Maintaining Stewardship

Danny Yount & Maika Khang
DENSO Manufacturing North Carolina, Inc. – Statesville Plant
Products made in North America

- Servo Motor <Michigan>
- EPS Motor <Statesville>
- Power Window Motor <Statesville>
- Pinch Sensor <Statesville> <Michigan>
- Washer System <Michigan>
- Radiator Fan Motor <Greenville>
- Wiper Motor <Greenville>
- Blower Motor <Statesville>
- SJ66(BLM)
- K62/K70
- GS34
- BF23
1. Mature EMS

- ISO14001 certified since January 1998

- Challenges
  - Starting up:
    - Finding alternatives for environmental impacting processes
    - Initially, copied the same Quality Program Procedures that were required by ISO14001.
  - Current:
    - Continuous growth of company = resetting environmental goals
    - Integrating with Business, Quality, and Engineering
1. Mature EMS (cont)

- Starting Up
  - **Rest room** Improvements (water saving toilets & sinks, high speed hand dryers)
  - **Machine/Process/Design** Improvements
    - Product painting to non-painted metal with plastic housings
    - Parts powder coating to plastic insulators
    - Positive balancing to negative balancing on armatures
- Current
  - **Company expansion** = more energy & water usage, more waste generation, etc.
  - Achieving Zero Waste Landfill
2. Aggressive Goals

DMNC has reduced electricity usage by 2% from 2015.
DMNC has reduced water usage by 25% from 2015.
DMNC has reduced Total waste usage by 18.9% from 2015.
DMNC has increased Landfill Waste by 29.6% from 2015.
2. Aggressive Goals

Electricity Use - FY 2018

FY17: Goal was Reduced by 5% per Ecovision Guidelines

<table>
<thead>
<tr>
<th>Year</th>
<th>Electricity, kWh</th>
<th>FY Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>18,153,631</td>
<td>20,252,608</td>
</tr>
<tr>
<td>2013</td>
<td>19,367,740</td>
<td>20,252,608</td>
</tr>
<tr>
<td>2014</td>
<td>21,370,280</td>
<td>26,674,200</td>
</tr>
<tr>
<td>2015</td>
<td>24,044,680</td>
<td>26,674,200</td>
</tr>
<tr>
<td>2016</td>
<td>24,687,120</td>
<td>25,607,232</td>
</tr>
<tr>
<td>2017</td>
<td>23,101,832</td>
<td>24,326,870</td>
</tr>
<tr>
<td>2018</td>
<td>23,997,227</td>
<td>23,110,527</td>
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</table>

Activities to Achieve Goal

2010_11 Completed - Replaced Metal Halide Fixtures with Fluorescent Lighting
2011_12 Completed – Added a Variable Electric Speed drive to blowers at Waste Water Treatment.
2014 - Installed New Zone Computer Controlled Lighting System in New Warehouse
(Actual) 2016_17 – Changed all Outside Pole Lamps & Bldg. Perimeter Lamps to LED Lamps.
(Actual) 2016_17 – Changed to LED lighting in parking lot & changed to LED Lights in Press Dept.
(Actual) 2016_17 - Installed LED Lights in all Production Areas
(Actual) 2017_18 – Installed 19 New RTU (Roof Top Units)
(Actual) 2018-19 - Changed to LED Lights in Office, Meeting Rooms, Jig Shop, Holder Molding, and BLM line 3.

We did not achieve target for electricity reduction due to production demand due to increased sales volumes and hotter than normal July.

New LED Lamps
2. Aggressive Goals

Water Use - FY 2018

FY18: Goal was Reduced by 1% per Ecovision Guidelines.

<table>
<thead>
<tr>
<th>Year</th>
<th>Water, Gals</th>
<th>FY Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>3,916,035</td>
<td>5,471,992</td>
</tr>
<tr>
<td>2013</td>
<td>5,193,346</td>
<td>5,471,992</td>
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<tr>
<td>2014</td>
<td>6,613,113</td>
<td>6,314,679</td>
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<tr>
<td>2015</td>
<td>7,377,995</td>
<td>7,206,614</td>
</tr>
<tr>
<td>2016</td>
<td>5,929,732</td>
<td>7,134,548</td>
</tr>
<tr>
<td>2017</td>
<td>5,968,764</td>
<td>7,063,202</td>
</tr>
<tr>
<td>2018</td>
<td>5,296,004</td>
<td>6,992,570</td>
</tr>
</tbody>
</table>

Activities to Achieve Goal

- 2006 - Installed waterless urinals and faucet sensors & Installed 44 low flow toilets
- 2008 - Reduction in painting operations, VFD on cooling tower
- 2010 - Install – Piping / Equipment to allow condensate to be sent into Process Water.
- 2011 - Completed project on using Process Water instead of city water in Thermoshock Unit located at Reliability. Save 50,000 gal/mo.
- 2013 - Maintain – Low Usage of City Water by continuing use of Well Water
- Oct. 2015 – Installed BLM Parts Washer, thus eliminating use of Paint Line, which used much more water.
- Feb.2017 – Install 400 Ton – Yoke Parts Washer, thus will eliminate the use of Paint Line, which estimates shows it uses more water
2. Aggressive Goals

