Manufacturing/Process Engineering: A Cooperative Education Experience

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Executive Summary

Working as a Manufacturing and Process Engineer Intern at Daktronics was an excellent hands-on experience. Under my supervisor, Mike Hulscher, I spent much of my time developing new layouts in AutoCAD for different areas of the factory to improve workflow and throughput. In addition, I did design and development work in Creo focused on improving operator safety and ergonomics to help reduce unnecessary physical strain. Overall, I learned a ton during my time at Daktronics and developed practical skills that I will carry with me throughout my engineering career.

Work Assignment

During my co-op as a Manufacturing and Process Engineer Intern at Daktronics in Sioux Falls, I worked under the supervision of Mike Hulscher within the Sioux Falls Manufacturing Engineering department. Throughout the co-op, my focus was to function as a liaison between the engineering team and the production team. My day-to-day responsibilities mostly revolved around improving overall workflow in different areas of the factory, assisting the process technicians with their projects, and helping solve safety and ergonomic problems faced by assembly line operators.

A major portion of my work assignment involved using AutoCAD to manage, update, and create new layouts across multiple areas of the factory. To assist with creating new, more efficient layouts, I first worked on the factory floor with operators to learn the process myself. This was to better understand what we were trying to improve and help identify bottlenecks that were previously overlooked. After I worked in the area for a week or two, I updated and logged new equipment into the existing layout in AutoCAD. Once that was completed, I spent the better part of a week making new layouts in AutoCAD, focusing on increased throughput, and reducing waste in the form of excess motion and operator wait time. Finally, I presented what I thought were the best layouts to the engineering group, area supervisor, and factory managers.

In addition to working on layouts in AutoCAD, I spent a significant amount of time doing 3D modeling in Creo. My work in Creo focused primarily on improving operator safety and ergonomics. By evaluating how operators interacted with equipment, I was able to model practical design changes and machine attachments that improved operator safety and helped reduce physical strain caused by awkward lifting angles and

excessive bending. Seeing my Creo designs go from digital models to functional tools was always rewarding and showed me how even minor changes to a process can make an operator's job easier.

Beyond CAD, I spent time working with operators, process technicians, and engineers to design and modify custom carts needed on the factory floor. I even got to learn how to use a bunch of different power tools and shop equipment that I had never used before. Additionally, being able to build, evaluate, and modify prototypes right in the shop was a wonderful way to escape the desk and work with my hands. It also taught me practical skills that go beyond the workplace.

Relation to SDSMT Education

Coursework at SDSMT gave me a solid theoretical foundation to apply to my work at Daktronics. Courses such as ME 126L (Design for Manufacturing) and ME 265 (Product Design and Development) helped me become comfortable with Autodesk Inventor, which made it easier to transition to Creo and AutoCAD. The courses ME 216 (Intro to Solid Mechanics) and MET 232 (Properties of Materials) gave me the basic knowledge I needed when choosing a material to use in different situations.

Co-op Experience and Career Goals

My time at Daktronics gave me a much greater appreciation for manufacturing/process engineering and the problem-solving involved in improving production. I loved the hands-on aspect of the work, and the experience helped clarify what I enjoy about engineering. I am keeping an open mind about which specific branch of engineering I want to pursue long-term. Overall, this co-op confirmed my passion for the field and gave me valuable experience that I can carry into my future career.