Sustainable Manufacturing Metrics

15.992 Strategies for Sustainable Business Lab

Advisor: Prof. J. Sterman
Team: Jon Dreher, Maureen Lawler, Jeremy Stewart, Giovanni Strasorier, Malaika Thorne

Our Approach

MIT

1) Engineering Faculty
2) 15.992 Staff
3) Class Discussions
4) Company Contacts
5) Literature Review

Criteria

1) Workers must have influence over metrics (engagement)
2) Address needs of all stakeholders
3) Must drive continuous improvement
4) Harmonized between various levels
5) Compatible w/ existing business systems
6) Must measure the right things

Research

Benchmarking

Examples of goal-setting for selected metrics

<table>
<thead>
<tr>
<th>Category</th>
<th>Metric</th>
<th>Goal/ Current BCIW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>Energy/unit (GI/vehicle)</td>
<td>6 / 6.3 (Honda)</td>
</tr>
<tr>
<td>Environmental Impact</td>
<td>Contaminant levels in water supplies (Chromium ppm)</td>
<td>0.05 / .1 (EPA MCLG)</td>
</tr>
<tr>
<td>Waste Mgmt.</td>
<td>Near zero-waste-to-landfill</td>
<td></td>
</tr>
<tr>
<td>Manufacturing Cost</td>
<td>$5 saved by process efficiency improvement</td>
<td>Reduce compensated waste (nonhazardous waste + materials GM pays to be recycled) &lt; 30 kg/vehicle (Toyota)</td>
</tr>
<tr>
<td>Occupational Safety</td>
<td>Number of OSHA reportable events per 1000 workers</td>
<td>6.7 / 6.9 (Average OSHA)</td>
</tr>
<tr>
<td>Personal Health</td>
<td>% participation in wellness program</td>
<td>25% / 11.8% (Intel Worldwide)</td>
</tr>
</tbody>
</table>

Note: Metrics will be measured at different frequencies (each shift, weekly, monthly, annually)