



ELECTRONIC & ELECTROMAGNETIC SYSTEMS
POWERTRAIN, DRIVETRAIN & ENERGY

Electricfil Corporation's
Participation in
Alabama's E3 Program

CEC Meeting

September 7, 2011

Electricfil Corporation - Overview

Electricfil, headquartered in Beynost, France, is a world leader in automotive ignition systems including engine and transmission sensors. The company's U.S. subsidiary, Electricfil Corporation, located in Elkmont, Alabama in 2004.

Electricfil Corporation currently has a 37,500 manufacturing operation that operates 24/5. The entire facility is climate controlled.

Our current manufacturing operations include electronics sub-assembly, resin potting, over molding and testing. We are ISO TS 19649 and ISO 14001 certified.

Overview of E3 Initiatives at Electricfil

Electricfil focuses heavily on continuously improving production processes, recycling and waste reduction. Our involvement in Alabama's E3 Initiative has made a significant difference in all areas noted through:

- Facility Lean and Practical Energy assessments and recommendations for improvements
- Kaizen events focused on equipment and process improvements to reduce time and energy usage
- Training on Lean Manufacturing and Kaizen processes
- Training on energy reduction tools and techniques
- Energy mapping of all plant floor equipment along with the development of energy calculators for assessing usage, costs and emissions
- Compressed air training, environmental factors, equipment life cycle costing, etc.

Practical Energy Assessment

In early 2010, Electricfil worked with E3 partner, Alabama Technology Network (ATN), on a Practical Energy Assessment of our operation. This involved a detailed review of our facility and daily work practices coupled with brainstorming sessions geared at identifying key improvement areas. Following this assessment, we were given a list of recommended improvements along with potential energy and cost savings.

Practical Energy Assessment Actions Taken

Examples of actions taken:

Sealed base of plant garage doors and insulated doors to reduce energy loss

Replaced old fluorescent and Metal Halide fixtures with high output/energy efficient lighting

Replaced old Halogen and Incandescent exit lights with efficient LED lights

Placed motion controls in areas such as restrooms and seldom accessed areas

Switched halls and closets to be able to turn lights off when areas are not in use

Capped wall mounted exhaust fan vents to reduce energy loss

Installed set-back thermostats and located/corrected compressed air leaks.

Estimated Annual Savings =

\$10.8K

120,000 kWh

A reduction of 81 metric tons of CO₂ emissions

Energy Mapping

In follow-up to our initial energy assessment, a representative from ATN assisted Electricfil with “energy mapping” all plant floor equipment along with the development of calculators for use in determining energy cost and emissions by machine center. *These same calculators can be used for office equipment, HVAC, maintenance equipment, etc.*

Equipment Name	PR US O1
Manufacturer	Battenfeld
Function/Process	Injection Molding Press
Volts	480
Amps	115
Motor (Standard or High Efficiency)	HE
Avg parts per hour	250
Machine cycle time	
Avg daily hours	24
Days operated weekly	5
Weekly hours of operation	40
Weekly kwhs	6624
Weekly cost of operation	\$629.28
Cost per hour of operation	\$15.73
Cost per part produced	\$0.063

Project/Source Description	Electricity Saved (kWh)	CO ₂ Emissions (lb)	CH ₄ Emissions (lb)	N ₂ O Emissions (lb)
PR US O1 Changeover Time Improvement	114,000	170,417.0	2.7	2.7
	0	0.0	0.0	0.0
	0	0.0	0.0	0.0
	0	0.0	0.0	0.0
	0	0.0	0.0	0.0
	0	0.0	0.0	0.0
	0	0.0	0.0	0.0
	0	0.0	0.0	0.0
Total Emissions	114,000	170,417.0	2.7	2.7
Total CO₂ Emissions Reduction - Equivalent (metric tons)		77.7		

Kaizen Events

ATN representatives lead two 5-day long Kaizen events at Electricfil. The first event was focused on reducing tooling changeover times at our over molding presses and the second event was focused on modifications to our resin potting and curing processes.

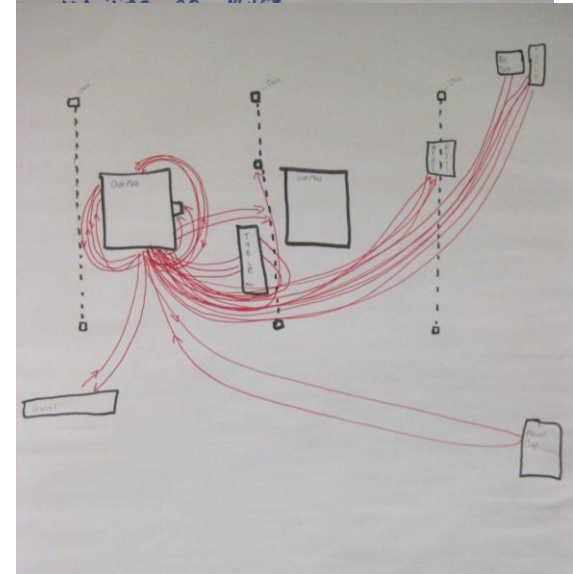
Both events targeted process improvements that would ultimately result in time savings, cost savings and energy reduction.

