Excellence Award
Corporate -Wide:

February 24, 2012
Colgate Palmolive

- 39,000 employees
- $15.6B Sales
- Sell products in over 200 countries
- Manufacture in over 60 locations globally
- Four Product Categories
  - Oral Care
  - Personal Care
  - Home Care
  - Pet Nutrition
Reducing Noise Globally

• Colgate is committed to world class health and safety performance

• One of our goals is to reduce the number of people exposed to noise

• Our solution was to implement a multi-faceted global approach to Noise Reduction
Our Global Team

USA    Thailand    Mexico    India    Brazil
China    Italy    Poland ...
Driving EOHS Performance

STANDARDS
- Minimum Global Performance Expectations

GUIDANCE
- Technical Documents
- Tools

CAPABILITY
- Training
- Subject Matter Expert Networks

GOVERNANCE
- KPIs
- Audits

Consistent Global Approach
Noise is one of Many “Standards”
Noise Reduction Strategy

Reduce Noise at the Source
Design Quiet
Build Capability
Operate Quiet

Colgate follows the ACGIH-TLV or local regulations whichever is more stringent
Design Quiet

• Buy Quiet Equipment
  – New equipment specifications include < 82 dBA, where feasible
  – Partnered with selected strategic suppliers on low noise equipment design

• Design Quieter Manufacturing Plants
  – Provided construction guidance to optimize building envelope and equipment layout
Operate Quiet

• Linking Noise and Maintenance
  – Autonomous Maintenance Step Progression Checklists
  – Equipment Specific Planned Maintenance SOPs
Compressed Air

• Compressed Air at Colgate
  – Significant source of Noise (~30%) and Energy (~15%)

• Noise, Energy & Maintenance teams partnered to create a guidance document to:
  – optimize system operation
  – minimize leaks
  – provide guidance on appropriate use
Build Capability

- Webinar Training
- Noise Reduction Handbook
- Noise Networks
- Intranet Noise Site
Noise Networks & Intranet Noise Website

Supported with Noise Network Best Practice Sharing Teleconferences
Reduce Noise at the Source

• Manufacturing Noise Assessments
  – Professionally evaluated over 60 pieces of equipment
  – Identified best practice solutions

• Two Noise Projects/Year
  – Executed at the site level with Technician involvement
  – Project implementation is a global Key Performance Indicator
# Example Projects

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<th>Projects</th>
<th>Reduction</th>
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<td>Cumberland Grinder</td>
<td>(8 dBA)</td>
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<tr>
<td>Case Former</td>
<td>(10 dBA)</td>
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<tr>
<td>HDPE Blending Room</td>
<td>(6 dBA)</td>
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<tr>
<td>14 Palletizer Systems</td>
<td>(5 dBA ea)</td>
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<tr>
<td>Filler Outfeed</td>
<td>(26 dBA)</td>
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<tr>
<td>Con-Air Dryer</td>
<td>(9 dBA)</td>
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<tr>
<td>Ceiling Sala Michelangelo</td>
<td>(5-10 dBA)</td>
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<tr>
<td>Air Wand</td>
<td>(22 dBA)</td>
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<tr>
<td>Trimmer In Feed</td>
<td>(9 dBA)</td>
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<tr>
<td>Muffler</td>
<td>(17 dBA)</td>
</tr>
<tr>
<td>AISA 3000</td>
<td>(6 dBA)</td>
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</table>
Cumberland Grinder (before)

Dust build-up on floor around grinder due to inefficient regrind evacuation

Noise level from blower/grinder: 93 dBA
Cumberland Grinder (after)

No dust build-up on floor around grinder

Noise level from grinder: 85 dBA
Moen Case Former (before)

Pneumatic cylinder seals wear, need replacement, caused banging noise, increased wear on machine

Noise level from case former: 97 dBA
Moen Case Former (after)

Conversion to servo-mandrel resulted in 72% reduction in air consumption, smoother stroke, less noise.

