

## Senior Design Project Description for FALL 2016

### Project Title: Shot Nozzle Design Part 2 (CW\_NOZZLE2)

Supporter: Curtiss Wright

Supporter Technical Representative: ASSIGNED

Faculty Mentor:  ASSIGNED  TBD (check one)

Single Team  Dual Team  (check one)

Personnel (EN/ET):  E,  Cp,  Cv,  6 M,  SE

(Complete if the number of students required is known)

Expected person-hours: (250 per student)

#### Description of Project:

Curtiss Wright designs and builds shot peening machines. These machines generate highly controlled blasting with carefully controlled process parameters and media. The media itself may be cast steel, cut wire, glass, ceramic, or stainless shot. The shot is delivered to the part through a nozzle. These nozzles are used in the production of components for the F-16, F-22, F-35 and various commercial programs in the Shelby NC facility.

Various nozzle designs are used. Each nozzle design has different performance parameters. This project is to investigate and quantify the performance characteristics of the different nozzle designs.

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

This project will use the results of a recently completed project in which an apparatus was constructed to test various shot peening nozzle designs. This project will use this test apparatus to characterize the various existing nozzle designs. The work will include in-depth predictive modelling to clarify what drives the performance.

#### Expected Deliverables/Results:

A report shall be provided documenting the results of the testing and analysis. This will include the nozzle performance characteristics, recommendations for the 'optimal' nozzle, and how these improved nozzles could be adapted for use in gravity-fed machines (which might require a new mixing nozzle design).

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

None