Our Green Journey
Irwin Seating Company

~ James Wilson
Irwin Seating Company is proud to share our environmental accomplishments. Through a focused vision and leadership strategy, we are committed to protecting the environment through the development of pollution prevention programs and practices, and by implementing technologies to safeguard and preserve, not deplete, our natural resources. In addition, we review our products, processes, and services for continuous improvement opportunities. When waste or toxic releases are unavoidable, we are committed to recycling, treatment, and disposal of those materials to minimize any undesirable impacts on the air, water, and land.

Through Irwin Seating Company’s Environmental Leadership Team, our programs and systems are regularly evaluated to ensure that they continue to be effective.
A cross functional team, committed to reviewing monthly metrics and managing corporate environmental goals.

Team members include:

- Executive Team
- Facilities
- Manufacturing
- Purchasing
- Design Engineering
- Field Installation
- Quality Engineering
- Human Resources
- Front End Admin
Environmental Leadership Team

Monthly agenda includes:

- Utility usage
- Waste Streams
- Recycling Programs
- Recent & Upcoming Seminars
- Environmental Regulations
- C.I. Team updates

Monthly metrics reviewed:

- Electricity
- Natural Gas
- Water
- Landfill Waste
- V.O.C.
- Carbon Footprint
In late 2008, Irwin Seating Company aligned themselves with The Right Place Inc. / MMTC West to value stream map our lean & green transformation.

The team included Richard Fleming, Bill Stough and key people from within our facility.

This analysis provided some project ideas and helped create our roadmap.
Our environmental scoreboard, located in the main plant aisle alongside all daily production information. Reviewed monthly are:

- Electricity
- Natural Gas
- Volatile Organic Compounds
- Landfill Waste
- Water Use
- Carbon Footprint
Our Carbon Footprint

Why do we need one?
- We felt this was the best tool available to establish a baseline for improvement.

How did we establish it?
- A complete analysis was done throughout the company identifying Greenhouse Gas contributors. (Electricity / Propane / Gas / Air & Ground Transportation / Landfill Contributions)
- Emission factors were assigned using information from the Environmental Protection Agency or Energy Information Administration.
- All of our contributors were studied to determine the easiest way to track them and instructions were created to ensure data integrity.
- Historical data was collected to complete the baseline
Previously, we measured utility usage compared to years prior. With business fluctuations, this misrepresented the “big picture”.

It was decided we take our utilities and compare them to our production volumes - giving us utility intensity. This allows us to better gauge our achievements and opportunities.
Incorporating environmental gains into the measurable benefits of continuous improvement events, helps stimulate “green” thinking as well as captures environmental gains.
2010 GOAL

10% Electricity Reduction
~ Recent Project Examples
HVAC Control Issues

- Substantial utility waste as the system ran 24hrs a day / 7 days a week.

- Existing office HVAC controls were obsolete, hard to control and required high labor hours even to adjust.

- Boiler controls were not functioning & forced the boiler to operate all year and “fight” with the air conditioning.
- Established seasonal occupied / unoccupied temperature settings.
- Reduced the occupied status to a 12 hour occupied day.
- System is unoccupied on holidays
- The reduced operating times will extend the life expectancy of the HVAC equipment.
- Annual utility reduction of $33,357
- Diagnostic tools and historical data to better troubleshoot issues as they arise.
- Reduction of 250 Metric Tons of CO2 Equivalent in our Carbon Footprint
- 3.6 year payback
HVAC Scheduling System

Ability to schedule shutdowns at night and over holidays to reduce our utility usage!
Our internal lighting has already been upgraded to T5 / T8 fluorescent fixtures. We are now installing occupancy sensors in the low traffic areas.

We have started replacing outdoor fixtures to both LED and induction lighting technologies.
We’ve started to connect some of our heavy electricity users to a Building Management System that sequences start-ups and automates schedules reducing run time.
Air Compressor Issues

- Most weekdays, we required 2 compressors / air driers to handle the required demand.
- After completing a load profile, we calculated the total cost of electricity to run our existing compressed air system (dryers & compressor) for 52 weeks
- Annual Estimated Electricity Cost of $111,130.00
- Purchased “Smart” compressor with VFD drive.
Will receive $29,476 incentive money from Consumers Energy for the improvement.

Eliminated the need for 2 cooling pumps, 3 cooling fans and 2nd running drier & compressor.

Reduction of 280 Metric Tons of CO2 Equivalent in our Carbon Footprint.

Sound level reduced from 94db to 73db = 22% improvement.

Electricity reduction of at least $38,322 annually.

Gas reduction of $8,838 annually.

$47,160 annual utility reduction = 42% improvement.

