



elyntegration

**Grid Integrated Multi Megawatt High Pressure
Alkaline Electrolysers for Energy Applications**

First strategy plan for commercial
exploitation of the results

DELIVERABLE 6.5

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Pablo Marcuello¹, Patrick Larscheid², Guillermo Matute³, Vanesa Gil⁴

¹ Industrie Haute Technologie (IHT)

² Institut für Elektrische Anlagen und Energiewirtschaft (IAEW)

³ Instrumentación y Componentes (INYCOM)

⁴ Fundación para el desarrollo de las nuevas tecnologías del hidrógeno en Aragón (FHA)

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1 EXECUTIVE SUMMARY

The research and innovation project “Grid Integrated Multi Megawatt High Pressure Alkaline Electrolysers for Energy Applications” (ELYntegration) is focused on the design and engineering of a robust, flexible, efficient and cost-competitive single stack multi megawatt high pressure alkaline water electrolyser.

A specific task in the framework of the project has been included to deal with the exploitation activities and project results after the project end. The project results that could be obtained during the project are from commercial point of view the development of materials (electrodes, membranes, stack) and systems (control system, BOP) which could be introduced in the market with an increased performance or commercial benefits. From scientific point of view, the consortium will also generate broad knowledge in the framework of grid services, market analysis, business cases and grid regulation which could help in the deployment of the current technology.

The first result of this task has been the methodology defined in the present document, defined in agreement with the European Commission through the “H2020 Common exploitation booster” programme in a specific seminar held by all the members of the Consortium.

This methodology includes a systematic approach for identifying and defining most relevant results to be obtained (key exploitable results, KER). At first, the methodology addresses the systematic characterization of potential KERs needed for a proper implementation of the exploitation strategy and business plan. Based on this, the methodology identifies further exploitation strategies in more detailed in terms of commercialisation, further research and exploitation activities after the project ends. Our approach for prioritizing the resultant KER takes into account technological risks, market risks, partnership risks,

The partners will continue working in the identification of the key exploitable results, strategic business plan linked to each KER and the final Intellectual Property Rights generated during the project.



2 OBJECTIVES

The research and innovation project “Grid Integrated Multi Megawatt High Pressure Alkaline Electrolysers for Energy Applications” (ELYntegration) is focused on the design and engineering of a robust, flexible, efficient and cost-competitive single stack multi megawatt high pressure alkaline water electrolyser.

In the framework of the project, different project results can be obtained from commercial and scientific point of view. Besides, those project outcomes can be the result of a cooperative work or just the contribution of one partner. The main rules to be followed by all the partners in terms of the project results exploitation is defined in the Consortium Agreement.

The task 6.2 of ELYntegration project “Exploitation strategy and business plan for project results” has the objective of developing an exploitation strategy plan, including the identification of the exploitable results in the framework of the project focused on the commercial exploitation and on scientific results.

The objective of this report is to summarize the main work carried out until now in the task 6.2.



3 TASK STRUCTURE

In order to fulfil the task goals there are different stages to accomplish as summarized below:

- Step 1: Identification of the methodology to be used (D6.5)
- Step 2: Identification of the exploitable results (D6.7)
- Step 3: Development of the exploitation strategy including business plan (D6.8)
- Step 4: Final definition of IPR and exploitable results (D6.9)

The first stage is the definition of the methodology to be used. It is important that this methodology is based on standardized procedures dealing with these processes so that the assessment can take into account all the study parameters. The Step 1 has been already successfully completed.

The Consortium is working in the Step 2 regarding the identification of the key exploitable results. This process will take time as it has to be done according to the methodology on an iterative way between all the partners. The main outcomes of this stage is the main results to be further commercialized, partners involved, risks, markets or countermeasures to be applied.

The exploitation strategy will be developed once the key exploitable results have been clearly identified. In this strategic plan, each exploitable result will have a specific business plan.

The final stage of this task will be the final definition of all Intellectual Property Rights developed during the project.



4 IDENTIFICATION OF THE METHODOLOGY

One significant goal achieved in the first period of the task has been the identification and agreement of the methodology to be used by all the partners. In the following points, an explanation of the information will be provided as a basis for this document.

In March 2017, all the members of the Consortium participated in a seminar suggested by the European Commission as a specific service to support the projects in this kind of tasks. The seminar called “Exploitation Strategy Seminar” had the following objectives:

- Recognition of exploitable results and exploitation expectations of the partners
- Definition and clarification of the exploitation strategy of different project results
- Follow-up actions and how to connect with relevant actors

In the base of the aforementioned goals, different templates were provided during the seminar in order to identify clearly the main information for the key exploitable results identification.

4.1 KER's characterization

The first template is related to the KER basic information. As it can be seen in the following table, each KER is defined from different points of view such us result description, market prospective and barriers, target groups, early adopters, competing technologies, needs to be on the market or expectations of the partners involved.

