



# **TEMONAS**

**TEchnology MOnitoring and ASsessment  
(278862)**

*Peter Claassen*  
*CLIMT GmbH, Graz / Austria*

# General Overview

## *Project & Partnership description*

- Technology Monitoring and Assessment
- Duration: Plan: 01.09.2011-28.02.2013  
Actual End: 31.05.2013 (+3 Mo)
- Budget
- Plan Total Budget: € 1,800,602 FCH-JU Contribution: €1,132,046
- Actual Total Budget: FCH-JU Contribution:
- Partnership/consortium description

CLIMT GmbH (AT)	
PLANET Energie GbR (DE)	CSMS (PL)
European Fuel Cell Forum (EFCF) AG (CH)	Bana Consulting Ltda (PO)
CEA LITEN (FR)	synergesis consult.ing (AT)

# Project achievements

## Basic Information

- **Project main objectives**
- *Provide the FCH-JU PO with a Technology Monitoring and Assessment Tool that meets the objectives of the 2010 cross cutting call:*
- *CSA with main purpose to:*
  - *“enable the FCH-JU to obtain an accurate assessment of progress both towards its objectives and its position within the global field of energy technologies”*
- **Project scope includes**
  - *Integrated tool development*
    - *Methodology development*
    - *IT implementation*
  - *Case Studies for validation of the tool*
  - *Execution and maintenance are not part of the remit*
- **Project Status**
  - *Completed*
  - *Tool Installed, Key Users trained*

# Project achievements

## Tool Functionalities

### • Data Entry Structure Definition

- Trade-off between completeness of data for broad analytical base and process complexity

- Object dependent

- Description sets
- Parameter masks

- Data confidentiality, quality and consistency

- Confidentiality & quality

- Source based

- Exception routines

- 2 person process with authorization

- Consistency

- Imprecise number process

- Attribute based parameter groups

- Stringency and tampering with data

- Full log history and source storage

The screenshot displays the 'RESEARCH DATA -> Research objects' software interface. The top window shows a grid view of performance data for '2006 - Excel Sheet 2006'. The grid includes columns for Parameter, Operating cond. description, Input symbol, Entered value, Entered unit, Deviation, Precision, Min value, Value, Max value, Unit, Reliability level, Confidentiality level, and State. Several cells are highlighted with yellow circles, including '0.55 W/cm²', '85 %', '550.00 mW/cm²', and 'at full power'.

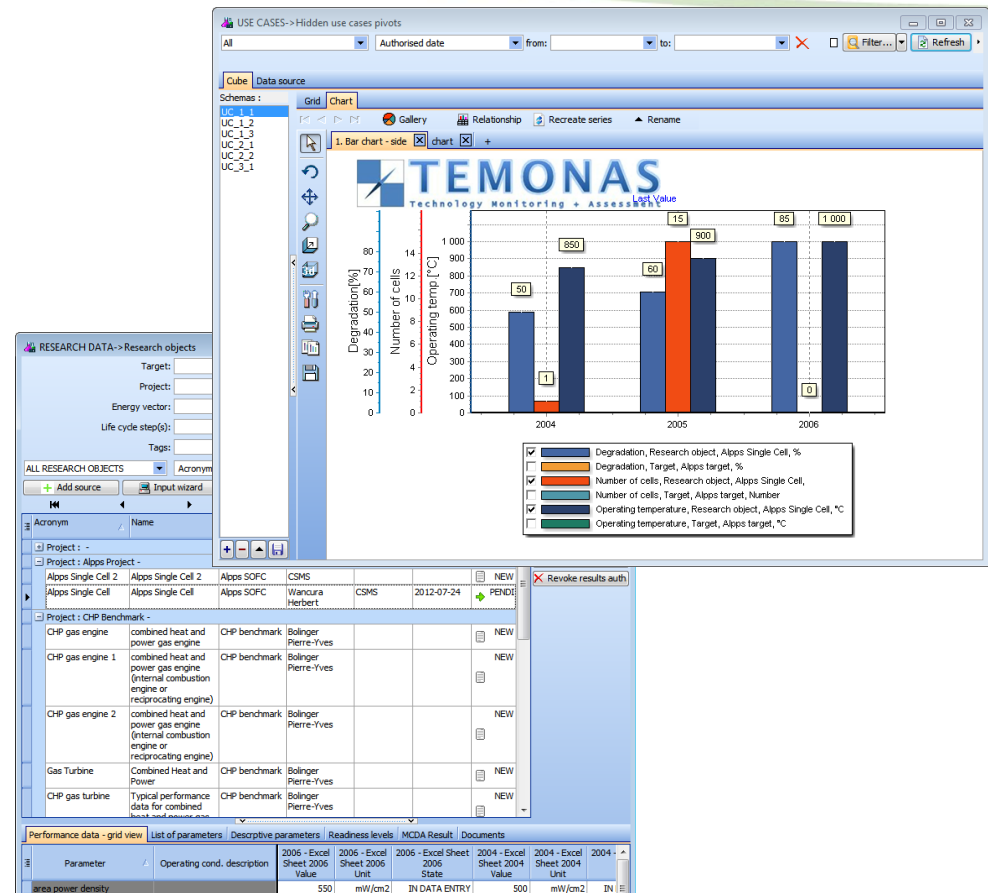
Below the grid, a detailed form for '2006 - Excel Sheet 2006' is shown. It includes sections for General data, Technical data, Application, Evaluation boundaries, and Other. The 'Technical data' section includes fields for Energy vector (SOFC), Life cycle step(s) (Fuel cell), and Technology type. The 'Application' section includes fields for Application area (Transport & Refuelling Infrastructure), Application type, and Application. The 'Evaluation boundaries' section includes fields for Technical perimeter (Component), Testing scale, and Testing environment. The 'Other' section includes a field for Parameter mask (Alps SOFC).

