

Keywords: Cold forming, Tool design, Geometrical optimization, Finite element analysis, Multi-objective optimization.

Introduction

Cold forming is a widely utilized manufacturing process for

potential benefits of adopting advanced optimization techniques in the manufacturing industry [9,10].

Conclusion

In conclusion, this case study highlights the application of geometrical-based optimization for enhancing the design of a common tool used in cold forming processes. By leveraging computational modeling and simulation, significant improvements in tool performance, productivity, and cost-effectiveness are achieved. The methodology presented in this study can serve as a valuable framework for manufacturers seeking to optimize their cold forming operations and stay competitive in the global market.

Future Directions

Future research in this area could focus on further refining the optimization process by incorporating additional constraints and objectives. Furthermore, the application of advanced materials and surface treatments could be explored to further enhance the performance and durability of cold forming tools. Additionally, the integration of machine learning algorithms could provide valuable insights for predictive maintenance and tool life estimation in cold forming operations.

Acknowledgments

None

Conflict of Interest

None

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