



TEMONAS
Technology Monitoring and Assessment
(278862)

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General Overview

- Technology Monitoring and Assessment
- 18 Months, starting Sep 01, 2011
- Total Budget: EUR 1,800,602.00
- FCH Contribution: EUR 1,132,046.00 (62.8%)
- Partnership

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)

1. Project achievements (1)

- **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 is 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*
- **Major Milestones so far: Inception Report & Mid Term Review**
 - *Status: Both completed*

1. Project achievements (2)

- **Project key challenges**
- **Data Entry Structure Definition**
 - *Trade-off between completeness of data for broad analytical base and process complexity*
 - *Data confidentiality, quality and consistency*
 - *Stringency and tampering with data*
- **Multidimensional assessment, benchmarking and monitoring**
 - *Object structure to enable performing both focused and holistic evaluation of*
 - *Intra-technology progress (FCH-JU projects, other fuel cell & hydrogen technologies/programs)*
 - *Inter technology assessment (position in the global energy world)*
 - *Multi-parameter comparison*
 - *Flexible query definition*
 - *Powerful output management*
 - *Methodology and implementation for defining commercialization ranking*

1. Project achievements (3)

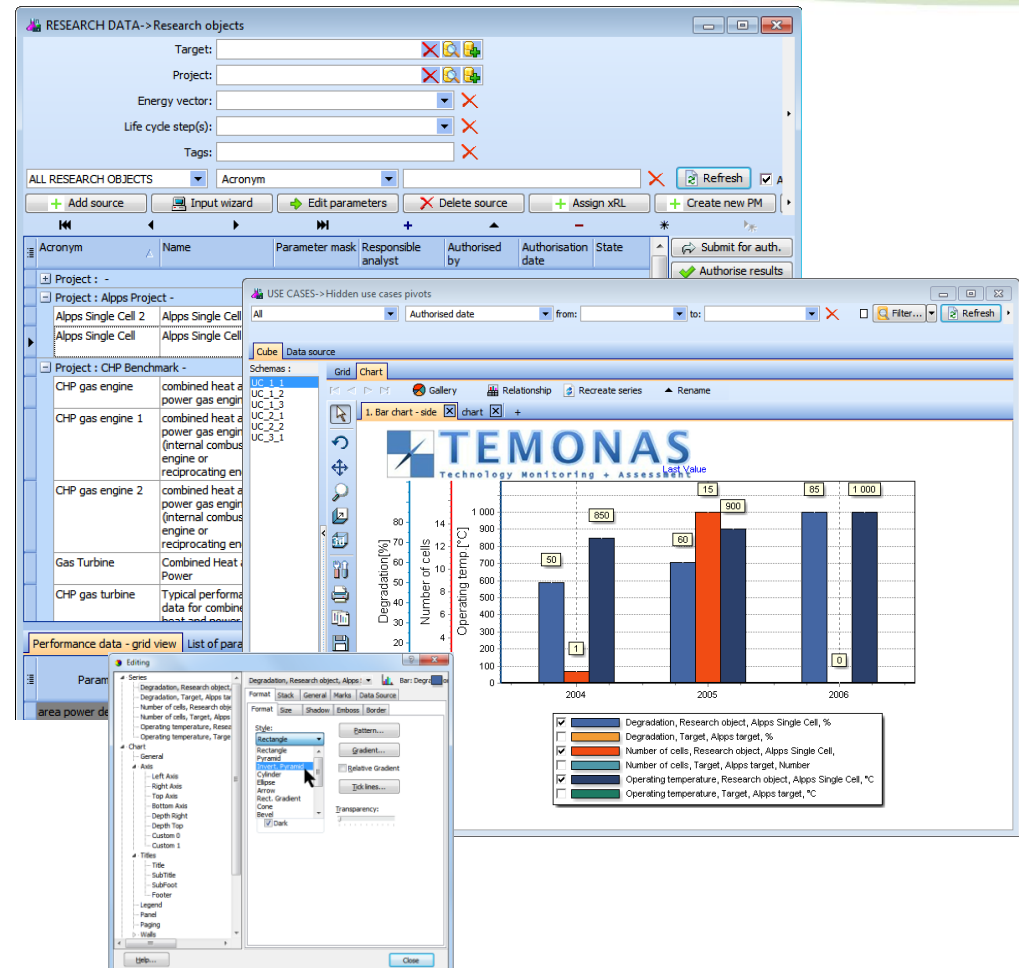
- **Project achievements**
- **Data Entry Structure Definition**
 - Trade-off between completeness of data for broad analytical base and process complexity
 - Object dependent
 - Description sets
 - Parameter masks
 - Data confidentiality, quality and consistency
 - Confidentiality & quality
 - Source 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 a software interface for 'RESEARCH DATA -> Research objects'. The main window shows a table of parameters with 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 in this table are circled in yellow, including '0.55 W/cm²', '550.00 mW/cm²', 'at 20% load', and '>= 50'. Below the main table, a detailed configuration window is open, showing various parameters such as 'Energy vector', 'Life cycle step(s)', 'Technology type', 'Application area', 'Application type', 'Application', 'Technical perimeter', 'Testing scale', 'Testing environment', and 'Parameter mask'. A dropdown menu is visible, showing reliability levels: '1 - Very weak', '2 - Weak', '3 - Average', '4 - Strong', and '5 - Very strong', with '4 - Strong' selected.

