

APEGM Progress Report for:Period beginning: **Jul 28, 2010** and ending: **Jan 28, 2011. (6 months)****Submission Date:** Mar 6, 2011**Supervisor:** P.Eng. Submitted on Mar 31, 2011**Period Employer:** Loewen**Job Title:** Manufacturing Engineer in Training

1. Give a description of the Engineering work experience you have obtained during this reporting period. Include information supporting the rest of your answers.

As a Manufacturing Engineer in training at Loewen, I have worked in many roles during the report time period. My areas of responsibility did not change from the previous reporting period. They can be separated into 3 basic areas. The first is daily responsibilities in relation to the production departments that I am responsible for either completely or partially. This includes being available to answer questions and provide support and documentation to the production, sales, drafting, approvals and service staff about machines requirements and capabilities, manufacturing process and capabilities, product design and performance requirements. This also included product approvals on customer requests.

The second area of responsibility is project based work. This includes analyzing potential projects and managing active projects. These projects can be small projects with low time requirements like the argon testing project in sealed units or larger projects with higher time requirements like the outswing sill covers project. Analysis of potential projects in this time period include a Patio door wood components analysis, a Bifold wood components analysis and a Bifold weatherstrip analysis. The analysis of these projects funnels into my cost benefit based priority system to develop what order to work on projects.

During this period I finished up my term responsibility of working with certification testing. Under the supervision of the R&D manager, I worked with external testing labs to get the final reports for both the standard terrace door and the ten foot terrace door impact testing programs and the Cyprum product NFRC program. Once the final reports were complete, the next steps were out of my area of responsibility. A lesson I learned from testing this period was due to the Cyprum door products failing the NFRC validation test the first time. Due to a misunderstanding the doors had shipped without being checked. When the doors were shipped back to Loewen to determine the cause of the issue, there was a series of small errors on the products that had lead to a significant gapping between the panel and the weatherstrip. The cost of shipping the units back to Loewen and to the lab the second time and the second test cost could have been eliminated with an initial quality check.

2.2 Application of Theory

During this report period, I applied theory in all of my projects. I used project analysis and project management tools and techniques in my potential and active projects. I use cost/benefit analysis to drive my priority list on potential and active projects. Once projects become active I use a project information template to set the project timeline. This project information sheet provides information on the project goals, requirements and limitations and quality requirements to each project step. Using this method, I have found that my projects have better documentation and it provides a concise communication tool for project updates with stakeholders. It also makes my priority list more resistant to fluctuations caused by external impulses. For example if someone asks me to elevate a project for them, I can state that the

reasons that it is not elevated already is because the projects above it have a better payback and I can show documentation comparing all my projects at a glance.

2.3 Practical Experience

During this report period I worked with existing engineering works regularly. In the Bifold wood component analysis and the Patio door parts analysis as well as the OS sill cover project I had to take into account the limitations, current capabilities and the potential of the systems that the respective projects would need to integrate with. During this time period I started analyzing the potential of making bifold wood components within Loewen. As the analysis progressed, it became increasingly clear that someone had worked on the project previously. There was no formal data tracking this project, but as I analyzed the requirements, employees and I found that there were heads and knives bought for the parts already and a hand router had been purchased and had been tucked away for years waiting to be used. Due to this unusual circumstance, the bifold wood component analysis business case showed zero cost. I think that this shows an important lesson to be learned about projects in. Although I can't comment on the reason for the project not being completed, I do think that having formal documentation and tracking on this project would have been very beneficial. As it is, the benefits of this project were lost for years due to inactivity. This has made me consider the long term implications of documenting active and potential projects and the value of having a consistent project tracking system in the manufacturing engineering department.

2.4 Engineering Management

During this report period I have worked with planning, scheduling, risk assessment and budgeting continuously. Working with my ME leader and my business unit leader I have worked towards setting project priorities based on business case criteria. This cost/benefit information, as well as external or non-monetary influences and risk assessments, helps me set my priorities and schedule for implementation of projects. Once these projects become active, I plan the project timeline using a standard template and finalize budgeting. Although I do not have any direct reports, during projects I work with people and direct the work of employees to achieve the desired outcome.

