

US EPA ARCHIVE DOCUMENT

## EPA 2009 State Innovations Grant April - June 2012

Washington State Department of Ecology – Lean and Green Assistance 7-31-2012

### **Part 1 Synopsis of Accomplishments during the Reporting Period**

Apr 29 – May 4	Heath Tecna (HT) event #1 - overall assessment of facility's potential environmental opportunities. Utility bills and regulatory reports for electricity, water/wastewater, hazardous waste disposal, and solid waste disposal were reviewed. Facility staff knowledge and simple inventories of the specific waste generated during the week also clarified where to focus efforts for the subsequent kaizen events.
May 7-11	HT event #2 - The goal was to reduce the generation of hazardous waste. Paint can recycling and adhesive use reduction were successes. In a separate, but parallel effort, a simple method was identified to reduce facility water use by 20%. One effort to substitute a less toxic solvent did not pan out due to lack of efficacy in removing excess adhesive. Better waste segregation was identified as a way to save money.
June 4-8	HT event #3 – This week focused on solid waste and chemical use reduction for portion of one process line. The goal was to right size the rectangular blanks used to cut parts for one type of stowage bin. This event was an “office kaizen”. The majority of the work involved two people compiling information from company databases to estimate material costs saved.
June 25-29	HT event #4 – This week focused on solid waste and chemical use reduction for portion of another process line. Parts are scrapped for various different defects. The most common defects for one process line were identified. The team identified the likely root causes and implemented one solution to address this. Additional efforts will take time and are on the company's to-do list. The company takes the to-do list VERY seriously and commits resources needed to follow through.
June 2012	Three of the four L&G videos are ready for distribution. Roll out scheduled for July and August 2013.

### **Part 2 – Narrative Discussion**

#### **Background.**

Heath Tecna manufactures airplane interior components such as; overhead bins, bulkheads, armrest compartments, and galleys. There are several different process lines, a number of different airline clients, and hundreds of different parts.

This series of events start with a focus on maximizing environmental improvements and secondarily incorporate any traditional lean improvements discovered (e.g. time saved, distance moved saved, etc.). Previous lean and green (L&G) projects under this grant started with a company focus on leaning a particular line and secondarily included environmental improvements. Both methods can work.

**L&G event #1.**

The following steps were used to complete the facility wide assessment for potential environmental opportunities. Three areas are selected for subsequent kaizen events.

- Compile utility bills before the event. During the event, review total annual cost for each utility and total annual use or waste generation (e.g. energy, water, solid waste generation, hazardous waste generation,). The goal, by the end of the event, is to identify the largest costs and areas of greatest potential.
- Identify individual waste streams for each utility. For example, hazardous waste (by weight) might be 30% from paint disposal, 40% from solvent wastes, and 30% from scrap (these are hypothetical numbers and not the actual values from this event).
- Learn how individual waste streams are generated. Measurements, gemba walks, and talking with staff on the floor are used.
- Brainstorm solutions. Take input from staff on the floor, kaizen members, and other facility staff. The team is open to new ideas and builds on each other's suggestions.
- Prioritize areas to address for individual kaizens or other efforts. Quantitative, semi-quantitative, and best guesses are used as data is or is not available. Prioritizing criteria include: potential dollar savings, potential environmental improvements, ease of implementation, and likelihood of success.
- Hazardous waste generation, solid waste generation, and chemical use are selected as opportunities where a kaizen event would be useful.
- Energy and water opportunities also exist and are addressed by state & facility staff in separate, but parallel efforts.

**L&G events #2-4.** These were each week long kaizens to address wastes generated across multiple process lines (e.g. paint) or wastes from a portion of one of the process lines (e.g. adhesive use in the assembly portion of one line). The second event looked at hazardous waste and the third and fourth evaluated potential solid waste reductions. As wastes were identified, the corresponding chemicals used in the scrap materials were identified and in some cases quantified. From a dollar standpoint, the hazardous waste event was the most successful in identifying cost savings. However, as these methods are rolled out into other production lines in the future, additional savings will be achieved. The additional savings can't be quantified at this point.

Two interesting hazardous waste reduction opportunities included:

- Rinse used paint cans with used solvent and recycle the metal cans. This waste segregation proved effective in saving money and diverting metal from hazardous waste disposal.
- Combine compatible wastes with similar hazardous waste designation. This waste aggregation method will save the company money.

