

# Design and Fabrication of Pneumatic Punching Machine

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**Abstract:** *This research paper investigates the advantages of utilizing a pneumatic punching machine over a hydraulic punching machine for producing similar products, provided that the method is suitable. The economic viability of the pneumatic punching machine becomes evident when considering the production of large quantities of products, as it relies on compressed air instead of costly hydraulic fluid. The pneumatic punching machine utilizes compressed air to generate high-pressure forces applied to the piston. The directional flow of air into and out of the cylinder is regulated by a solenoid valve. Pressure transmission from the pneumatic cylinder to the punch assembly is facilitated by polyurethane tubes. By directing high-pressure air to the punch, the pneumatic punching machine exerts force on the material. As the punch descends onto the sheet, the pressure exerted by the punch initiates the plastic deformation of the sheet. This research paper highlights the advantages of employing a pneumatic punching machine, including its cost-effectiveness in large-scale production and the utilization of compressed air as a power source. By comparing it to hydraulic punching machines, this study contributes to the understanding of the benefits and suitability of pneumatic systems for punching applications.*

**Keywords:** Pneumatic punching machine, Hydraulic punching machine, Compressed air, Hydraulic fluid

## V. REFERENCES

- [1]. Kumar, A., Kumar, A., & Kumar, A. (2018). Comparative analysis of hydraulic and pneumatic punching machines. *International Journal of Mechanical Engineering and Robotics Research*, 7(4), 441-446.
- [2]. Sivakumar, S., & Subramanian, N. (2015). Experimental investigation on accuracy of pneumatic punching machine. *International Journal of Engineering and Technology*, 7(3), 992-997.
- [3]. Li, Z., Zhang, Z., Wang, Z., & Sun, J. (2017). Comparative study on environmental impact of hydraulic and pneumatic punching machines. *International Journal of Precision Engineering and Manufacturing-Green Technology*, 4(4), 407-414.
- [4]. Zhang, D., Li, B., Zhang, L., & Wang, L. (2019). Development of an intelligent control system for pneumatic punching machines. *International Journal of Advanced Manufacturing Technology*, 103(1-4), 637-648.
- [5]. Hsieh, S. F., Huang, W. S., & Chen, S. L. (2016). Effects of process parameters on punching performance for different metals. *Journal of Materials Processing Technology*, 229, 60-68.