First DFMA Workshop Experience

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Agenda

- About Me
- Introduction
- DFMA Workshop Prep
- First DFMA Workshop
- Results from DFMA Workshop
- Conclusion

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About Me

- Position: Project Engineer – Product Costing

- Time at Kohler: 2 years

- Education: Bradley University in Peoria, IL
  - B.S.I.E.

- Fun fact: Left - handed
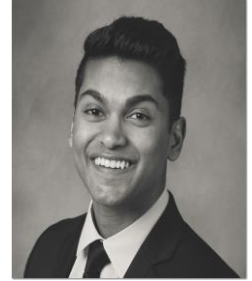
Introduction

- Kohler Power Systems
  - Newer to DFMA
  - Kohler Faucets – Front runner
- Uses
  - Product Simplification
  - Product Costing
  - Supplier Costing
- New generator project
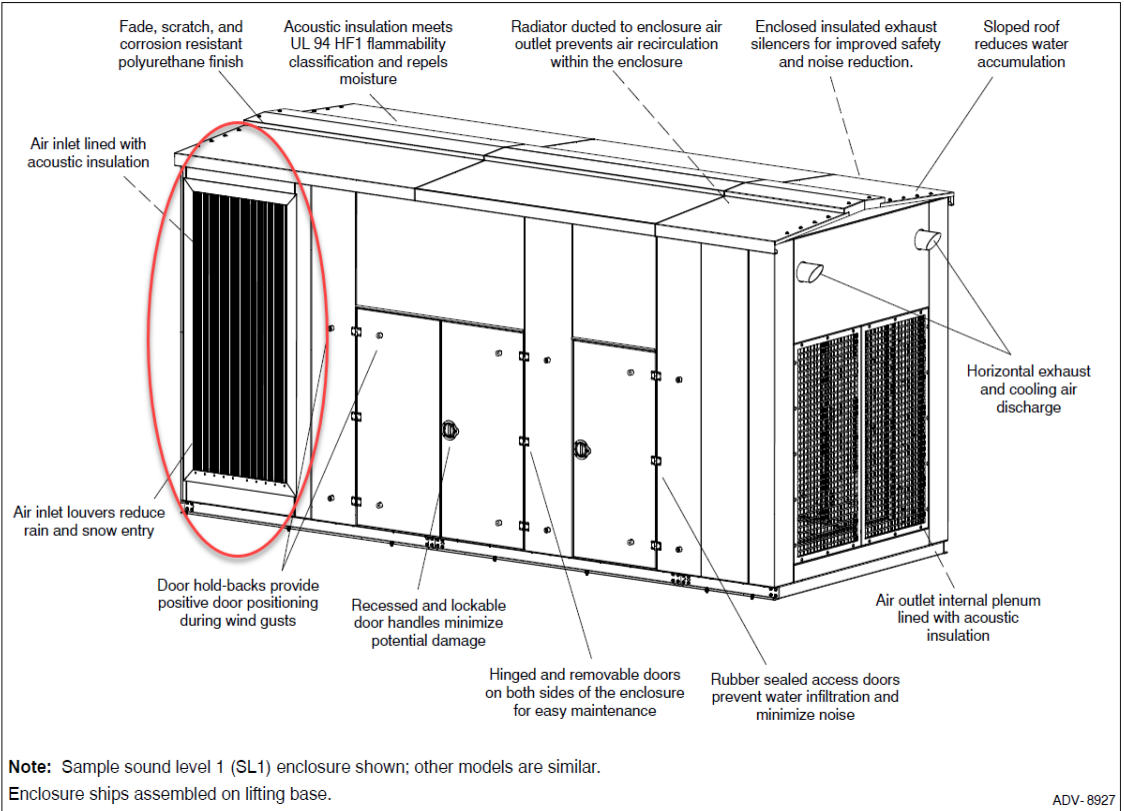 - Best time for DFMA Workshop
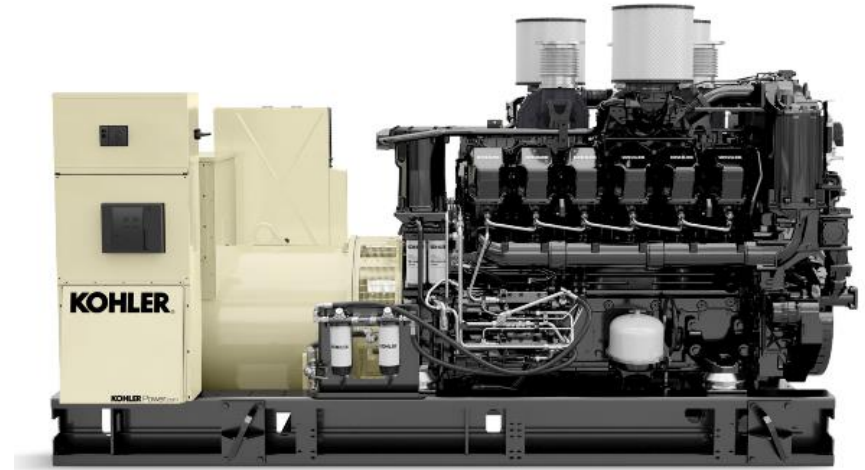
Introduction cont'd