### Important points

- In using lean and environment methods, some companies will start from a lean perspective and some will start from the reducing environmental impact perspective. BOTH can work if the other is incorporated along the way. Lean can be used as “a foot in the door” with a company and then expanded to include environmental work, or the other way around. It’s all about finding out what speaks to the company and then suggesting an expanded scope to save additional money.

This project started by assessing overall facility costs for environmental impacts such as; electricity, water, hazardous waste, and solid waste. As information was collected about how these wastes were generated; we also mapped a process diagram and collected traditional lean data such as time studies for various steps. In this way, we started from a “green perspective”, but also included traditional lean parameters such as labor time. For example, we noted that some parts generated more solid waste when they were cut. We then spoke to the machine cutting operators, timed several cutting operations, and found that by changing the blank size and shape; less scrap (i.e. solid waste generated and chemical used) would be produced. It also resulted in less operator set-up time because more parts were cut from a single blank. A similar result could have occurred if we had started with the focus on making the cutting machine more efficient.

If this approach is used, have utility bills compiled beforehand and ready for the kaizen team to use. It saved team time since only 1 or 2 people are needed to effectively gather utility data. The facility utility bills provide the top down assessment (overall facility usage of resources). Bottom up assessment (identification of individual wastestreams that comprised the total) is completed during event.

- Another example of using lean with other methods was the decision to address some waste streams with a larger team and a week long kaizen, while other environmental opportunities were better addressed with a team of two spending a few hours collecting information and determining the course of action. Water efficiency was addressed using the second method. State technical assistance staff worked directly with the maintenance supervisor to install a temporary meter on the three largest water uses in the facility. The meter is a sophisticated device that quickly and accurately measures flow without cutting into a pipe to install a dedicated meter. There was done while the rest of the kaizen team worked on hazardous waste issues. A similar approach was taken to make arrangements for the local electrical utility to meter the largest electrical uses in the plant.
- Facility staff were enthusiastic and creative about looking for ways to achieve environmental benefits once they had some categories to focus on (e.g. chemical use reduction, hazardous waste reduction). A little bit of education about

environmental impacts went a long way in inspiring employees. One point of clarification that was needed is that “chemical use” includes all raw materials. Just because pre-impregnated fiberglass (prepreg) isn’t a liquid doesn’t mean it doesn’t contain chemicals. It was pointed out that most of the exposure risk or environmental improvement from scrap reduction is at the prepreg manufacturing facility out-of-state rather than at this facility.

- Kaizen team members were provided with bright red vests. All company staff have been directed to give priority to helping kaizen teams if at all possible. This made access to other company staff and information much easier. This is standard lean procedure at this company.

### **Marketing videos.**

Three of four planned Lean and Green videos have been produced, released and links are being distributed. Authored by Impact Washington and Cimira Studios (Seattle) the videos include:

- An overview of the lean and green services and partnerships in Washington State;
- A case study of the L&G project at AccraFab, a metal finisher near Spokane. Results included a reduction of 70,000 gallons of acid wastewater and cost savings of \$179,000; and
- A case study of the L&G project at SunOpta Foods, a food processing facility in Omak. Results included reduction of 64 tons of solid waste, energy use and total cost savings of about \$100,000.

A fourth video, another case study, is planned, but the facility has not yet been selected.

To view the AccraFab video, click this link: [AccraFab - Lean & Green Manufacturing on Vimeo](https://vimeo.com/44007787).

To view the SunOpta video, click this link: <http://vimeo.com/44007787>

To see the Lean and Green “Partners” video, click here: <http://vimeo.com/43681917>

We are distributing the video links to the people and organizations who are likely interested and who we want to view it. This includes potential future Lean and Green clients, facilities in the metal finishing and food processing sectors, current allies and partners, and other key stakeholders.

### **Part 3 – Projection of Activities, Accomplishments, and Major Expenditures for Next Quarter Report**

1. Continue marketing for projects.
2. Complete roll-out of videos

### **Part 4 – Financial Report**

See Donna Allen's budget report – separate Excel file. This budget report is for expenditures through 5/30/2012. Additional invoices are still being processed for the June events.