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EXPERIMENTAL PREDICTION AND INVESTIGATION OF SPRING BACK

IN U BENDING PROFILE PROCESS USING RSM AND ANOVA

S. SARAVANAN[1], M. SARAVANAN[2] & D. JEYASIMMAN[3]

[1]Research Scholar, Department of Mechanical Engineering,
Periyar Maniammai Institute of Science & Technology, Vallam, Thanjavur, Tamil Nadu, India
[2]Professor, Department of Mechanical Engineering,
SSM Institute of Engineering and Technology, Dindigul, Tamil Nadu, India
[3]Associate Professor, Department of Mechanical Engineering,
Periyar Maniammai Institute of Science & Technology, Vallam, Thanjavur, Tamil Nadu, India

ABSTRACT

One of the most important sensitive features that affect the accuracy of the sheet metal processes is the elastic recovery during unloading, called spring back. In this investigation, the objective is to optimize the process parameters to minimize the spring back effect using different statistical approaches like Taguchi and Response Surface Methodology (RSM). This research paper discusses the various process parameters such as punch nose radius, sheet thickness and blank holder force that affects on spring back behavior of Ms, SS316 sheet metal during U bending process. Finally, the effects of U bending process parameters like thickness of plate, punch nose radius and blank holder force on the spring back is studied and optimized with the use of Design of Experiments (Taguchi) Method and analysis of variance (ANOVA) and RSM using DOE++ software for std material MS, SS in order to minimize the amount of spring back sheet metal industry.

KEYWORDS: U, V Bending Process, Spring Back, Taguchi, RSM & ANOVA

Original Article

1. INTRODUCTION

In different assembling forms, sheet metal shaping involves an extraordinary place since it produces parts of unrivaled mechanical properties with least misuse of material in a brief span. High material usage, exact make, and simple to acknowledge robotization are the attributes of sheet metal shaping. The sheet metal items have an extensive variety of utilization, for example, aeronautical (boards, nose skins, and so on.), car (body boards, gas tanks, and so forth.), electrical (housings, switch boxes, and so on.), family unit apparatuses (kitchenware, clothes washers, and so on.) and building (rooftops, clean items, and so on.). In the previous years, sheet shaping building has developed with the coming of new materials, procedures and control strategies. The sheet shaping conduct is affected by material properties, device and process parameters in a mind-boggling style. The proper information of material conduct, process parameter configuration, apparatus plan and issues identified with advances in material and shaping innovation is basic for effectively controlling and enhancing a procedure to create a superior item. Thus, it winds up basic to think about the procedure experimentally to satisfy these 2 necessities. Today, in the sheet framing industry, like some other, there is a solid requirement for a decrease in cost, enhancement in item quality and shortening of the term of the advancement cycle to meet out the focused market. Thus, the PC supported to plan and reenactment of sheet framing forms which lessens or disposes of tedious, asset serious and

Dr.D.SENTHIL KUMARAN M.E.,Ph.D.,(NUS)
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu(Po),
Palani Road, Dindigul - 624 002.