An example of the analysis done to determine the viability of a project is the analysis on patio door parts being made in the terrace door fabrication cell. This analysis had to be very detailed due to the complexity of the proposal. It required the analysis of the current capabilities of fabricating parts in terrace door and the adjusted downstream processes in patio door. Using this information, I then needed to determine what was required to make it viable and the associated cost and timeline. The risk in this analysis was important to note because there were several possible variations which could drastically affect both the cost and the timeline of the project. In this example, most of the risk was based on aspects not under my control. Based on my analysis, this proposal is still only a potential project. Risk assessments are a very important part of product approvals as well. I have to look at all requests sent to me and analyze if there are any risks and if so, whether they are acceptable risks.

2.6 Profession and Ethical Responsibilities

Working ethically is a part of my job with respect to the public, the profession, the client and/or the employer, my co-workers and the environment. During this period I worked with externally testing product. This requires diligently checking details to ensure that the specifications on the certified product are correct. It also requires that the certified product being sent to customers actually represents the certification documents. If for example, a shorter screw is used on the hinge of a door in a hurricane zone, it presents a risk to the customer's property and safety. I have also worked with product approvals during this time period. Some approvals require an ethical evaluation as to whether Loewen can supply the requested product to the expected quality but also in a safe manner. An example of this consideration would be an approval on an oversized operating unit that hasn't been tested. Although it may be possible

to build the unit, it could pose a risk to either the employees handling it or to the customer if the hardware cannot withstand the weight.

Supervisor Agrees: Sarah has provided an accurate description of the work she did in the 6 month time period. Sarah's cost benefit based priority system is a model for other Manufacturing Engineers to follow. Sarah is very good with ensuring her work is thorough. She does not hesitate to recommend changes to Manufacturing Engineering processes and has often taken the initiative to update our process instructions.

2. Please check the following options that apply:

2.1: During this reporting period, I have applied theory in:

- ✓ Analysis/Interpretation
- ✓ Project Design/Synthesis
- ✓ Testing/Verification
- ✓ Implementation

Supervisor Agrees: Sarah has applied theory in all above areas. Tooling theory was definitely applied in many projects.

2.2: I have obtained experience by:

- ✓ Studying or being exposed to existing Engineering works
- ✓ Applying Designs as part of larger systems
- ✓ Experiencing the limitations of Engineering designs
- ✓ Experiencing time as a factor in the Engineering process

Supervisor Agrees: Sarah definitely obtained experience in the above areas. For the 6 month period, Sarah performed a wide variety of work that also included product design related items.

2.3: I was exposed to the following areas of Engineering management:

- ✓ Planning
- ✓ Scheduling
- ✓ Budgeting
- ✓ Supervision
- ✓ Project Management
- ✓ Risk Assessment

Supervisor Agrees: Sarah performed a variety of engineering management tasks.

2.4: I was required to make decisions based on professional and ethical responsibilities to:

- ✓ The Public
- ✓ The Profession
- ✓ The Client and/or Employer
- ✓ Co-Workers
- ✓ The Environment

Supervisor Agrees: Sarah's professional and ethical decisions touched several entities.

3. Describe any activities that have improved your Communication, Teamwork, or Interpersonal Skills in the following areas:

Oral Presentations:

During this report period I facilitated a workshop at a Lean Conference held at Loewen. This required me to prepare the workshop for an unknown number of people. I presented the problem to the group and then after they had had a short tour of the area, assisted in answering questions while they worked on solutions. I also need to be comfortable speaking about many topics to stakeholders from floor workers to executives to customers at any time during my daily work.

Written Documents:

Writing documents to communicate or to record events or data is part of my daily job. This includes keeping a record of my projects, creating and/or correcting process instructions, engineering change notices, project business cases and approvals on customer requests. I have also worked with correcting external testing reports. Two tracking documents were very important during this period to the improvement of the approvals process. These two documents were the ME capabilities sheet and the approvals tracking log. The former is the key communication with the approval technicians on what they can or cannot approve with signoff and the details of what they need to consider. It needs to be clear, easy to use and most importantly, correct. The latter is a way of developing a history to highlight areas of concern. Both of these tracking documents have been integral in improving the approvals process and continue to drive changes.