Parameter	Operating cond. description	Input symbol	Entered value	Entered unit	Deviation	Precision	Min value	Value	Max value	Unit	Reliability level	Confidentiality level	State *
area power density			0.55	W/cm²	0.00	0	550.00	550.00	550.00	mW/cm²	4 - Strong	3 - Public	IN DATA ENTRY
Degradation	after 1000h		= 85	%	0.00	0	0.00	85	0.00	%	3 - Average	3 - Public	IN DATA ENTRY
Degradation	after 20 cycles		= 85	%	0.00	0	0.00	85	0.00	%	4 - Strong	3 - Public	IN DATA ENTRY
Degradation	after 300h		= 10	%	0.00	0	0.00	10	0.00	%	4 - Strong	3 - Public	IN DATA ENTRY
Dimension of a Cell (d, l)			-	mm			-			mm	4 - Strong	3 - Public	IN DATA ENTRY
Dimension of Stack (d, b, h)			-	mm			-			mm	4 - Strong	3 - Public	IN DATA ENTRY
Efficiency	at 20% load		= 35	%	0.00	0	0.00			%			
Efficiency	at full power		>= 50	%	5.00	0	50.00			%			

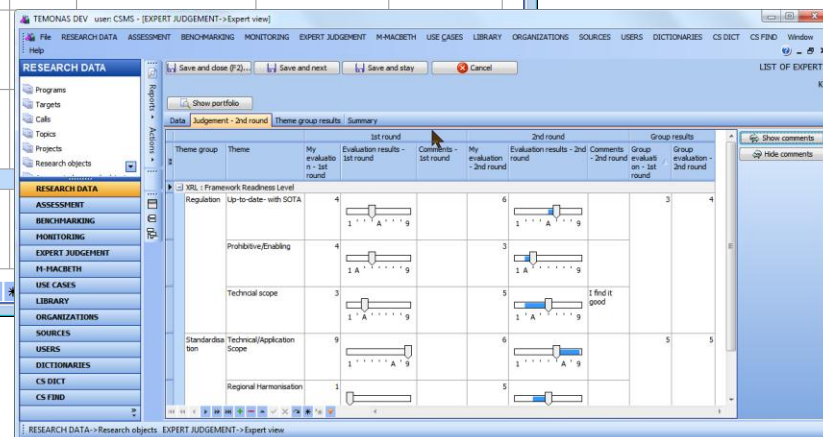
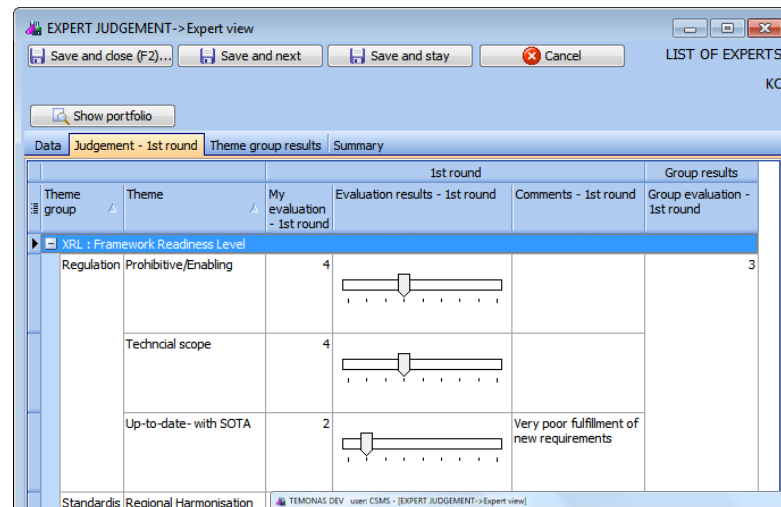
1. Project achievements (4)

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



1. Project achievements (5)

- **Project achievements**
- **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*
- **Commercialization ranking**
 - **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*



2. Alignment to MAIP/AIP

- **AIP Alignment**
- TEMONAS meets all requirements as defined in the AIP 2010
- **MAIP Alignment**
- Tool can be used to support
 - Tactical processes, i.e. planning of AIPsor
 - Strategic processes, i.e. next MAIP generation

- TEMONAS is a cross cutting activity
 - Safety and regulatory matters are one of the dimensions of evaluation
- TEMONAS Dissemination activities
 - Website www.temonas.eu
 - Presentations to FCH-JU PO and JRC
 - Conference Presentations
 - International leadership Conference on Technology and Innovation Management, Oct 12, 2012
 - Fuel Cell Seminar 2012
 - ILCTIM presentation will also be published as peer reviewed paper
 - Other dissemination activities are under review

4. Enhancing cooperation and future perspectives

- Technology Transfer / Collaborations
- Project Future Perspectives
- Contribution to future FCH-JU Activities
 - Minimum reporting standard in-line with AIP/MAIP Targets
 - Planning support for the FCH-JU PO
 - Possible international cooperation subject



THANK YOU.

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Useful References

- **Fuel Cells and Hydrogen Joint Undertaking (FCH JU)** – Programme Office
<http://www.fch-ju.eu/>
- **FCH JU reference documents** (incl MAIP/AIPs)
<http://www.fch-ju.eu/page/documents>
- **European Industry Grouping** for Fuel Cells and Hydrogen, **NEW-IG**
<http://www.fchindustry-jti.eu>
- **European Research Grouping** for Fuel Cells and Hydrogen, **N-ERGHY**
<http://www.nerghy.eu>
- **European Commission** non-nuclear Energy Research (incl FCH)
http://ec.europa.eu/research/energy/eu/research/index_en.htm