2.13 year payback.
Electricity Intensity Results

Legend for indicator
(compared to last year’s month)
- Green = reduction
- Yellow = static
- Red = increased use

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</table>

2010 - 3.2% Reduction
Environmental Objectives

2010 GOAL

10% Natural Gas Reduction
10% Water Reduction
~ Recent Project Examples
Switched our powder booth part wash system to "green" chemicals.

Results from this process change:
- Eliminated the need to heat the water on one of previously 5 stages
- Removed 2 stages of the process which resulted in a water / sewer savings.
We recently removed and insulated over old stacks equivalent to a 10' x 15' roof hole.

We’ve removed 850 ft² fiberglass window wells and resurfaced with insulated steel siding.

Biannual PM’s are done to survey the building with infrared to detect envelope issues.
Natural Gas Intensity Results

Legend for indicator
Green = reduction
Yellow = static
Red = increased use

MONTHLY

YEAR TO DATE

2010 - 13.4% Reduction
Water Intensity Results

Legend for indicator
Green = reduction
Yellow = static
Red = increased use

MONTHLY
YEAR TO DATE
Environmental Objectives

Zero Landfill Status
~ Recent Project Examples
Zero Landfill Objective

- We now recycle our scrap metals, scrap wood, skids, fabric, buckets, plastic, wrap, banding, foam, batteries, light bulbs, cardboard, computers, and a variety of paper products.
- We have diverted over 37 tons of fabric from the landfill since the project’s inception.

- All non-steel recycled material is loaded on one truck which is pulled to a single source recycle facility when full.
Zero Landfill Objective

Returnable totes and skids are used for our local plastic vendors instead of corrugated.

Chair back plastic in returnable totes
We have also worked with our vendors on efforts such as reusing packaging for shipping. The results of one of those efforts saved 23 tons of cardboard.

Previously mixed steel loads are now being separated and sized to gain maximum recyclable revenue.
As a result these recycling efforts, we are now able to turn this…

Typical Inbound Restoration Truck Load
Zero Landfill Objective

Into this...

Without a single pound of waste going to the landfill.
Total Waste Intensity Results
(includes Waste To Energy stream)

2008 to Present 62.2% Reduction

2010 - 28.8% Reduction

Legend for indicator
Green = reduction
Yellow = static
Red = increased use

MONTHLY
YEAR TO DATE
Landfill Waste Intensity Results

- 2008 to Present 94% Reduction
- 2010 - 84% Reduction

**[Graph showing monthly landfill waste intensity results for 2008, 2009, and 2010.](#)**

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YTD: 6.75, 2.54, 0.43
Hazardous Waste Reductions
~ Recent Project Example
We have recently switched over from solvent based wood finishing to water based.

As a result, we no longer generate chromium residue in our spray booth filters. This eliminated one 5 yard hazardous waste pickup per month.

It has also had a significant impact on our VOC emissions.
VOC Intensity Results

2008 to Present
84% Reduction

2010 - 72.7% Reduction

Legend for indicator (compared to last year's number):
- Green = reduction
- Yellow = static
- Red = increased use
Environmental Tools

Infrared Camera

Used to identify:
- Building envelope issues
- Oven insulation issues
- Bad door seals
- Electrical issues

Maintenance uses this tool in its preventative maintenance system for all of these opportunities.
Our largest challenge encountered: **Scrap Powder Coat**

As a result of some of our recent recycling efforts and another dumpster dive, we realized scrap powder is our largest landfill contributor. To date, we have exhausted our search for a recycling source.

Our focus remains to find a recycling source, as well as increase our powder utilization rate to limit what is being sent to the landfill.
Introducing the 4C Universal Column

- 180 tons less steel used per year
- 855,000 fewer parts a year
- 900,000 fewer press strokes a year
- 27 miles of welding less than the 8U
- 1,710,000 fewer toggle clamps opening and closing during the welding process
Designing Green

4C Center Column Weld Reduction

#8
9 WELDS
13 ½"
CYCLE
TIME: 39s
ROBOT &
HAND

#4
8 WELDS
6 ½"
CYCLE
TIME: 23s
ROBOT
Designing Green

4C End Column Weld Reduction

#86
- 13 WELDS
- 19 ¼"
- CYCLE TIME: 111s
- HANDWELD

#4
- SAME AS CENTER COLUMN!!
- 8 WELDS
- 6 ½"
- CYCLE TIME: 23s
- ROBOT
## Packaging Ingenuity

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<th>#4 Center</th>
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<td>10/box</td>
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<tr>
<td>55 pounds</td>
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<tr>
<td>15 7/8” (W)</td>
<td>16 ¼” (W)</td>
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<td>5.73 cubic feet.</td>
<td>1.91 cubic feet</td>
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Thank you!

Questions?

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