A dropdown menu is open for the 'Reliability level' column, showing options: 1 - Very weak, 2 - Weak, 3 - Average, 4 - Strong, and 5 - Very strong. The '4 - Strong' option is selected.

# Project achievements

## Tool Functionalities (2)

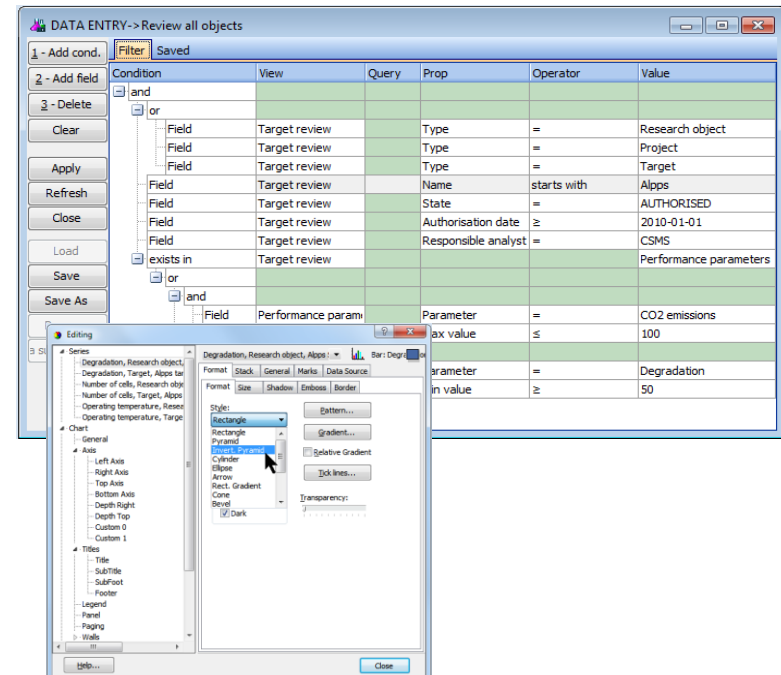
- *Multidimensional Assessment, Benchmarking and Monitoring*
  - *Object based:*
    - *Research objects,*
      - *individual*
      - *aggregated*
    - *Target Objects*
    - *Related objects*
      - *Program objects*
      - *Call objects*
      - *Source objects*
      - *Research performer*



# Project achievements

## Tool Functionalities (3)

- *Single RO assessment to Multi-parameter comparison*
  - *Advanced SQL query editor & pivot table*
  - *Pre-customised standard evaluations for regular major use cases*
    - *Project assessment*
    - *Technology assessment*
    - *Progress monitoring*