- Enclosure
  - Accessory of genset
    - Protects from external elements
  - Intake Louver Subassy
    - Helps airflow for the generator

Aluminum Sound Enclosures

Fade, scratch, and corrosion resistant polyurethane finish

Acoustic insulation meets UL 94 HF1 flammability classification and repels moisture

Radiator ducted to enclosure air outlet prevents air recirculation within the enclosure

Enclosed insulated exhaust silencers for improved safety and noise reduction.

Sloped roof reduces water accumulation

Air inlet lined with acoustic insulation

Air inlet louvers reduce rain and snow entry

Door hold-backs provide positive door positioning during wind gusts

Recessed and lockable door handles minimize potential damage

Hinged and removable doors on both sides of the enclosure for easy maintenance

Rubber sealed access doors prevent water infiltration and minimize noise

Horizontal exhaust and cooling air discharge

Air outlet internal plenum lined with acoustic insulation

Note: Sample sound level 1 (SL1) enclosure shown; other models are similar.
Enclosure ships assembled on lifting base.

ADV- 8927

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DFMA Workshop Prep

- DFMA User Group
  - Resources available for DFMA Workshop
  - Workshop Prep Guide
  - Length, objective, scope, boundaries, participants, etc.

First DFMA Workshop

- Input data / CAD files prior to event in DFA
  - Maximize time during event
- DFM models
- DFM and DFA linked
- 6 attendees
- Fill out DFA as a team
- Ideas in Notes section

Results from DFMA Workshop

- Wrote ideas on whiteboard
  - Safe
    - Create a fixture for assy
    - Idea pursued
  - Reach
    - Combine existing parts
    - Prototypes made
  - Stretch
    - Change the entire process/materials
  - Annual Savings from ideas range from $10k to over $100k
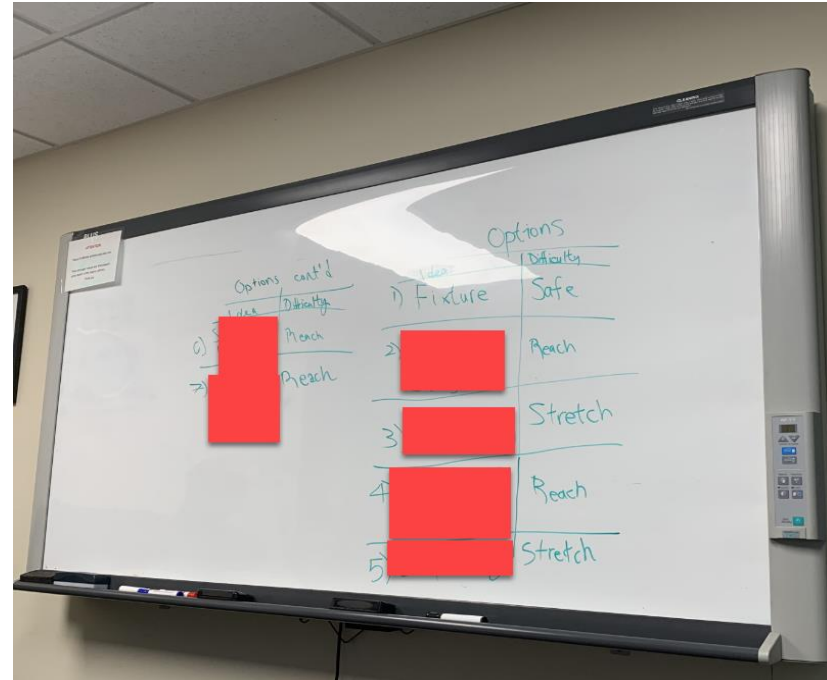
Conclusion

- Great learning experience w/ promising results

- More team members looking into fixturing

- Prototypes made to eliminate extra processes

- Cross-functional teams for better harmony

Sound Enclosure

Fixed air flow inlet grille

Fade-, scratch-, and corrosion-resistant powder-baked finish

Acoustic insulation meeting UL 94 HF1 flammability classification repels moisture absorption

Vertical outlet with 90° angles to redirect air and reduce noise

Enclosed insulated exhaust critical silencer for improved safety and noise reduction with tailpipe and rain cap

Lockable, flush-mounted door latches prevent tampering

Hinged and removable doors for ease of servicing

Radiator drain

Door holders provide positive door positions during wind gusts

Rodent guards and skid end caps prevent animal entry