Aluminium

Optimization of Process Parameters in Sheet Metal Forming by Using Taguchi Method

Bachelor Thesis from the year 2017 in the subject Engineering - General, Basics, , course: Mechanical Engineering, language: English, abstract: Electric Discharge Machining is mainly used for very hard materials. Now a days we know that product and process technology is very advance, many types of new materials are being developed which have very high

strength, high thermal and electrical conductivity which are difficult to machine by traditional machining methods. So Non-conventional machining methods are used to machine such type of materials, EDM is also one of the Non-conventional machining methods which is used to machine such advance hard and brittle materials to satisfy the present days product needs like aerospace, mould, dies and other applications. Mixing of powders into dielectric fluid is a one of the recent advancement in the EDM process to improve its process capabilities and is known as Powder Mixed Electric Discharge Machining (PMEDM) process. The objective of this work is mainly to study the effect of

various input parameters like pulse-on-time, discharge current, tool material and grit size on the various output parameters like MRR, TWR, Surface Roughness, Hole Diameter Variation and Micro structure. In this study, these output parameters are studied by using the ANOVA through Minitab17 software. By using this software, study the Means and S/N ratios for all these parameters. Optimization of the whole process through Grey Relational Analysis for obtains the better output response simultaneously. Improvement in output responses by using grey relational analysis are 64.84% in TWR, 52% in HDV, 49.78% in MRR and 41.57% in SR. Micro structure has been also observed

through SEM analysis.
With the more precise demands of modern engineering products, the control of surface texture together with dimensional accuracy has become more important. This paper outlines the Taguchi optimization methodology, which is applied to optimize cutting parameters in end milling operation. The study was conducted in machining operation in hardened steel DIN GX40CRMOV5-1. The processing of the job was done by TiN coated carbide inserted end-mill tool under semi-finishing and finishing conditions of high-speed cutting. The milling parameters evaluated were cutting speed, feed rate and depth of cut. The experiments

were conducted by using L-27 (313) orthogonal array as suggested by Taguchi. Signal-toNoise (S/N) ratio and Pareto Analysis of Variance (ANOVA) are employed to analyze the effect of milling parameters on surface roughness. Main effects of process parameters on the quality characteristics have been analyzed. The results show that the optimum parameters of machining by CNC Milling Machine for specified hardened steel material DIN GX40CRMOV5-1 is obtained at a cutting speed of 355m/min, feed rate 0.1mm per tooth and depth of cut 0.5mm.

Evolution of Material Properties and Optimization of Process Parameters During Hydroforming

of Aluminum Extrusions
Optimization of Turning Process Taguchi Approach
Process Parameters Optimization Using Taguchi Methods
The optimization of SLS process parameters using D-optimality

One of the main factors limiting progress and mainstream acceptance of metal additive manufacturing (MAM), including the laser engineered net shaping (LENS) process, is lack of consistency between different processes, different feedstock materials, and even different individual machines. To achieve the consistency needed to advance the

technology, the processing parameters must be well understood and optimized for a wide range of applications and materials. One material with great potential, but has very limited research so far, is commercially pure titanium (CP Ti). CP Ti can be used in many applications ranging from architecture to its use in desalination plants, but one of the most promising applications for CP Ti is medical implants. The ability to use CP Ti in MAM would be a great stride in advancing the quality of medical implants, but for MAM to become a

mainstream method of producing medical implants, the consistency of the process needs to be ensured. The first step of gaining consistency in MAM with CP Ti is to acquire a greater understanding of the process parameters involved and to optimize the processing parameters for the application at hand. This Thesis aims to find process parameters for CP Ti that are both efficient and cost savings along with providing optimal mechanical properties. Once the trends of varying process parameters can be seen, an optimal set of

parameters can be seen and utilized to get the full potential from depositing CP Ti in the LENS process.