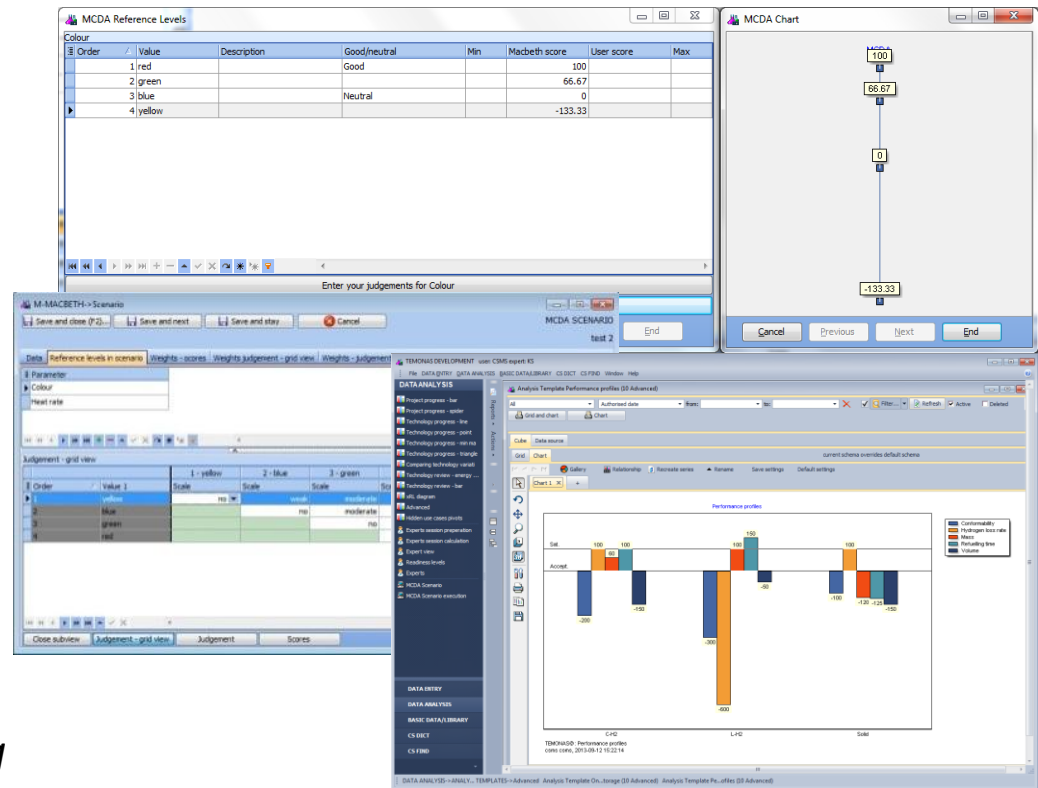


# Project achievements

## Tool Functionalities (4)

### Multi-criteria comparison

- **Implementation of the MACBETH methodology and algorithms**
- **Normalization (linear/non linear) based on ratings of attractiveness**
- **Prioritization and weight definition**
- **Aggregation to single attractiveness rating**
- **Robustness/Sensitivity testing**

