

Design and Development of Pneumatic Operated Fixture for Spot Gun

Prajwal Gosavi¹, Bhushan Tile², Yadnesh Ghodke³, Akshay Borade⁴, Mr. L. G. Kamde⁵

UG Scholar, Department of Mechanical Engineering^{1,2,3,4}

Faculty, Department of Mechanical Engineering⁵

Matoshri College of Engineering and Research Centre, Eklahare, Nashik, Maharashtra, India

Abstract: The title of project is “Design and Development of Pneumatic operated fixture for spot gun for Scorpio rear header (DG0020N) part”. The project is associated with automatic clamping of the assembly device comprising of spot welding process. The process has several advantages compared to conventional techniques that are usually practiced in the company. It is technology used for application of advance mechanical systems in combination for betterment of processes, manufacturing and control systems. The Project covers application of numerous engineering sectors viz. Design, Manufacturing, Assembly, Strength & Stress analysis & Cost Analysis. The design accounts for increased safety for the entire operation, increased productivity, flexibility, workers fatigue, effectivity and reduction in consumption of time. Designing software’s like Pro-Engineer, AutoCAD are to be used for product development and analysis. The Mechanism is basically designed by taking in to account the clamping that is required to be hold the part. The Parts required to be assembled are mounted on the mechanism and then clamped using air operated toggle clamps. Then welding operations are performed and finally the assembled part is unclamped and unmounted. This project thus increases productivity by reducing cycle time and reduces operator fatigue by reducing his motion. Finally, project covers the cost analysis which resembles the future expansions as well as scope.

Keywords: Pneumatic, Spot welding, Fixture, toggle clamps

REFERENCES

- [1]. Kang and Peng (Designing and fabricating fixtures using Computer-Aided Fixture Planning (CAFP)), 2009.
- [2]. Chetankumar M. Patel, Dr.G.D.Achary (Design and manufacturing of 8 cylinder hydraulic fixture for boring yoke on VMC -1050), 2014
- [3]. R.S. Khurmi and J.K. Gupta, Machine Design, Eurasia publishing house, 1st Digital edition, chapter 14 and chapter 27.
- [4]. <http://www.mahindrachie.com>
- [5]. <http://www.smcin.com/ckg1/catalogue>