INNO-SOFC Deliverable D5.2

Data Management Plan

Date: 04 04 2016

Lead Beneficiary: ENEA

Nature: Report

Dissemination level: Public

Summary:

The Data Management Plan (DMP) is a document summarizing data sets and patents that are employed in the project INNO-SOFC. Each data set will have an appropriate meta-data information to help facilitate the knowledge and new information produced during the project. This implies also a policy on the ways data can or will be shared. Finally, plans on how the data will be stored long-term are expressed. In the beginning of the project, the DMP serves as an outline of the data sharing plan. DMP will be updated constantly during the project when more detailed information of each data set is gathered. New data sets to be shared may also be added.

INNOSOFC DATA MANAGEMENT PLAN

Introduction

As a Projects taking part in the Open Research Data Pilot, INNOSOFC intends to develop a Data Management Plan (DMP), the first draft being the present Deliverable submitted after 6 Months, and to be updated during the project lifetime. Whenever significant changes arise in the project, such as

- new data sets
- changes in consortium policies
- external factors

a new version of the DMP shall be uploaded taking into account the major developments. In any case, the DMP shall be updated as part of the mid-term and final project reviews of INNOSOFC

Objective

The objective of the DMP is to provide a structured form of repository for the consultation of data, measurements, facts and know-how gathered during the project, for the benefit of a more systematic progress in science. Where the knowledge developed in the EU-funded project is not governed by intellectual property for the purpose of commercial exploitation and business development, it is important to valorize the results of project activities by facilitating take-up of key data and information for further elaboration and progress by other projects and players in Europe.

Structure of the DMP

The DMP will give an outline of knowledge that stands at the basis of INNOSOFC ("Background") in the form of Data sets and Patents that are employed in the project. It is then necessary to define the data sets to be gathered within the project lifetime, both through indexing and description of data origin, nature, scale and purpose. To facilitate referencing and reuse of data, appropriate meta-data (data about the data) shall be provided. This implies also a policy on the ways data can or will be shared. Finally, plans on how the data will be stored long-term need to be expressed. The DMP shall be elaborated on behalf of each INNOSOFC partner to begin with, and may be redesigned to represent the data repository for INNOSOFC as a whole if deemed necessary or more coherent.

In detail, the following information will be requested from each partner in the form of tables:

0. Background data
Identifiers for the know-how/data sets that are utilized within the project, based on previous assets. These should have a univocal reference, that can trace to the set of data leading to the background knowledge.

1. Data set reference and name, and approximate size
Identifier for the data set to be produced. This should be a univocal reference, ultimately possibly a DOI (digital object identifier). The scale of the data set should be indicated (number and bytes size of files or of data points)

2. Data set description

Description of the data that will be generated or collected, its origin (in case it is collected), nature (in case it is result of original work or elaboration) and whether it underpins a scientific publication. A description of the technical purpose of the data gathered will be given. Information on the existence (or not) of similar data and the possibilities for integration and reuse may be indicated.

3. Standards and metadata

Reference to existing suitable standards, codes, regulations, guidelines or best practices the data have complied to and/or are akin to. If these do not exist, an outline on methodology and how metadata can/will be created should be given.

4. Data sharing

Description of how data will be shared, including access procedures, embargo periods (if any), outlines of technical mechanisms for dissemination and necessary software and other tools for enabling re-use, and definition of whether access will be widely open or restricted to specific groups. Identification of the repository where data will be stored, if already existing and identified, indicating in particular the type of repository (institutional, standard repository for the discipline, etc.).

In case the dataset cannot be shared, the reasons for this should be mentioned (e.g. ethical, rules of personal data, intellectual property, commercial, privacy-related, security-related).

5. Archiving and preservation (including storage and backup)

Description of the procedures that will be put in place for long-term preservation of the data. Indication of how long the data should be preserved, what is its approximated end volume, what the associated costs are and how these are planned to be covered.

INNOSOFC Data Sets Identifier – General

Call: H2020-JTI-FCH-2014-1
Topic: FCH-02.5-2014
Type of action: FCH2-RIA
Proposal number: 671403
Start project: 01.09.2015
End project:28.02.2108

Project focus:
Development of innovative 50 kW SOFC system (stacks and key components) and related value chain for full market penetration of commercial-scale stationary fuel cells.