Waste - FY 2018

FY18: Reduced Landfill Goal by 1.0% per Ecovision Guidelines

<table>
<thead>
<tr>
<th>Year</th>
<th>Landfill, Lbs</th>
<th>FY Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>218,136</td>
<td>505,219</td>
</tr>
<tr>
<td>2013</td>
<td>115,600</td>
<td>255,852</td>
</tr>
<tr>
<td>2014</td>
<td>143,020</td>
<td>248,176</td>
</tr>
<tr>
<td>2015</td>
<td>165,300</td>
<td>248,176</td>
</tr>
<tr>
<td>2016</td>
<td>303,820</td>
<td>240,731</td>
</tr>
<tr>
<td>2017</td>
<td>198,760</td>
<td>234,712</td>
</tr>
<tr>
<td>2018</td>
<td>228,907</td>
<td>232,365</td>
</tr>
</tbody>
</table>

Activities to Achieve Goal

FY08 Re-established markets for thermoplastic sprues ~150,000 lbs/yr, employee education program
FY10 Added K Blower Holders & Regrind – PP being recycled or reused
FY11 Started recycling Styrofoam – Brushes are shipped on Styrofoam and is used by K Bl Pl Housing
FY13 Reduce usage of DE (Diatomaceous Earth)
FY12 Thermoset – Started sending to Customer – Waste to Burn, Avg./Mo dropped from 42,000/mo to 20,000/mo. – 1st 6 mos of sending Thermoset to Customer - Waste to Energy
FY13 Continued shipping Thermoset to Waste to Energy Company. Started shipping 3 trailer loads per week to 1 Recycle Company Feb.
FY16 Started sending food waste to compost facility. In CY2017, ANC sent 4.05 tons of food waste to become compost.
FY16 Requested and received okay to start sending GS & BF23 (PBT) Spines & Plastic Parts to Waste to Energy.
FY17 Recycler company found buyer for Circuit Board Anti-Static Trays but asked EHS to stop recycling reels – both items from clean rooms.
FY18 Landfill Waste is estimated to be less than 3,458 lbs of target.
2. Aggressive Goals

CO2 Production Emissions and Goal (Required Ecofactory Goal)

Co2 emissions are calculated from actual kw usage.

1- Emissions were over target for May and June due to production requirements due to increased sales.
2- Emissions were over target in August due to extreme hot month in July causing AC units to run. Average daily high was 89 degrees. (South #1 which supplies AC units was over 138,380 kw used)
2. Aggressive Goals

Recycling - FY 2018

EHS Audited Plastics Recycle Company to verify Plastics that are Non-Recyclable are being sent to Waste to Energy Companies

<table>
<thead>
<tr>
<th></th>
<th>FY2012</th>
<th>FY2013</th>
<th>FY2014</th>
<th>FY2015</th>
<th>FY2016</th>
<th>FY2017</th>
<th>FY2018</th>
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</thead>
<tbody>
<tr>
<td>Solid Waste</td>
<td>328,354</td>
<td>165,758</td>
<td>237,376</td>
<td>332,020</td>
<td>343,760</td>
<td>263,240</td>
<td>286,773</td>
</tr>
<tr>
<td>Plastic, OCC, OP</td>
<td>858,330</td>
<td>1,031,113</td>
<td>1,168,094</td>
<td>1,299,613</td>
<td>1,633,843</td>
<td>1,292,775</td>
<td>1,250,549</td>
</tr>
<tr>
<td>ANC Metal</td>
<td>13,509,196</td>
<td>15,741,125</td>
<td>17,181,933</td>
<td>17,516,761</td>
<td>15,878,437</td>
<td>14,680,923</td>
<td>14,191,772</td>
</tr>
<tr>
<td>Waste + Recycled, (lbs)</td>
<td>14,903,508</td>
<td>17,216,129</td>
<td>18,910,916</td>
<td>19,480,493</td>
<td>18,231,027</td>
<td>16,672,289</td>
<td>16,143,968</td>
</tr>
</tbody>
</table>

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3. Beyond Compliance

- Take advantage of the ESI resources
  - Peer learning was great learning experience to mature your EMS
    - Gastonia Waste Water – Government Department Obtaining ISO Certification
    - Engineered Sinter Products – Great Employee Enthusiasm with EMS
    - Military Helicopter Re-Painting- Control of Chemicals Usage
  - Trainings offered through ESI really help grow your knowledge and learn new ideas to achieve your goals
    - Assisted in transition to ISO14001:2015 standard: Conducted management training, gave training to EHS Associates, and gave POC for document review & resulted in 0 findings as a result of New Standard. Note: We did receive 3 minor findings.
4. Integration into Core Business Functions

- From design phase, Production Engineering must consider environmental aspects & impacts
  - These environmental items are communicated to contractors through Contractor Safety & Environmental Training
  - Monthly environmental Key Performance Indicator (KPI) review at management level
5. Community Involvement

- Keep America Beautiful, Keep Iredell Clean Organization
  - Big Sweep
  - Earth/Arbor Day
  - Household Hazardous Waste Day