Going Green – From the Forest to the Trees

Sustainability: a “Plant” Perspective

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An overview of the Good and Challenges of DENSO’s Environmental programs
Our Facility
- DMMI is located in Battle Creek, Michigan
- We employ roughly 1,800
- on ≈ 99 acres in the Fort Custer Industrial Park
- There are 6 buildings on site, at roughly 1.4 million ft²
  - Main bldg is ~1.1 million ft²

Our Products
- DMMI is the manufacturer of automotive heat exchangers, including radiators, heaters, air conditioning components and their final assemblies
- Our customers include Toyota, Honda, Chrysler, GM and others

Fun Facts (2009)
- Our average electric bill: > $550,000 / month
- Our average natural gas bill: > $200,000 / month
- Used 62 M gallons of water
- Recycled 6.3 M lbs.
  - 3.2 M lbs. metal
  - 1.1 M lbs cardboard
  - 84.7% of waste - recycled
  - 91.6% of waste - diverted from landfills
Basic Core Manufacturing Process

- Stamping/Forming
- Sub-Assembly
- Degreasing
- Brazing
- Surface Treatment
- Final Assembly

Metals (Al, Zn) + Oil

Coat or Paint
Michigan Clean Corporate Citizen, 1998
EPA SmartWay Transportation Partnership, 2005
Michigan Business Pollution Prevention Partnership, 1998
EPA Performance Track Member - since 2000

Southwest Michigan Sustainable Business Forum
Calhoun County - Solid Waste Advisory Board Member
Calhoun County - Local Emergency Planning Committee
Battle Creek - Environmental Planning Committee
Battle Creek - Wellhead Protection Program
What is Sustainability?

Is it?  

a) a catchy fad, full of buzz words  
b) pollution prevention on Steroids  
c) or something more?
Sustainability is a comprehensive, common sense approach to incorporate environmental planning and practices into all Business Operations.

**Basic Program Needs:**
- Broad Business Perspective
- Integrated systems for improvement
- Sense of Social needs and perceptions
- Means to convert vision to reality

**Goal is to optimize the balance between the Economic, Social and Environmental needs (TBL)**
To win the Championship,
How will you play the game?

Vision
The desire or passion of where you want to be

Strategy
Develop the game plan - means to move forward

Incorporation
Awareness, Ownership and Leadership

Implementation
Assigning resources / Implementing change
“Concepts #2” - Integration!

< Programs > not just Projects!

Design (facility, process)

Projects (P2) (The action of improving)

Purpose (expectations, passion, Champions!)

Metrics (How do you know where you are)

Purchasing Are you starting with the right stuff?
Everyone wants the Gold standard – but you can’t just “wish” it. But, you can do almost anything with Time and Money.
DENSO Corporate Environmental direction -

**Eco – Vision 2005, followed by Eco – Vision 2015**

The key “pillars” to the program ...

- Eco - Management (programs inside of our walls)
- Eco - Products (product & process design)
- Eco - Factory (efficient operations)
- Eco - Friendly (Community involvement)

The Eco-Vision program serves as the backbone for a Sustainability program at DENSO
“Eco-Vision 2015” has a multi-media environmental action plan

- **Reduce CO₂ emission**, 18% 2004-2010
  
  - CO₂ / Sales
  
  ![](image)

- **Reduce Landfill Waste**, 75%, 1999-2010
  
  - Landfill Waste - Normalized
  
  ![](image)

- **Reduce VOC (air) Emissions**, 30%, 2000-2010
  
  - VOC / Sales
  
  ![](image)

- **Reduce water Usage**, 30% 2000-2010
  
  - Water Use / Sales
  
  ![](image)

- **Reduce TRI emissions**, 30% 2000-2010
  
  - TRI Emissions / Sales
  
  ![](image)

**other Elements include**
- Green Purchasing
- Education, Partnerships & Social Sustainability
Review of DENSO Eco-Vision 2015 at DMMI

Successes
• Majority of targets being met.
• Strong Management involvement
• Increased awareness
• Significant learning process

