

Senior Design Project Description for SPRING 2017

Project Title: Radial Cage Optimization (SG_RCOPTIM)

Supporter: Schaeffler Group USA

Supporter Technical Representative: ASSIGNED

Faculty Mentor: _____ ASSIGNED TBD (check one)

Single Team _____ Dual Team (check one)

Personnel (EN/ET): _____ E, _____ Cp, _____ Cv, 2 M, 2 SE

(Complete if the number of students required is known)

Expected person-hours: (250 per student)

Description of Project:

Schaeffler Group is a multinational corporation that supplies engineered components to the automotive and industrial sectors. Some notable customer of the Schaeffler Group are Ford, General Motors, Fiat Chrysler Automobiles, John Deere, and Harley Davidson. Components supplied by Schaeffler Group range from a simple ball bearings to Multiair, a hydraulically-actuated variable valve timing which is supplied to Fiat FIRE engines and the Chrysler Tigershark engines.

UNCC students will support a process optimization project in the Fort Mill Prototype Dept. of Schaeffler Group USA. The Fort Mill Prototype Dept. supports all prototyping activities for the North America Region. The department has very specialized equipment and personnel to support development and production activities.

In this project the students will make recommendations on how to optimize the radial cage manufacturing line. The guiding principles that should be used for the optimization activities are ergonomics, lean principals, space usage, and process requirements. During the project, the students will have access to our local manufacturing plants for idea generation and benchmarking. During the idea generation phase, the students will have the opportunity to see manufacturing of the Variable Cam Timing (VCT) supplied to the Ford Nano Engine and radial cage production for the Corvette. Additionally, the students will receive support from the Schaeffler lean manufacturing Dept., MOVE. They will be available to provide trainings on lean manufacturing concepts and support in workshops to solve/study manufacturing problems on the production line.

Initial Project Requirements (e.g. weight, size, etc.):

Two areas that we would like the students to focus the optimization activities are:

1. The layout of the radial cage production line
2. Minimum two pieces of equipment or processes that would have the greatest

Return on Investment (ROI) for the proposed improvements is required.



UNC CHARLOTTE

The WILLIAM STATES LEE COLLEGE of ENGINEERING

Expected Deliverables/Results:

The final deliverables for this project will be:

1. Current status – layout, production rate, problems, etc.
2. Detailed layout for the optimized radial cage production line
3. Design package including calculations on two equipment/process
4. Supporting documentation to justify improvements and changes

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

CAD Design

Lean Manufacturing

Ability to visit Schaeffler facility in Fort Mill