The book contains Optimization of Multi response of Turning Process Parameters by Using Tool Inserts, now a days mostly used optimization technique which is better than single response optimizing technique because all the output is affected at a time by all the input factors. The objective of this book is to determine the optimal setting of cutting parameters speed (N)m/min, depth of cut(d) mm,

feed(f)mm/rev, Nose Radius(r)mm, variation amplitude(mm/sec2), vibration frequency(kHz) in Cutting tool inserts to minimize surface roughness (Ra) and to increase the Tool life. In this book the experiment has been carried out on CNC (SPINNER 15) lathe in dry, Wet and MQL (Minimum Quantity Lubrication) cutting Condition turning of a commercially used EN 24 grade steel as a work material and carbide insert tool (CNMG120408 CNMG120412). This book highlights use of Taguchi experiment design to optimize

the multi response parameters on turning operation. For this experiment Taguchi design of experiment was carried out to collect the data for surface roughness and tool vibration. The results indicate the optimum values of the input factors and the results are conformed by a confirmatory test. This book describes use and steps of Taguchi design of experiments and orthogonal array to find a specific range and combinations of turning parameters like cutting speed, feed rate and depth of cut, Nose Radius and Cutting

condition to achieve optimal values of response variables like surface roughness, tool life, material removal rate in turning of Split Bush of EN24 Material.

Optimization of Process Parameters and Economic Evaluations in Polyester Immobilization of Hazardous Wastes

Optimization

Optimization of Process Parameters in Manufacturing

Optimization of Process Parameters of MIG-Co2 Welding Process

Optimization of Process Parameters on Surface

Roughness and Material Removal Rate of Stainless Steel Aisi 316 in Cnc Milling Process

"The results show that the LPA content had no significant effect on the cure kinetics; however cure shrinkage decreased non-linearly with increasing LPA content. LPA content at 10% was found to be the minimum amount for shrinkage compensation. LPA content (?10%) resulted in pressure increase and morphological changes during RTM manufacturing. A cure gradient was observed for low pressure injections which had a significant effect on the resin pressure and roughness. LPA was found to be the most influential parameter

affecting surface finish. A minimum of 10% LPA was required for class A surface finish. Higher injection pressures and filler content improved surface quality, whereas styrene content, cure rate and temperature gradient had no effect on the surface roughness in the range tested. A direct relationship was observed between LPA content, final cure shrinkage, resin pressure and surface finish." -- This book describes an effective framework for setting the right process parameters and new mold design to reduce the current plastic defects in injection molding. It presents a new approach for the optimization of injection molding process via (i) a new mold runner

design which leads to 20 percent reduction in scrap rate, 2.5 percent reduction in manufacturing time, and easier ejection of injected part, (ii) a new mold gate design which leads to less plastic defects; and (iii) the introduction of a number of promising alternatives with high moldability indices. Besides presenting important developments of relevance academic research, the book also includes useful information for people working in the injection molding industry, especially in the green manufacturing field.

Intelligent Optimization of Mold Design and Process Parameters in Injection Molding

Shinin DOE case study

Optimization of Process Parameters for Sputtering of Hydroxyapatite Target on Stainless Steel

Optimization of Process Parameters for Mechanized Formation of Khoa-Peda

Multi-objective Optimization of Process Parameters Involved in Micro-finishing of Al/SiC MMCs by Abrasive Flow Machining Process

Sheet metal is one of the most important semi finished products used in the steel industry, and sheet metal forming technology is therefore an important engineering discipline within the area of mechanical engineering. The development of new sheet

metal forming processes, tooling and so on has up till now to a large extent been based on experience, rules of thumb and trial-error experiments without or with only little use of scientifically based engineering methods. As mentioned above, experience is not enough, and trial-error experiments are very expensive with regard to both money and time. There is therefore great need for the development of both theoretical and experimental engineering methods. In this case, Taguchi method was selected to design of experiment using the statistica software version

7 which enables the problems to be tackled effectively; the punching process has been chosen to form the sheet metal. The objective of the project is to determine the optimize parameters. The parameters to be considered in this study are punching tonnage, the sheet thickness, the sheet length and the sheet width.