Partner-specific Data sets

VTT

Knowledge owned by PPs before the project used for the project	
Data sets	*Patents/References*

Knowledge produced and shared by partners during the project						Tools for the diffusion of knowledge created by the project			
Data set identifier and scale (amount of data)	*Origin & Nature (literature, experiments, analysis, modelling, etc.)*	*Purpose (technical description)*	*Metadata (Standards, references)*	*Restrictions (Patents, IP, other)*	*Data storage means*	*Peer-reviewed scientific articles (green/gold diff.)*	*Other publications (leaflets, reports, …)*	*Other tools (website, newsletter, press releases)*	*Events (seminars, workshops, Conferences, fairs)*

EAP_Stack_Test, ~10MB	Experimental	EAP	INNO-SOFC STACK TESTING	Stack specific data is confidential; test conditions are confidential; IEC standards are not for free: confidentially shared within consortium	5 years backed-up data storage (Real-time replicated MySQL database)	Article?			
Transient_Stack_Test, ~10MB	Experimental	Transient events and cycling tests, stack characterisation	INNO-SOFC STACK TESTING	Stack specific data is confidential; test conditions are confidential; IEC standards are not for free: confidentially shared within consortium	5 years backed-up data storage (Real-time replicated MySQL database)	Article?			
Estimator_Models	Modelling + experimental	Estimator models to replace physical measurements		Commercial					
CFD_Models	Modelling	CFD models and stress strength analysis of		Commercial					

		stack/system interfaces							

ELCOGEN Oy

Knowledge owned by PPs before the project used for the project	
Data sets	*Patents/References*

Knowledge produced and shared by partners during the project						Tools for the diffusion of knowledge created by the project			
Data set identifier and scale (amount of data)	*Origin & Nature (literature, experiments, analysis, modelling, etc.)*	*Purpose (technical description)*	*Metadata (Standards, references)*	*Restrictions (Patents, IP, other)*	*Data storage means*	*Peer-reviewed scientific articles (green/gold diff.)*	*Other publications (leaflets, reports, …)*	*Other tools (website, newsletter, press releases)*	*Events (seminars, workshops, Conferences, fairs)*

"INNO-SOFC STACK TESTING" (250 kB)	Test programs and tasks	Four test programs and 17 test tasks for Elcogen stacks in INNOSOFC project,	IEC TC105, 62282-7-2 and SOCTESQA protocols under development, data from Convion, VTT and Jülich	Test conditions are confidential; IEC standards are not for free: confidentially shared within consortium	Digital, on Elcogen server	TBD	TBD	Possible feedback to IEC and SOCTESQA	TBD

CONVION

Knowledge owned by PPs before the project used for the project	
Data sets	*Patents/References*
C20 20kW system data	Patents as described Annex 1 (Description of Action (PartB)).

Knowledge produced and shared by partners during the project						Tools for the diffusion of knowledge created by the project			
Data set identifier and scale (amount of data)	*Origin & Nature (literature, experiments, analysis, modelling, etc.)*	*Purpose (technical description)*	*Metadata (Standards, references)*	*Restrictions (Patents, IP, other)*	*Data storage means*	*Peer-reviewed scientific articles (green/gold diff.)*	*Other publications (leaflets, reports, …)*	*Other tools (website, newsletter, press releases)*	*Events (seminars, workshops, Conferences, fairs)*
C20 operationanl data, CSV-files ~200MB	experiments	Development of model based control		Convion IP	USB hard drive				
Innosofc system design	3D-modelling, manufacturing drawings	Design and manufacturing of system	IEC-62282-3 IEC 60079 IEC 60204 IEC 61000 IEC 60529	Convion IPR	Backupped PDM cloud				
Innosofc system operation data (5GB)	experiments	Validation of product		Operational data is Convion IPR	Hard drive (RAID), USB backup + periodic backup		Conference publications on results		Fuel Cell Expo, European fuel cell forum

Innosofc system performance figures	experiments	Validation of product	IEC-62282-3 IEC 61000	System design is Convion IP	Hard drive (RAID), USB backup + periodic backup		Conference publications on results		Fuel Cell Expo, European fuel cell forum

ELRING KLINGER

Knowledge owned by PPs before the project used for the project	
Data sets	*Patents/References*

Knowledge produced and shared by partners during the project						Tools for the diffusion of knowledge created by the project			
Data set identifier and scale (amount	*Origin & Nature (literature, experiments,*	*Purpose (technical description)*	*Metadata (Standards, references)*	*Restrictions (Patents, IP, other)*	*Data storage means*	*Peer-reviewed scientific*	*Other publications (leaflets,*	*Other tools (website, newsletter,*	*Events (seminars, workshops,*

of data)	*analysis, modelling, etc.)*					*articles (green/gold diff.)*	*reports, …)*	*press releases)*	*Conferences, fairs)*
Cost analysis for interconnect manufacturing (~10 MB)	analysis, offers, calculated cost	Evaluation of implemented quality and production processes	N.A.	EK process knowledge	internal	N.A.	N.A.	N.A.	N.A.
QA on interconnects (~500 MB)	measurement data	QA optimization	N.A.	EC design (EC IP)	internal	N.A.	N.A.	N.A.	N.A.
Process FMEA on EC interconnects	analysis	QA optimization	N.A.	EK process knowledge	internal	N.A.	N.A.	N.A.	N.A.

