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Experimental Investigation and Analysis of Laser Cutting ...

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Experimental Investigation For Laser Cutting On

ELSEVIER Journal of Materials Processing Technology 58 (1996) 323-330 Jourmd of Materials Processing Technology Experimental investigation into CO2 laser cutting parameters Bekir S. Yilba Department of Mechanical Engineering, King Fahd University of Petroleum and Minerals, Dhahran 31261, Saudi Arabia Received 21 November 1994; accepted 20 July 1995 Industrial summary The quality of laser cuts is of the utmost importance in laser processing.

Experimental investigation into CO2 laser cutting ...

Abstract. A three-dimensional analytical model of pulsed laser cutting has been developed, particularly aimed at predicting the quality of cut under various cutting conditions. The model is based on infinitesimal point heat sources, representing the effect of the laser beam on the surfaces inside the cutting zone, and it includes the contribution of the oxygen reaction to the heating of the metal.

Theoretical and Experimental Investigation of Pulsed Laser ...

Laser cutting Cutting region Temperature Cutting edge quality ABSTRACT Laser cutting of AL6061T6 alloy was conducted to investigate the effects of process parameters on cutting region temperature and cutting edge quality. The process variables are including cutting speed, laser power, sheet thickness and nozzle stando? distance. It is found that mea-

Experimental investigation of the effect of process ...

laser cutting of various engineering materials with special emphasis on experimental investigations that dealt with ana lyzing process parameters that affect the cut quality charac teristics. In...

(PDF) Experimental investigations of CO2 laser cut quality ...

In the first part of the experimental activity, investigation on the effect of cutting speed and assist gas pressure on Ti6Al4V lmm thick sheets cut with fibre laser was carried out.

(PDF) Experimental investigation on fiber laser cutting of ...

The CO 2 laser cutting of three polymeric materials namely polypropylene (PP), polycarbonate (PC) and polymethyl methacrylate (PMMA) is investigated with the aim of evaluating the effect of the main input laser cutting parameters (laser power, cutting speed and compressed air pressure) on laser cutting quality of the different polymers and developing model equations relating input process parameters with the output. The output quality characteristics examined were heat affected zone (HAZ) ...

Laser cutting of polymeric materials: An experimental ...

V. EXPERIMENTAL DETAILS The investigation of experiments was enforced with CO 2 laser beam system (Model: TLC1000) delivering maximum peak power of 15 kw. The experimental set up of laser cutting process was shown in Fig. 3.

Experimental Investigation and Analysis of Process ...

This paper experimentally investigates the cut quality of laser cutting for the age hardened Inconel 718 nickel based super alloy, with the use of a continuous CO2 4.0 kW laser cutting system.

(PDF) Laser cutting process - A Review

This study reports on complete glass cutting using a single CO 2 laser beam with a low power of several tens of watts. In this study, the morphological characteristics of a cut surface and the process window for complete cutting were investigated at various process conditions.

Experimental investigation on the CO 2 laser cutting of ...

The CO(2) laser cutting of three polymeric materials namely polypropylene (PP), polycarbonate (PC) and polymethyl methacrylate (PMMA) is investigated with the aim of evaluating the effect of the main input laser cutting parameters (laser power, cutting speed and compressed air pressure) on laser cutting quality of the different polymers and developing model equations relating input process parameters with the output.

Laser cutting of polymeric materials: An experimental ...

This paper presents the results of titanium alloy laser cutting using a 2 kW fiber laser. The cutting process was performed in continuous wave mode and using Argon as shear gas. Laser cuts were realized on titanium alloy Ti6Al4V sheets lmm thick. Image analysis and microscopy, were carried out to examine the cutting edge quality features including thickness of the recast layer and heat-affected zone

Experimental investigation on fiber laser cutting of ...

Motivated by the need to enhance the kerf quality during cutting of Poly(methyl methacrylate) (PMMA) sheets using pulsed CO 2 laser beam, this study presents an experimental investigation and optimization of laser cutting parameters including cutting speed, assisted gas pressure, laser beam power, and sheet thickness. The kerf quality characteristics including the top kerf width, bottom kerf width, and kerf taper have been considered as the process responses and have been measured using ...

Improving laser cutting quality of polymethylmethacrylate ...

Abstract. A theoretical model has been developed for simulating the laser grooving process. It takes into account the interaction among subsequent pulses, the required time for the melting temperature to be reached and the subsequent removal of a finite volume of material during each laser pulse. The model predicts the maximum groove depth that can be achieved for a specified set of process parameters, such as laser power, pulsing frequency, and scanning velocity.

Theoretical and experimental investigation of pulsed laser ...

This experimental study investigated the applicability of the laser cutting technique using a multi-mode continuous fiber laser to cement-based materials. The parameters tested in this research were three material compositions with different amounts of silica sand, and six laser cutting speeds, from 4 m/min. to 14 m/min.

Experimental Investigation of Multi-mode Fiber Laser ...

orthogonal array in order to investigate the effect of laser cutting parameters: Laser Power, Cutting Speed and Gas Pressure on cut quality parameter erfwidth. Based on the experimental K results, Second Order Regression, Artificial Neural Network (ANN) and Fuzzy Logic (FL) based predictive models have been developed.

Experimental Investigation, Modelling and Comparison of ...

In this paper, an experimental and numerical investigation of low power laser cutting of cotton fiber laminate (CFL) is presented. CFL is very useful for electrical insulation applications at low...

Experimental and numerical investigation on multi-pass ...

Experimental investigations on Nd:YAG laser cutting of silicon nitride Experimental investigations on Nd:YAG laser cutting of silicon nitride Kuar, A.S. ; Doloi, B. ; Bhattacharyya, B. 2005-01-01 00:00:00 A laser beam has great ability to machine very hard conductive as well as non-conductive materials such as high speed steel, ceramics, and diamonds, etc. Present paper includes the parametric ...