How Optimization of process parameters matter's for rejection? Implementation of tool "process parameters search" itself will help to bring down rejection, in any industry where process parameters are involved to control process.

Experimental Optimization of Process Parameters to Obtain Class A Surface Finish in Resin Transfer Molding Process

Optimization of the Process Parameters in Drilling Using a Power Sensor for On-Line Estimation of Tool Wear

Optimization in Process Parameters on Double Track of Selective Laser Melting

Design and Optimization of Process Parameters in Bio-gas Production Systems An Approach of Multiple Attribute Decision Making

Ohmic heating can be suitably used for production of acceptable yellowish coloured ginger paste. Electrical conductivity increases

and time of heating decreases with increasing salt level of ginger paste. Temperature of 80 C is sufficient for ohmic heating of ginger paste. Microbial load is negligible in ohmically treated ginger paste for all the combinations of salt levels and voltage gradients. Ohmic heating treatment keeps the pH and TSS of ginger paste well within the acceptable range. Optimization of process parameters indicates that the optimum conditions of voltage gradient, salt level and KMS treatment for pH are 12 v/cm, 0.5% and 0.2 % respectively, for TSS 11.8 v/cm, 1.5% and 0.2 %, for L* colour value they are 20.5 v/cm, 0.4%, 0.2 %, for a* value 6.96 v/cm, 0.6%, 0 % and for b* value the

optimum conditions are 8.6 v/cm, 0 % and 1% respectively"

Fused Deposition Modelling (FDM) is a rapid prototyping system that produces physical models directly from the computer aided design (CAD) drawings. These models can be used to evaluate the assembly and the functionality of the design, also producing a manufacturing tools, and end-use parts. Parts built with production-grade thermoplastics that match the traditional machined parts, and according to the realworld conditions. FDM can produce instantly functional parts that used mainly in medical and automotive applications, with the use of reverse engineering techniques such as

engineering scanning or digitizing systems. Knowledge of the quality characteristics of FDM fabricated parts is crucial. Quality significantly depends on process variable parameters. Optimizing the process parameters of FDM can make the system more precise and repeatable and such advancement can lead to use of FDM in rapid manufacturing applications rather than only producing prototypes. The part building is influenced by variant processing conditions. Thus, FDM process variable parameters are required to be collectively optimized rather than individually. In order to understand this issue, this study presents results of the experimental work on

the effect of the main FDM process variable parameters of layer thickness (A), air gap (B), raster width (C), contour width (D), and raster orientation (E) on the quality characteristics of surface roughness (Ra), dimensional accuracy (DA), and tensile strength (TS). Previous studies have investigated the quality characteristics but limited knowledge is available on FDM newly improved materials. Thus, the new ABS- M30i biomedical material was used in this experimental work to build parts. To conduct this study, a full factorial experiment was used to obtain the test runs. A number of analytical methods such as regression

analysis, Analysis of Variance (ANOVA), and Pareto analysis were used to determine the influence of the variable FDM process parameter settings. Results show that these process parameters have significant effect on the quality of finished products. For example, it has been found that the surface roughness and tensile strength of processed parts are greatly influenced by the air gap parameter as it affects the part's beads structure, because it overlapping the material beads and consequently strengthen the beads bonding, and reduce the voids between the beads. Scanning Electron Microscope (SEM) work has been undertaken to

characterise the experimental results. The results will be important for FDM produced parts in different functional applications as rapid manufacturing becomes increasingly accepted.

Design Of Experiment

Optimization of Process Parameters for Micronutrient Fortified Milk-starch Gels

Process Parameters Optimization for Mass Reflow 02\01 Components

Step-by-step Optimization of the Process Parameters of Extrusion Lines

Optimization of Turning Process Parameters by Using Tool Inserts