# Plan Overview

*A Data Management Plan created using DMPonline*

**Title:** Experimental and Numerical Assessment of the Hydrogen Micromix Combustion Concept at Elevated Pressures for Gas Turbine Applications

**Creator:**Alexandros Giannouloudis

**Principal Investigator:** Alexandros Giannouloudis

**Data Manager:** Alexandros Giannouloudis

**Affiliation:** Cranfield University

**Template:** DCC Template

**ID:** 41436

**Last modified:** 05-06-2019

**Copyright information:**

The above plan creator(s) have agreed that others may use as much of the text of this plan as they would like in their own plans, and customise it as necessary. You do not need to credit the creator(s) as the source of the language used, but using any of the plan's text does not imply that the creator(s) endorse, or have any relationship to, your project or proposal

# Experimental and Numerical Assessment of the Hydrogen Micromix Combustion Concept at Elevated Pressures for Gas Turbine Applications

## Data Collection

**What data will you collect or create?**

- Standard text, image and mixed document files (.txt, .doc(x), .pdf, .png, .jpg) (<2GB)
- Matlab (.m, .mat) for processing numerical data, and LabView (.vi) for controlling test rig equipment (<2GB)
- Solidworks for CAD models and drawings for experimental rigs (.SLDPRT, .dwg) (<20GB)
- Experimental results from combustion tests (.csv, .xls(x), .pdf, .png) (<20GB)
- STAR-CCM+ for numerical data of combustion simulations (.sim) (<20TB)

Existing publicly available published data will be used with reference.
Existing models and data from Cranfield University will be used.

**How will the data be collected or created?**

For standard texts or images and documents, the format shall be: "name_type_vxx", where the name is representative of the content of the document, type refers to whether it is a report or presentation etc and vxx is the version of the document.
A generic naming format will be applied to all the rest of the datasets as follows: "yyyy-mm-dd_name_vx.x.x.x", where yyyy-mm-dd is the date, vx.x.x.x is the version followed by a one-digit number sequence divided by dots.
The name part, for each data-set, represents something different:

- For Matlab and LabView files the name represents the function of the code file or virtual instrument
- For CAD files, the name of the designed part, assembly or drawing is used
- For experimental results the name shall define the specific conditions of each test case in the following format "PxxTxxxΦx.xx" where P is pressure in bar, T temperature in K and Φ is the equivalence ratio and x represents the corresponding value. In this case, cxx is added to the format, to account for the tested injector configuration and instead of version, "txx" will represent the number of tests repeated on a specific case. So the format here is "yyyy-mm-dd_PxxTxxxΦx.xx_cxx_txx"
- For simulations the same format as in experimental results can be used.

Regarding data quality for simulations and experimental results uncertainty quantification will be performed, for experiments the instrumentation will be calibrated and repetition of results will be assessed.

## Documentation and Metadata

**What documentation and metadata will accompany the data?**

Readme files will accompany all data sets to explain the content and way of the utilisation of the data. These files will include information on:

- the methodology of data acquisition
- the methodology for data processing
- measurement techniques (for experiments)
- experimental and numerical test conditions
- any software (including version) required to view data/documents
- folder and file naming convention

Metadata will be used for each dataset and will include tags on:

- names of people involved
- dataset creation date
- tags descriptive of the content
- funder information
- filetype

## Ethics and Legal Compliance

**How will you manage any ethical issues?**

No ethical issues arise from the work to be undertaken.
CURES approval has been granted and all aspects of work comply with Cranfield's ethics framework.

**How will you manage copyright and Intellectual Property Rights (IPR) issues?**

Intellectual Property Rights and copyrights of my work are subject to the conditions of the ENABLEH2 project Grant Agreement and the relevant Data Management Plan.

## Storage and Backup

**How will the data be stored and backed up during the research?**

All types of data will be stored in PC hard drive as well as to external hard drives to be acquired for keeping back-ups.
Weekly, all new data will be stored in the personal network drive provided by Cranfield University, where it is backed up.
Data will also be shared to the Network and Community tool of the ENABLEH2 project.

**How will you manage access and security?**

Access to the data will be restricted by password.
Password protection will be used for the external hard drives as well, and the drives will be stored in a locked office.
Partners will have access to the data through the Network and Community tool of the ENABLEH2 project.

## Selection and Preservation

**Which data are of long-term value and should be retained, shared, and/or preserved?**

Raw and processed data and all relevant datasets will be stored in Cranfield's repository, CORD for at least 10 years.
Before the end of the project, the lead investigator along with his supervisors will decide which datasets shall be preserved with CORD and which are not important.
Sharing datasets is subjected to the conditions referred to the Grant Agreement of the ENABLEH2 project.

**What is the long-term preservation plan for the dataset?**

For the long term, the datasets will be preserved in CORD (for at least 10 years)
The Network and Community tool of the ENABLEH2 project can also be utilised as a long term repository of datasets.
No costs are associated to these activities

## Data Sharing

**How will you share the data?**

Data will be shared publically through open access scientific publications, Cranfield University's CORD repository and through the Network and Community tool of the ENABLEH2 project.

**Are any restrictions on data sharing required?**

Data sharing restrictions are a subject of the ENABLEH2 Grant Agreement and the relevant Data Management Plan.

## Responsibilities and Resources

**Who will be responsible for data management?**

Responsibility for data management lies with the primary investigator and the ENABLEH2 project office. Review of the DMP will be in collaboration with the supervisors of the investigator's work at regular progress meetings.
Data ownership is subject to the conditions of the ENABLEH2 Grant Agreement.

**What resources will you require to deliver your plan?**

Relevant training on Data Management has been completed and Research Data Managers of Cranfield University provide continuous support. No extra costs are foreseen for Data Management.