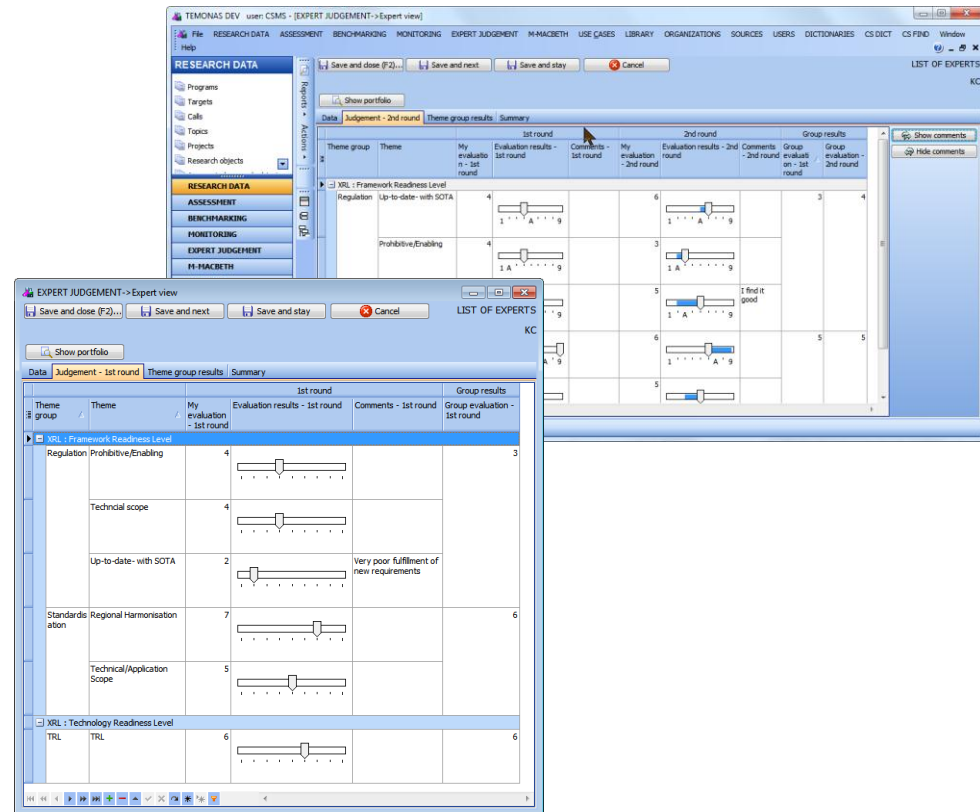


# Project achievements

## Tool Functionalities (5)

### Commercialization ranking, Radar

- **Additional function of IT supported Delphi polling of experts**
- **Use of standardized scales**
  - **Ranking scales**
    - TRL, MRL, DDS
  - **Likert scales**
    - FRL, PCL
  - **Market information**
    - MA, RCA





# Project Utility

## Relationship to current and future FCH-JU Activities

- Software will be used by the FCH-JU PO for
  - Project and program assessment
  - Knowledge management
- Part of (future) Open Access Requirements for Projects (as in H2020)
- Content will be individually agreed on a project per project base
- Entry by coordinator via web interface

The top screenshot shows the login page of the TEMONAS web interface. It has a header with the 'New Energy World JU' logo and the 'TEMONAS Technology Monitoring + Assessment' logo. Below the logos, there are input fields for 'User' (containing 'an') and 'Password' (masked with dots). A 'Login' button is visible.

The middle screenshot shows the 'DATA ENTRY - WWW Data entry' page. It features a table with the following data:

Select	Accession	Name	Parameter template	Responsible analyst	Authorised by	Authorisation date
1	Fiat Elettra H2	Fiat Elettra Car	Hydrogen Car	Glatthor Katharina		
2	Sample car demo	Sample car data	AH11 Inpt1	Novak Aleksander		

The bottom screenshot shows the 'DATA ENTRY - WWW Data entry' page with a form for entering new data. It includes a 'Comments' section with a text area containing 'This is a sample of data entry via vov Browser'. Below this is a table for entering parameters:

Parameter	Operating conditions	Input symbol	Min.	Value	Max.	Unit	Comment
State of input fuel	:			GH2	-		
Range	:	>=	140	140	170	km	(Max value is my estimation (A.Novak))
Engine power	:			30		kW	
Power	:			7		kW	
Other fuel types used	:						
Energy Converters - Vehicle	:			PEM + LH			
On-board storage capacity	:					l	
Maximum Speed	:					km/h	
Year of construction	:			2001		yr	
Buffer tank pressure	:			200		bar	

# Project achievements

## Dissemination Activities

- TEMONAS was tested and presented at various expert workshops and conferences
  - Expert workshops (external)
    - Oldenburg 26.04.2013, Vienna 03.05.2013, Birmingham 14.05.2013

### ➤ Presentations 2012

2 <sup>nd</sup> International Conference on Leadership, Technology & Innovation Management	Istanbul	October 11-13, 2012	Paper
Fuel Cell Seminar 2012 November 5-8, 2012, Connecticut USA	Connecticut	November 5-8, 2012	Presentation / booth
FCH JU Review Day, Brussels, 28-29 November 2012	Brussels	November 28-29, 2012	Presentation

### ➤ Presentations 2013

TISS Conference 2013, Mumbai	Mumbai	Jan 22, 2013	Presentation
PACITA Conference, Prague	Prague	March 15-16, 2013	Poster
Fuel Cell and Hydrogen Conference 2013, Birmingham	Birmingham	March 21, 2013	Presentation
Hypothesis conference, Edinburgh	Edinburgh	June 11-12, 2013	Presentation
European Fuel Cell Forum	Lucerne	July 6-8, 2013	Presentation
Final Workshop	Brussels	May 22, 2013	Presentation

- [www.temonas.eu](http://www.temonas.eu)

## Exploitation and Post-Project Activities

- Will continue to be maintained and updated as well as developed further with new features
- TEMONAS is available to other interested organisations
  - Individual or corporate licenses
  - Project consortia via cloud service
  - Consulting services
- Corresponding agreements have been concluded within the consortium



# THANK YOU

and contact us via:

[www.temonas.eu](http://www.temonas.eu)