Interaction with Others:

I interact with people from most areas of the company as well as external suppliers and labs. I have found that working with people towards an outcome that works for both parties is very important to achieving a sustainable team based environment. A good example of this is that being flexible and interacting with floor workers by going out and seeing what they are doing and why can develop trust and mutual respect.

Other:

Supervisor Agrees: S: works very well with everyone. She speaks and communicates very well with others and her writing skills are excellent.

4. During this period, I had to consider the social implications of my work in the following areas:

Working in a company with a high end market gives a unique perspective on social interactions. This is especially true of the interactions during harder economic times. The strong push from customers to lower prices is expected, but the demand for more offerings and very custom options to achieve orders is an interesting and not always expected effect. This creates a need within Loewen to approve higher risk orders to get sales. These types of orders increase the risk of quality or time concerns, but also makes the work environment for shop workers increasingly stressful.

Supervisor Agrees: There are definitely some very fine lines that Sarah has had to consider in her daily workings when it comes to engineering and its unique effects on workers.

5. Examples of my ability to work effectively as part of a team, during this period, include:

The structure of my job requires me to work with teams in my daily work. I work with the ME, product development, quality, sales, service and departmental teams to achieve the goals of the organization. Additionally, in this time period I have worked with two organized teams. The first is the group of ME's who approve customer orders. This project was implemented to start tracking information about approvals to determine areas of improvement. The second team was a team effort to improve a quality issue on the terrace door product. This team meets weekly and attempts to develop ideas to eliminate the quality issue.

Supervisor Agrees: Sarah is required to work with other cross-functional team members in an informal and formal team set-up. She understands who to involve for all types of requests.

6. Examples of my ability to assume responsibility include:

During this report period I had many projects and analysis that I was responsible for as well as the production cells that I look after. I worked with testing internally and externally, approvals on customer requests, safety and quality concerns, continuous improvements and cost reductions. Specifically during this period I continued to work with external certification testing to a completion of my responsibility. I also assumed responsibility for working with internal testing on a quality issue in the sealed units department.

Supervisor Agrees: Sarah has also assumed responsibility for improving internal Manufacturing Engineering processes more specifically with the Product Approval process.

7. I have shown progress since the last report (where applicable) as follows:

During this report period I have endeavored to set timelines based on realistic goals and work towards achieving them. This has included limiting active priority projects to three and developing a standardized project information form to follow. I continue to work towards a better understanding of the mechanical systems in my areas. Working on the Patio door parts analysis I had to work with current machines and capabilities as well as costing and setting technical requirements for potentially required machines.

Supervisor Agrees: I strongly agree with Sarah's progress with working with timelines and process equipment.

8. I feel myself to be lacking in exposure to, or requiring improvement in, the following areas:

I continue to work towards strengthening my time managements and project management skills. As stated in my previous report I feel that I could benefit from a better understanding of the machines used in my area. While I have been learning, I am not at the level that I aspire to be.

Supervisor Agrees: Sarah is making good expected progress in the above stated areas.

9. I would like to provide the following additional, relevant information:

Supervisor: [Redacted] P.Eng. [Redacted] (First Registered: [Redacted])

I make the following evaluation and recommendation regarding the progress report for this MIT:

Sarah is a valued team member of the Manufacturing Engineering group as well as ME support for the Terrace Door and Cyprium departments. Her engineering experiences in the last 6 months are valid and appropriate, I believe that the work she has fulfilled follows an excellent progression in learning and difficulty from an engineering standpoint. I certainly recommend that the entire 6 months be recognized as EIT work experience.

In my opinion, during this reporting period, (Jul 28, 2010 - Jan 28, 2011) (6 months), Sarah has completed an equivalent of 6 months full time experience.

Please show my comments to the MIT.