FORSCHUNGSZENTRUM JÜLICH

Knowledge owned by PPs before the project used for the project	
Data sets	*Patents/References*

Knowledge produced and shared by partners during the project						Tools for the diffusion of knowledge created by the project			
Data set identifier and scale (amount of data)	*Origin & Nature (literature, experiments, analysis, modelling, etc.)*	*Purpose (technical description)*	*Metadata (Standards, references)*	*Restrictions (Patents, IP, other)*	*Data storage means*	*Peer-reviewed scientific articles (green/gold diff.)*	*Other publications (leaflets, reports, …)*	*Other tools (website, newsletter, press releases)*	*Events (seminars, workshops, Conferences, fairs)*
tbd	experiments	Characterization of stack behavior	"INNO-SOFC STACK TESTING"	Stack specific data is confidential; test conditions are confidential; IEC standards are not for free: confidentially shared within consortium	Internal & project server	tbd	N.A.	Project website	TBD

ENEA

Knowledge owned by PPs before the project used for the project	
Data sets	*Patents/References*
DRT analysis methods for EIS analysis	C. Boigues-Muñoz et al. *Journal of Power Sources* 286: 321-329 (2015) C. Boigues-Muñoz et al. *Journal of Power Sources* 294: 658-668 (2015)
Test procedures for SOFC stacks	IEC TC105 documents, restricted to IEC use SOCTESQA project (FCH JU, Grant Agreement 621245) for the definition of SOFC stack test procedures

Knowledge produced and shared by partners during the project						Tools for the diffusion of knowledge created by the project			
Data set identifier and scale (amount of data)	*Origin & Nature (literature, experiments, analysis, modelling, etc.)*	*Purpose (technical description)*	*Metadata (Standards, references)*	*Restrictions (Patents, IP, other)*	*Data storage means*	*Peer-reviewed scientific articles (green/gold*	*Other publications (leaflets, reports, …)*	*Other tools (website, newsletter, press releases)*	*Events (seminars, workshops, Conferences, fairs)*

						diff.)			
High-temperature sealing tests (3 x 240 h tests)	Experimental	Verify sealing integrity in 2-part assembly with material CTE mismatch	Procedure agreed with PP Convion	None foreseen	Digital, on ENEA, Convion and INNOSOFC supports	TBD	TBD	TBD	TBD
Test procedures for INNOSOFC stacks (1 reference document and 9 protocol documents)	Literature (international standards) and other projects (SOCTESQA)	Harmonized test conditions and results presentation	IEC TC105, 62282-7-2 and SOCTESQA protocols under development	IEC standards are not for free: confidentially shared within consortium	Digital, on ENEA and INNOSOFC supports	TBD	TBD	Possible feedback to IEC and SOCTESQA	TBD
Platforms and channels for results exploitation	Liaisons and associations	Promoting INNOSOFC results and exploitation	Procedures provided by associations (Enterprise Europe Network, …..)			No	Project promotion sheets, flyers, specifications	Association portals	Fairs and conferences (TBD)

ENERGY MATTERS

Knowledge owned by PPs before the project used for the project

Data sets	*Patents/References*

Knowledge produced and shared by partners during the project						Tools for the diffusion of knowledge created by the project			
Data set identifier and scale (amount of data)	*Origin & Nature (literature, experiments, analysis, modelling, etc.)*	*Purpose (technical description)*	*Metadata (Standards, references)*	*Restrictions (Patents, IP, other)*	*Data storage means*	*Peer-reviewed scientific articles (green/gold diff.)*	*Other publications (leaflets, reports, …)*	*Other tools (website, newsletter, press releases)*	*Events (seminars, workshops, Conferences, fairs)*
application analysis	Market research Interviews	Determine business cases EU 27	Energy prices Subsidy regimes in EU Regulatory framework	EM confidential. Only shared within consortium	Digital, on INNOSOFC supports				
User requirement	Market research Interviews	Enable discussion on technical configuration		EM/Convion confidential. Only shared within consortium					

Future scenarios	Public reports Expert opinions	Input for sensitivity analysis			Digital, on INNOSOFC supports				
Case studies	Market research & interviews with experts	Determine potential and interest						Website INNOSOFC	FCEN webinar, workshops tbd