Challenges
• A Priority amongst Priorities
• Global Targets, local realities
• Too Many targets?
• Viewed as a staff function?
• *Pixie Dust* - resources

DENSO achieved positive results, After overcoming many challenges!
Example #1 - Landfill Waste

DMII tracking of Total LF Waste

DENSO Goal 1 = 75% reduction
DENSO Goal 2 = “Zero” = 95% Reduction
Challenge Goal = “Zero” = 99% Reduction

Currently, the biggest challenges:
1 - The law of diminishing returns!
2 - International & cultural consideration
3 - The “process” – mfg. & packaging
Example: Waste Projects

Dry Flux Recycling

- Reusing spent flux
  - ... complicated process
- pulled 24 tons per year from LF
- saved $120,000 / year

Office Recycling

- The old way ...
  - paper or trash
  - it just “goes away”

- Now ...
  - each individual sorts trash & others

Tracking “performance”, not volume
(what is the right metric?)

Goal: create a consciousness
Dumpster Dives

What you measure is what you manage!
- defined high bar areas and streams for improvement.
- Resulting project recycled 380 K pounds of materials

Marketability

To the informed –
Scrap is a commodity!
- Is this true on the production floor?
- Not every waste is “valuable” Are you willing to pay?
Success has been about “getting dirty” = hard work

There is no “one solution”
Focus: Conservation & Efficiency

Reduce CO2 emission, 18% (normalized) 2004-2010

CO2 History

What about Green E?

Green Credits
- at 100%, need $1.23 M / yr

Wind
- limited (ANG fly zone)

Solar PV (… a string 216 miles long!)
- 2008 Pilot evaluation:
  For $70 K = 12,600 KWH / yr
  Payback = 15+ years
  Impact = 0.01% of total usage

Example #2 - CO2 Emissions

Electricty
Nat. Gas
CR Target
CR Actual

Electricty
Nat. Gas
CR Target
CR Actual

0.0 50.0 100.0 150.0
0 50,000 100,000 150,000
0 '99 '00 '01 '02 '03 '04 '05 '06 '07 '08 '09 '10

CR Target
CR Actual

0 50,000 100,000 150,000
0 '99 '00 '01 '02 '03 '04 '05 '06 '07 '08 '09 '10

CR Target
CR Actual

Example #2 – CO2 Emissions
How do we work within the Rule of 10%?

1. Use those who care
   1. Create Champions
   2. Provide opportunities
   3. Listen

2. Shift the bell curve
   4. Make it easy
   5. Personalize
   6. Reward good behavior
   7. Live the message

Example #3 – Awareness & Involvement

The Environmental Conscience: How do you make people care?
Barriers to Success (#1) – Society

Society & Business – The emphasis for individuals is to be specialized

Can we See the Forest from the Trees?

Is the environment “somebody else's job?”

How do you create “integrated environmentalism”
Barriers to Success #2 – Organizational Structure

How does your organization choose < Sustainability >

Culture:
* Aggressive / Passive?
* Proactive / reactive?
* Flavor of the day?

Numbers
* Metrics – leading or lagging
* Manage #’s or #’s Manage
* Numbers vs. Programs

Goals
* Local, National, Global?
* Integrated?
* Reasonable / Conflicting?

Ownership:
* Understand vs. belief
* Duty vs. Purpose

Resources:
* Finance & staff
* Knowledge and Experience
* Input and Influence

Q1. What are you trying to achieve?
Q2. Who are you trying to impress?
Barriers #3 - “daily stuff”

① The weakest link

- Rewarded Behavior is Repeated behavior!

Remember the Program page?
- what about flat tires?

② Convenience vs. Inconvenience

Does this always work – no!

(more on next page)

Lofty Goals do not guarantee daily success
**Biggest Challenges:**

1. “I didn’t know”
2. the 10% rule
In retrospect

1. Good programs “see the forest from the trees”
2. Integration is critical  
   (systems, programs, projects & people)
3. A good game plan is critical  
   (process and programs, not just projects)
4. Must understand the impacts of human behavior
5. Are there local & cultural considerations?