



# HANDS ON SHOP FLOOR INNOVATION

*Dennis Thompson*

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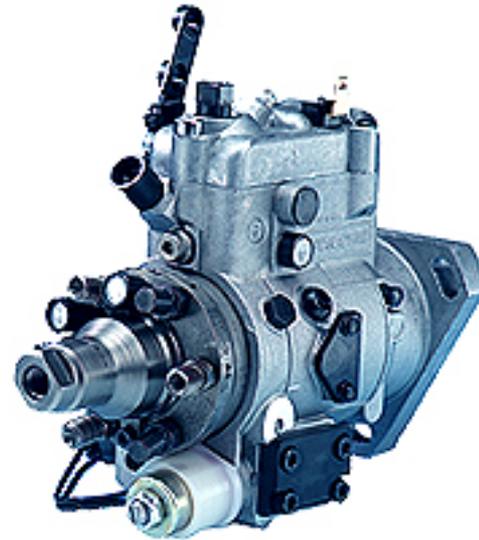
## *(3) Drivers of Innovation*

- Crises (Losing Business/Quality/Safety/etc)
- New products and/or new markets
- Senior leadership with vision

# INNOVATION: NEW PRODUCT/NEW MARKET

*Stanadyne Diesel Fuel Injection Systems*

- Conversion from Job-Shop to High Volume Repetitive Mfg
  - Just in Time
  - Rotor/Barrel (.00002)



# INNOVATION: QUALITY/SAFETY

*Stanadyne Diesel Fuel Injection Systems*

- Poor braze causing catastrophic failures
  - Model and validate what variables create a good braze joint
  - Create an automated process to manage those variables



# INNOVATION: NEW PRODUCT/NEW MARKET

## *Advanced Drainage System*

- Moving from an agriculture drainage business to municipal storm and sanitary sewer market (4-12" single wall pipe to 12 to 60" dual wall pipe)
- Invented new manufacturing process
- Created portable tooling and mfg process



# INNOVATION: NEW MARKET

*Remington Arms*

- Improve manufacturing to maintain acceptable margins on 870's sold thru Big Box stores (Wal-Mart)
  - Move from building 1 gun at a time to an assembly line
  - Collaboration: machinist, gunsmiths, engineers and management



# INNOVATION: THE FUTURE

*Senior Leadership with Vision*

- Large Original Equipment Manufacturers (OEM's) are becoming integrators and outsourcing most of the manufacturing.
  - How do you get "Hands on Shop Floor Innovation"?
  - The extended enterprise must be able to operate as if it were a single factory.
  - Examples (Lee & Fung/movie industry)
  - DoD direction (SOM/AME/NCM/MBE)