Journal Bearing Removal Improvement

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**Recommended Citation**  
Gibson, Benjamin; Johnson, Matthew; Kramer, Lucas; and Martin, Chad, "Journal Bearing Removal Improvement"  
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Journal Bearing Removal Improvement
Client: Danfoss Power Solutions, Ames, IA

Problem Statement
- Current method of removing journal bearings from castings is labor intensive, poses safety risks, and creates contamination.
- Develop a new method and, if necessary, tooling, to improve the bearing removal process.

Objectives
- Eliminate safety hazard posed by hammer blows
- Cut bearing removal time by 50%

Constraints
- Simple to use, with minimal training required.
- Easily maintained and/or replaced when worn
- Works for journal bearings ranging from 28-65mm ID, and 17-45 mm deep

Proposed Solutions
- Air hammer with 180 degree attachment ("Texas Twister") to ease impact-based removal
- Dedicated station with hand-operated hydraulic cylinder to pull bearings from casting

Methods
- Technician interviews and informal time studies for current process
- Technician interviews on preference and feasibility of proposed solutions
- If applicable, design and/or fabrication of custom tooling
- If applicable, design and fabrication of custom tooling with both university and company resources
- 3D printing, Waterjet, CNC Mill/Lathe, Welding, Heat Treating
- Technician interviews and time studies for new process

Major Outcomes
- Tool design/fabrication or off the shelf tool selection
- Training documentation for technicians
- Process implementation
- Quantization of improvement

Benefit to Client
- Increased operator safety
- Reduced cycle time
- Reduced contamination potential
- Reduced part damage

Acknowledgements: Authors are grateful to thank Kevin Anderson and Tristan Jones for the opportunity to work on this project. Project was co-funded by the differential tuition.