OFFICE OF EQUIPMENT MANAGEMENT

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Corrosion has been ODOT’s No. 1 cause of Truck and Loader downtime

- Structural Corrosion
  - Chassis/Cab
  - Frame Cracking
  - Body Corrosion
- Electrical failures
  - Chassis MFG wiring harness
  - Aftermarket wiring
    - Connectors and wiring quality
CORROSION ISSUES

- Cab Corrosion

  - Floor and corner posts are the most common corrosion areas in the cab.
Frame Issues

Rust jacking from the use of a double frame rail and the introduction of anti-icing.

Depending on the severity and if the crack is limited to the outer frame, the crack may be welded. Otherwise, the outer frame needs to be replaced.
Mild Steel body components such as tanks, beds, hydraulic systems and wetting systems suffer the extreme of effects of corrosion.
CORROSION ISSUES

- OEM Electrical Issues
  - Fuse and Circuit boxes
  - Communication Cables (Engine to Transmission)
  - Control Modules (Engine, Transmission, Power)
CORROSION ISSUES

- Electrical Corrosion downs equipment more than any other form of corrosion.
  - Results can be as simple as a light not working or a engine sensor failure the shuts the engine down.
However sometimes they result in something as simple looking as this:
CORROSION ISSUES

- ....And it results in this.
CORROSION ISSUES

- Truck chassis manufacturers build trucks for the masses.
  - Municipalities account for approximately .5% of that fleet.
- Changes in wiring and corrosion protection are difficult to get implemented and require long lead times.
Sometimes we have to take measures into our own hands.

- Relocation of electrical modules inside the cab
- Yearly inspections that clean and repack electrical connectors with grease and spray with Fluid Film.
  - [Greasing Procedure - Revised 05-16-2012.pdf](#)
  - [International - Greasing Manual - Rev 7-30-08.pdf](#)
CORROSION SOLUTIONS

- Integrated wiring harnesses with weather-proof electrical connectors
CORROSION SOLUTIONS

- Cab Corrosion
  - Minimizer floor mats
    - Keeps the salt brine from the operator’s boots from penetrating the OEM floor mat.

- Frame Cracking
  - All trucks incorporate the highest RBM, single frame rail available.
Truck Components

- Body - Stainless Steel (201/403) Traditional Bed and Live-Floor Bed
  - Cost Analysis Presentation.ppt from 2006
  - Total cost of bed, spreader and repairs for mild steel over 15 years: $30,324
  - Total cost of a bed, spreader and repairs for stainless steel over 15 years: $14,775
  - Difference in Costs: $15,549
  - The amount of time spent working on these beds will also be greatly reduced
Body Comparisons – Two trucks going to sale this summer.
CORROSION SOLUTIONS

- Truck Components
  - Aluminum or stainless tanks (e.g. fuel, air, etc.)
    - AND STRAPS!!
  - Stainless steel hydraulic tanks and covers
CORROSION SOLUTIONS

○ Fluid Film
  ○ [International - Fluid Film TSI 06-08-07.pdf](#)
  ○ ODOT had been using fluid film on electrical systems for over 10 years with excellent results.
  ○ ODOT locations are now using fluid film in areas other than electrical with similar results.
    ○ Undercoating
    ○ General rust protectant
    ○ Anti-Seizing compound
○ In the Cab:
Exterior Components
CORROSION SOLUTIONS

- Mechanical Componentry
  - Bolts
  - Hydraulic quick couplers
  - Pumps and motors
  - Body Subframes
  - Etc.
Fluid Film

- Can be applied with a spray or undercoating wand.
- Most success has been seen when it is applied after winter and allowed to harden as a coating through out the summer.
- Reapplied yearly.
ODOT infrastructure

- Over the last 8 years ODOT has been actively replacing our aging garages.
- ODOT has always kept its snow and ice fleet in an above freezing storage facility.
  - Typically 50 degree warm storage.
- ODOT is implementing in the new garages a dedicated/automated wash bay facility.
- This insures the trucks is thoroughly washed down and has a heated location to dry out before its next use.
○ Fayette County Garage - ODOT
CORROSION SOLUTIONS

Results

- Componentry moved inside the cab is better protected and does not fail as often.
- Aftermarket integrated wiring harness have greatly reduced electrical issues to the rear of the trucks.
- Fluid film has reduced overall corrosion and the seizing of bolts and fittings.
- Lastly the introduction of stainless steel componentry has greatly reduced the cost of maintaining this equipment throughout its life.
- And....
It has also led to the recycling of parts.

- Before the truck is sold at auction, stainless beds, spreaders, etc are removed and refurbished at our Prison facility.
Hopper Spreaders waiting to be refurbished and start their next life in a new truck.
**Beds**
- Restoration costs are around 30% to 40% contract pricing.
- Includes cylinders, hinges, conveyor assemblies if applicable.

**Hoppers**
- Restoration 10% to 40% contract pricing.
- Bearings and motors. Augers if applicable.

**Undertailgate spreaders**
- Restoration 20% to 30% contract pricing.
- Bearing and motors are replaced.
o Saving that result from the recycling of truck components will be used to fund additional light and heavy duty fleet.

o 3 recycled beds funds a new crew cab pickup.