

## Senior Design Project Description for SPRING 2017

### Project Title: Thermal Hole Inspection (WGT\_HOLE)

Supporter: Winbro Group Technologies

Supporter Technical Representative: ASSIGNED

Faculty Mentor: \_\_\_\_\_ ASSIGNED  TBD (check one)

Single Team  Dual Team \_\_\_\_\_ (check one)

Personnel (EN/ET):  1  E,  1  Cp, \_\_\_\_\_ Cv,  2  M, \_\_\_\_\_ SE

(Complete if the number of students required is known)

Expected person-hours: (250 per student)

#### Description of Project:

Winbro Group Technologies is a world leader in the design and manufacture of advanced machines and technologies based on non-conventional processes. Winbro high technology machine systems produce cooling holes and forms in components used in the most demanding part of aero and industrial gas turbines.

This project is to design and create a thermal imaging inspection system that can be used in the inspection of cooling holes in aerospace and industrial gas turbine parts. A rough conceptual design has been developed by Winbro Group.

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

Winbro Technologies will provide the thermal camera with focus optic as well as a part holding fixture. In addition a scrap part will be provided for the project team to use.

The conceptual design must be verified. Hardware and software requirements are to be determined.

Project requirements include:

- Specify the correct hardware to make sure it can conform.
- Hardware should be capable of 360<sup>0</sup> rotation
- Integrate the hardware and software (open source software to be used)
- Program the software
- Run gauge R&R testing and analysis
- Interface to connect rotational hardware and part holding fixture
- Airlines are required to pressurize the part

#### Expected Deliverables/Results:

A functional and tested thermal imaging system is to be provided. An operating manual with design drawings will be included.



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

None