

Projektmodul PO 2011/20180
BWL B.SC
Wintersemester 2021/2022

Smart Manufacturing

Professor / Lecturer

Mr. John Piller

Description

Schedule

Mo Dec 13, 4 pm – 8.00 pm

Tue Dec 14, 4 pm – 8.00 pm

Wed Dec 15, 4 pm – 8.00 pm

Fri Dec 17, 4 pm – 8.00 pm

Mo Dec 20, 4 pm – 8.00 pm

Fri Jan 7th, 4 pm – 8.00 pm

Problem description and targets

Manufacturing today is changing in many ways. The technology available with accessible Cloud based computing allows for higher level algorithms to make predictive analysis of controls and supply chain. The use of Smart Manufacturing technologies in a business needs to be developed according to the needs of that process. The focus of this seminar is to understand the current state of manufacturing along with the evolving technologies available.

Manufacturing Networking (Operations Networks, OT) and Business Enterprise Networks (Information Networks, IT) have been developed parallel to each other over the last 30 years. While Ethernet, Internet, Cloud networks have allowed global connections they have also invited “Bad Actors” to find ways of attacking these networks for financial gain or just disruption of business. Manufacturing Networks traditionally were designed to only be within a Machine or Cell and not communicate outside of their space, so the need for security was minimal. As Smart Manufacturing has created potential benefits to the OT networks, the IT and OT worlds are now being combined and those once separate systems now share in the benefits and costs of the other.

Using methods of business development this seminar will help evaluate the technical costs and benefits of managing a conversion of a manufacturing facility from traditional controls solutions to a cloud-based solution.

Proceeding

This seminar has multiple sections. The initial phase will be high level discussion on technology used in industrial control, manufacturing, and automation. This will be a System Level discussion and not an engineering solutions discussion. Enough detail will be provided so an educated discussion can be had on the technology. There will be a discussion of the types of networks that are used for communication, Manufacturing Networks (OT) and Business Enterprise Networks (IT) connection is key in Smart Manufacturing.

In the second phase we will discuss a patio furniture manufacturing facility. The company is named Polywood. It uses recycled plastic bottles in its production of composite lumber or wood to then produce patio furniture. Polywood has two locations, one in Indiana and one in North Carolina. The company and its components will be discussed to provide a base for the case

study of this seminar.

During the third phase we will discuss the options of Smart Manufacturing or Industry 4.0. We will discuss what it does do, what it can do, and what it does not do. We will also discuss Engineering Project Management in how to estimate time and develop Milestones to create an achievable end goal.

The fourth phase and the final phase will be working with a team to develop a cost plan for the next steps at Polywood. With the guidance of the instructor your team will build the Smart Manufacturing design plan for Polywood to take over the next three years. Lastly there will be a required presentation of the plan. The Final Presentation will be delivered in January 2022 after the Christmas Holiday.

Learning targets

- Application of project management approaches.
- Working in teams.
- Application of creative techniques.
- Target-oriented documentation and presentation of the outcomes.
- Preparation of the presentation and presenting the results.

Assessment

Project management (20%), Business plan (60%), Project presentation (20%)