



UNC CHARLOTTE

The WILLIAM STATES LEE COLLEGE of ENGINEERING

Senior Design Project Description for SPRING 2016

Project Title: Band Clamp Tool (SAP_CLAMP)

Supporter: Saprex

Supporter Technical Representative: ASSIGNED

Faculty Mentor: _____ ASSIGNED TBD (check one)

Single Team Dual Team _____ (check one)

Personnel (EN/ET): _____ E, _____ Cp, _____ Cv, 5 M, _____ SE

(Complete if the number of students required is known)

Expected person-hours: (250 per student)

Description of Project:

Saprex provides customized, composite based insulation systems (Axiom) for truck and two wheeled vehicle exhausts. At this time Saprex makes approximately 200,000 of these per year. The insulation needs to be firmly attached at both ends so that it does not come loose during vehicle operation. Mechanical bands similar to pipe clamps are used to attach the insulation. Currently the bands are assembled manually and a manual device is used to firmly attach the bands and cut the excess off. The average time from start of clamp assembly to completion is two minutes. This project is to develop a device that will improve the process to reduce the total time by at least 30 seconds.

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

The device that attaches the band and cuts the strap to the correct length should be automated. The device should stop at the correct torque without any overtightening or under tightening. The device should stop when the desired torque is reached. The project team must work with Saprex to determine the desired torque. The design should prevent slippage. It is acceptable to modify an existing device.

Expected Deliverables/Results:

A complete functioning prototype of the band clamp tool must be provided. Testing must be performed to demonstrate the time savings.

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

None.