Noise level from case former: 87 dBA
HDPE Blender Room (before)

Noise and dust generated by blending room grinders

Noise level from blending room: 85 dBA
HDPE Blender Room (after)

Door isolates grinder noise and HDPE dust

Noise level from blending room: 79 dBA
Palletizer Hydraulics (before)

- Fluids in the system from bang when motor turns on/off
- Noise level from Palletizer pump: 88 dBA
Palletizer Hydraulics (after)

Installed suppressor to minimize hydraulic banging. Pump whine contained in sound-insulated box.

Noise level from Palletizer pump: 83 dBA
Even with sound barrier, motor, line shaft, and gearboxes were very loud.

Noise level from filler outfeed: 107 dBA
Filler Outfeed (after)

Line shaft removed; Individual drives installed: cleaner, quieter

Noise level from L4 Filler outfeed: 81 dBA
Con-Air Dryer (before)

Single frequency blower produced lots of noise, vibrated floor & enclosure panels

Noise level from old Dryer: 94 dBA
Con-Air Dryer (after)

Machine set on vibration mounts, quieter blower

Noise level from new dryer: 85 dBA
Sala Michelangelo - Example

- Acoustic insulation panels reflective of local culture
- Employee education on noise reduction
Replacement of 45 Air Wands

Dosimeter before: 112.8 dBA

Dosimeter after: 90.1 dBA
Trimmer In Feed (before)

Air nozzles created noise and were ineffective on new bottle

Noise level:
Door Open
103 - 113 dBA
Door Closed
98 – 113 dBA
Trimmer In Feed (after)

Noise level:
Door Open
90.7 – 104 dBA
Door Closed
86 - 104 dBA

Replaced nozzles with in feed decline drive belt; reduced noise improved productivity
## Muffler Addition (before)

<table>
<thead>
<tr>
<th>Muffler Pump</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>Net Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>92.9</td>
<td>90.2</td>
<td>80.6</td>
<td>22.1 dBA**</td>
</tr>
<tr>
<td></td>
<td>85.8</td>
<td>94.4*</td>
<td>77.6</td>
<td>16.8dBA</td>
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<tr>
<td></td>
<td>92.6*</td>
<td>92.2</td>
<td>81.3</td>
<td>11.3dBA</td>
</tr>
<tr>
<td></td>
<td>95.2*</td>
<td>94.4</td>
<td>83.6</td>
<td>11.6dBA</td>
</tr>
<tr>
<td></td>
<td>97.4</td>
<td>94.1</td>
<td>83.2</td>
<td>21.8dBA**</td>
</tr>
</tbody>
</table>

** No Muffler Installed, *Starting Muffler
Muffler Addition (after)

- Reduced sump pump noise rating by 17%
- Measured noise levels reduced
  - Average 98.1dBA to 81.3dBA
- Process in place to ensure future pumps installed with correct muffler
Noise Reduction Results

- 250 noise reduction projects across 60 facilities around the globe
- $2 Million invested
- Delivered ~ 6 dB noise reduction per project
- Reduced noise exposure for over 5,000 Colgate employees
Moving Forward

• Continue implementation of global strategy
  – 120 additional Noise Reduction Projects targeted in 2012
  – $500,000 Budgeted
  – Further develop engineering, equipment supplier and maintenance partnerships

• Create a Zero Hearing Protection Site
Lessons Learned

• Driving Organization-wide Change
  – Specific measurable goals and objectives
  – Monitor and communicate progress regularly
  – Recognize and reward progress

• Key Partnerships
  – Engineering
  – Maintenance
  – Suppliers
  – Global Energy Team
  – Employees
Significance of the Award

• Recognizes the global team of Engineers, EOHS professionals and leadership that contributed to this initiative

• Safe in Sound Award will be communicated internally and externally
  - Sustainability Awards Colgate.com (external)
  - ourColgate.com (internal)
    • Banner
    • EOHS Website
    • Organization-wide e-Mail
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