

Education Through Work Experience: Manufacturing Engineering Co-Op at QRP



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Introduction

I was a manufacturing Engineering Co-Op at QRP, an aerospace manufacturing company specializing in quick release pins and latches for aerospace applications. I found this Co-Op opportunity at the Engineering Connections Fair in the fall of 2021 and worked at QRP during the Spring 2022 semester. This Co-Op served as an ESC 300 credit.

Abstract

This poster demonstrates the advantages and applicability of a work-based learning experience. These opportunities are an excellent way to apply classroom theories and concepts to practical applications. In the same way, work experiences can offer an introduction to new specific material which can be used to draw connections between concepts. This presentation highlights my objectives and achievements as a Manufacturing Engineering Co-Op.

Objectives

- Improve abilities with engineering software, such as SolidWorks
- Design new and improvise existing tooling and fixtures
- Continuous Improvement of manufacturing processes
- Create and deliver professional reports and presentations

Responsibilities

Development, improvement, and implementation of new tooling, fixtures and processes

- Assessment of current tools and fixtures and designing improvements in SolidWorks
- Implementation of new latch line and pin assembly processes and cell layouts to improve efficiency and increase production
- Creating work instruction documentation for newly implemented age treatment process and other assembly operations

Assist in strength, deflection, and deformation testing of new products. Create report analyzing results.



Figure 1. Tool designs for various manufacturing processes.

Educational Experience

- Further education and practice in courses such as computer aided engineering, manufacturing and processes, machine design, and strength of materials.
- Exposure to new specific engineering material not covered in a traditional classroom: age treatment, new manufacturing processes, aerospace standards and codes, etc.



Figure 2. Redesign of riveting fixture.

Conclusions

These work experiences offer a new direction towards education and serve as an excellent supplement to the classroom setting. The experiences also provide education in new specific engineering topics and general information about the industry of interest and working in an engineering environment. Other beneficial aspects are experience interacting with and learning from other engineers and coworkers in other disciplines. Work experiences also offer additional report writing and presenting practice. Co-op opportunities and work experiences are great for anyone wanting to develop their academic career.



Figure 3. Testing of trigger assembly.

Future Work

Another benefit to education through work experiences is an opportunity of employment. These experiences are a great segway into a career as it provides a background into the work that will be done and a familiarity with the company and coworkers. I will be continuing my career with the company in a slightly different role, developing and innovating manufacturing processes.

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