

# MASTER ASSIGNMENT: LIMOUSINE

(LIMIT CYCLE of THERMO-ACOUSTIC OSCILLATIONS IN GAS TURBINE COMBUSTOR)

For ThW CTW

More information: [j.c.romancasado@utwente.nl](mailto:j.c.romancasado@utwente.nl)

Office Horst N244

## **Use of EXPLOSIONS to measure the Flame Transfer Function of burners**

Modern gas turbines need to be efficient and clean and to achieve both of the goals, lean premixed combustion technology is used. However, the turbines are more prone to the appearance of combustion instabilities that will damage the engines and reduce its operational life.

The Flame Transfer Function (FTF) relates the velocity variations in the inlet of the burner to the variations of instantaneous heat release of the flame. The FTF is a very important tool for the prediction and control of the stability of the flame. The traditional way of measuring the FTF's is to impose a sinusoidal variation in the air or fuel flow. The new approach will obtain the FTF from the response of the system to a sudden increase of pressure, such like the shock wave produced by an explosive device.

Goal: Develop a system able to deliver controllable and repeatable explosions of sufficient amplitude to excite the flame in a SAFE way. Tune the DAQ card for the recording of the event and compare the FTF with the one obtained used traditional methods.

Methods: Literature survey. Design and construction of the set up. Test the devices in the LIMOUSINE set up