Kaizen Events

Each event started with training the team on lean concepts and Kaizen. Each Kaizen team was comprised of individuals from production, engineering, maintenance and quality.



Cooling Down Tool
Going to get tools (attention on end wrench)
Going for more tools (torque wrench)
Going to get towels
Got maintenance to remove top plate
Go get cheater bar.
Walking around machine to loosen bolts because long wrench
Walk to get mold.
Moving racks (obstructed path)
3rd mold strap not needed
Finding and sorting hoses
Getting maintenance to change set-up program
Double handling of mold.
Settings not correct to allow changeover.
Tying hoses away to secure
Tool heat-up
Returning tools and Mold Cart



Overmold Kaizen Event

Objective: Reduce tooling changeover time at two over molding presses each operating 24/5.

How: Through the creation of standardized changeover operating procedures, revamping hose connections and access points for easier connections and access, adding thermolators to preheat tools, locating tools between the machine centers, and training.

Results: Reduced tooling changeover times from approx. 2 hours to 20-30 minutes each = a savings of 8 hours per day between the two presses.

Big Picture: 8 hours saved per day =

\$10.2K annually in energy costs

Reduced energy usage by 114,000 kWh annually

The equivalent of one operator annually

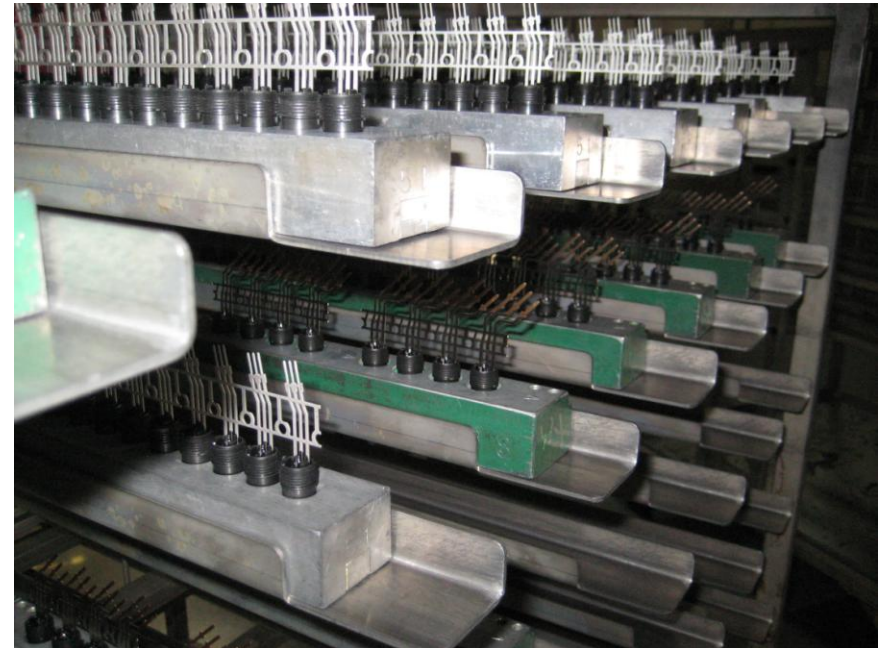
Reduced CO2 emissions by 77 metric tons

**Bigger Picture: We will have as many as 12 over mold presses in the future...a multiplier of x6 in terms of the savings noted!*

Potting and Curing Kaizen Event

Objective: Reduce oven curing times

How: Change from batching to mixed model production through potting/curing process



Potting and Curing Kaizen Event

Results: A reduction of 25% in curing oven usage via mixed model (equivalent of 1 out of 4 ovens)

Big Picture:

\$18.8K annually in energy costs

A reduction of 198,000 kWh

A reduction in CO2 emissions by 135 metric tons

**Bigger Picture: We will have as many as 5 potting operations in the future...a multiplier of x5 in terms of the savings noted!*

Phase Two... Add rack space on carts used in curing process to increase capacity of racks by approx. 30%. Savings TBD





Other Key Accomplishments

- Awarded TVA VII-E 5 yr. utilities credit for energy conservation and investment and another incentive for participation in their CEAI energy efficiency program = The estimated value of services, payments, and credits = \$45,000
- Featured in Business Alabama Magazine as a participant in Alabama's E3 (Economy, Energy and Environment program)
- Awarded the 2011 Sustainability in Manufacturing Leadership Award from Alabama Technology Network and the Business Council of Alabama.
- Other – reduced landfill bound waste from nearly 40 yards to less than 4 yards per week. This was accomplished through recycling of nearly all production scrap and general waste products.





Summary

Our participation in Alabama's E3 Initiative has benefited our company greatly.

Electricfil Corporation is a small company with limited resources. E3 partners have helped us save money, improve processes, reduce emissions/energy, etc. Their services/assistance was made available to us free of charge! Yes, we had to make minimal investments to institute some of the recommended improvements, but the payback was almost immediate.

We have reduced our energy consumption by 25% or approx. \$40K annually.

Another plus is that the changes we have made have been viewed in a very positive light by our customers and by the local business community.

Future objectives include further evaluation of solar/renewable energy options and use of more eco-friendly raw materials (in partnership with our customers and suppliers).



Thank you!

