Journal Bearing Removal Improvement

Ben Gibson
Iowa State University, bgibson1@iastate.edu

Matt Johnson
Iowa State University, mjj26@iastate.edu

Lucas Kramer
Iowa State University, lgkramer@iastate.edu

Chad Martin
Iowa State University, cmmartin@iastate.edu

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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
  OR
• 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, CAD model of custom tooling
• If applicable, fabricate 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

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