



UNC CHARLOTTE

The WILLIAM STATES LEE COLLEGE of ENGINEERING

Senior Design Project Description

Company Name	Ametek - Controls Southeast Inc (CSI)	Date Submitted	March 30, 2018
Project Title	Process Optimization for Sulfur Seal Production (AMETEK_SXS)	Planned Starting Semester	Fall 2018

Personnel

Typical teams will have 4-6 students, with engineering disciplines assigned based on the anticipated Scope of the Project. 250 hours are expected per person.

Complete the following table if this information is known, otherwise the Senior Design Committee will develop based on the project scope:

Discipline	Number	Discipline	Number
Mechanical	2	Electrical	
Computer		Systems	5
Other ()			

Project Overview:

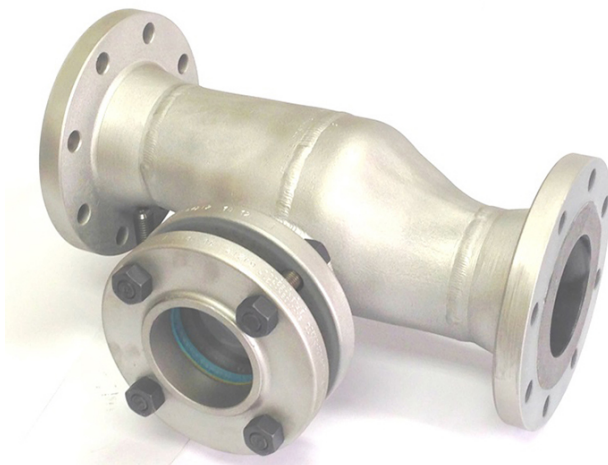
AMETEK, Inc. is a leading global manufacturer of electronic instruments and electromechanical devices with annual sales of approximately \$4.0 billion. AMETEK has more than 15,000 colleagues at nearly 150 manufacturing locations around the world. Supporting those operations are nearly 100 sales and service locations across the United States and in 30 other countries.

Ametek - CSI is a division of Ametek Corporation and is located in Pineville, NC. CSI provides thermal maintenance systems and specialized process equipment for heating, cooling and control of liquid/vapor processes in the petrochemical, chemical, and refining industries. CSI does this through a combination of proprietary products and engineering methods developed over 40+ years of practice. The flagship products are ControTrace® engineered tracing, ControHeat® jacketing and SxSeal® Sulfur Traps. As a technology-neutral supplier, CSI evaluates all aspects for each project to deliver the most optimized heating or process equipment solution available – maximizing savings for both capital and ongoing operational costs. Some product examples:



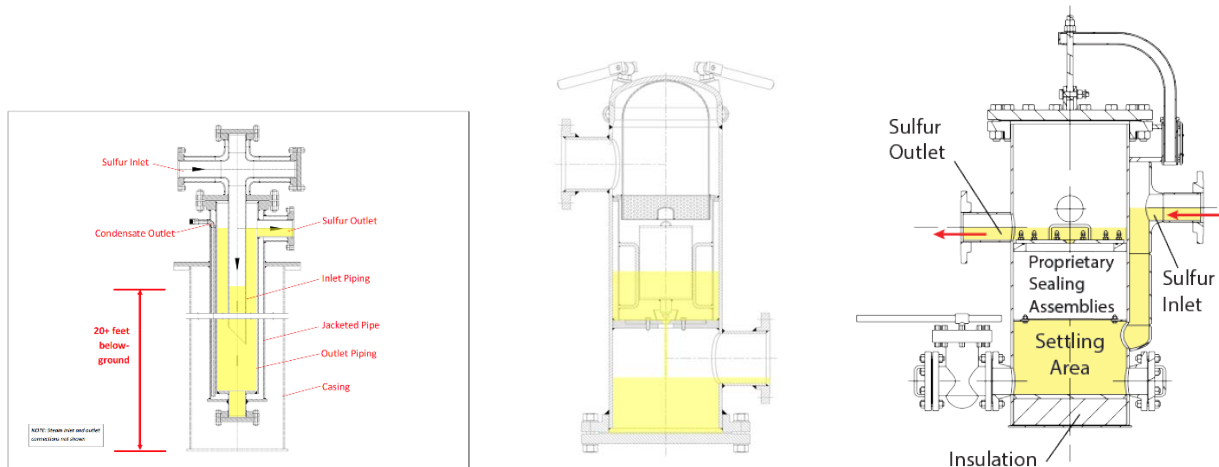
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In oil and gas refining, it is necessary to remove sulfur from the refining stream to comply with environmental regulations that help to prevent “acid rain”. During the sulfur removal process it is necessary to have process equipment that separates the high pressure section of the sulfur recovery unit from the atmospheric sulfur storage container. CSI provides the refining industry with the

widest available choice in sulfur sealing devices through their patented SxSeal® Product line.. Choices are provided for below ground (shown on the left below) and two above ground (the two right drawings below) devices.



The above ground SxSeal's have experienced significant growth in the past 5 years as the features of the product have led to a market share leading product line. The product is produced in higher volumes than CSI's other product lines. The traditional production methods used at CSI are not keeping up with the volume growth and the SxSeal production area is in need of an overhaul. The objective of this project will be to redesign an entirely new production process for the SxSeal production process which increases throughput, reduces lead time, reduces WIP, reduces product cost and increases quality.

Initial Project Requirements:

Conduct a value stream mapping exercise (or other lean six sigma tool) to identify process flow, communication flow and takt time. Consider using simulation models to characterize current state and simulate improvements in recommended configurations. Develop a future and current state of the process flow identifying any wastes, constraints and actions required to create synchronous flow. Work with production team to optimize current 5S state. Utilize the ERP system tables and other data sources to create automated reports that calculates product specific takt times and verify by conducting time studies on the manufacturing floor. Help integrate Material Test Report (MTR) verification and MTR Matrix development into the Material Control receiving process.

Expected Deliverables/Results:

- Load Leveling – synchronous flow
- Cycle Time Reduction
- Inventory Reduction
- Quality Improvement
- Constraint identification and minimization
- Improved / more efficient use of ERP system



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- Exception reporting to improve robustness of process, speed and accuracy of decisions, eliminate/minimize multiple manual touches of information - Use Microsoft SQL server Management Studio to accomplish above
- Automated MTR verification and MTR Matrix Generation

Disposition of Deliverables at the End of the Project:

Current and future state maps, automated reports and any third-party software acquired or hardware developed to create synchronous flow will stay with the Industry sponsor.

List here any specific skills, requirements, knowledge needed or suggested (If none please state none):

- Ability to use Microsoft SQL Server Management Studio to access ERP tables and develop reports to help calculate takt times, create exceptions reports, and data verification
- Familiarity with Lean Six Sigma Tools
- Familiarity with Industrial Fabrication components and nomenclature
- Basic understanding of MIG, TIG and Flux-Core welding
- Design reviews will be done at CSI's site in Pineville, NC.