KER (Name)	Provide below a short description
Description of the Result	
Innovativeness introduced compared to already existing Products/Services	
Unique Selling Point	
Product/Service Market Size	
Market Trends/Public Acceptance	
Product/Service Positioning	
Legal or normative or ethical requirements (need for authorisations, compliance to standards, norms, etc.)	
Competitors/Incumbents	
Early Adopters - First Customers	
Cost of implementation - bringing product/service to the “market” (before Exploitation)	
Time to market (from the end of the project)	



Foreseen Product/Service Price	
Adequateness of Consortium Staff	
External Experts/Partners to be involved	
Status of IPR: Background (type and partner owner)	
Status of IPR: Foreground (type and partner owner)	
Status of IPR: use the results from the Exploitation Form	
Partner/s involved expectations	
Sources of financing foreseen after the end of the project	

Table 1 KER characterization template

4.2 KER's exploitation form

Once the basic information of each KER is defined, it is needed to identify how each KER will be further exploited. For this exercise, the following table is proposed.

KER's Exploitation Form				
(how the KER will be further exploited – Select only an option)				
Selected route		Implementing actor	Yes	No
DIRECT USE	Commercialisation: deployment of a novel product/service (offered to the target markets)	One partner		
		A group of partners		
	Contract research (new contracts signed by the research group with external clients)	A partner		
		A group of partners		
	A new research project (application to public funded research programmes)	A partner		
		A group of partners		
	Implementation of a new university - course (Note that a training course is a service)	A partner		
		A group of partners		
		A new partnership		



INDIRECT USE	Assignment of the IPR	A partner		
		A group of partners		
	Licensing of the IPR	A partner		
		A group of partners		
	Development of a new legislation/standard	A partner		
		A group of partners		
	Spin- off	A partner		
		A group of partners		
		By assignment		
		By licensing		
	Other (please describe)			

Table 2 KER's exploitation template

By the assessment of the above points, the commercialization path has to be agreed between the different partners if it is a joint result or by each partner if the results owns just to one partner.

4.3 KER priority map

The KER priority map identifies the potential risks that can be harmful for the success of the KER exploitation and also the potential opportunities which can boost the project results commercialization.

Before going into the template, it is needed to list the number of risks/opportunities which can be divided in different sections:

- Technological risks:
 - o Worthless result: ill-timed disclosure.
 - o Worthless result: earlier patent exists.
 - o Worthless result: better technology/methodology exists.
 - o Significant dependency on other technologies.
 - o The life cycle of the new technology is too short.
 - o Result aiming at replacing existing and well entrenched technologies

- Partnership risks:



- Disagreement on further investments: some partners may leave.
- Industrialization at risk: no manufacturer for the exploitable result.
- Industrialization at risk: a business partner leaves the market.
- Industrialization at risk: a partner declares bankruptcy.
- Disagreement on ownership rules
- Market risks:
 - Exploitation disagreement: partners on the same market.
 - Exploitation disagreement: partners with divergent interests.
 - Worthless result: performance lower than market needs.
 - Nobody buys the product. Nobody needs it.
 - Nobody buys the product. Too expensive.
 - Nobody buys the product. Unsuitable sales force.
 - Nobody buys the product. The project hits against a monopoly.
 - Nobody buys the product. Problems at the time of the first sales.
 - Nobody buys the product. Rejected by end-users.
 - Nobody buys the product. Our licensee is not exploiting his exclusive license.
 - Nobody buys the product. Standards to make it compulsory don't yet exist.
- Legal risks:
 - Legal problems: proceeding against us.
 - Legal problems: we are sued for patent infringement.
 - Know-how risks: it is easy to counterfeit the patent.
 - Know-how risks: a counterfeit cannot be proved.
 - Know-how risks: the patent application is rejected.
- Management risks:
 - Know-how risks: there are leaks of confidential information.
 - Multiple changes to original objectives.
 - Inadequate communication among partners.
 - Lack of endorsement from top management
 - Weak exploitation: Inadequate business plan
 - No resources (human and/or financial) secured to make the next step toward exploitation
 - Off time supply of financial means.
- Environmental/regulation/safety risks:
 - Product/service does not comply with the standards.
 - Research is socially or ethically unacceptable.
 - Influence of laws and regulations.

This list of risks can be updated and increased according to the definition of each KER.

Once the main risks have been identified by each KER, a probability of occurrence (from 1 to 10) and the level of impact of such risk (from 1 to 10) is defined in order to make a qualitative analysis of the main risks to be considered.



Key Exploitable Results	Degree of importance of the risk related to the final achievement of this Key Exploitable Result. Please rate from 1 to 10 (1 low- 10 high)	Probability of risk happening Please rate from 1 to 10 (1 low - 10 high)	Risk Grade
Partnership Risk Factors			
Technological Risk Factors			
Market Risk Factors			
IPR/legal Risk Factors			
Financial/management Risk Factors			
Environmental/regulatory Risk Factors			

Table 3 KER priority map (1)

Scope and type of potential intervention	Feasibility/Success of Intervention Please rate from 1 to 10 (1 low- 10 high)	Priority Level

Table 4 KER priority map (2)

4.4 Ground identification

This template deals with indicating clearly the commitment, background and IPR strategy of each partner in each KER involved.

	Partner 1	Partner 2	DETAILS
Partners willing to go to the market			<i>Accept the share of investments & risks</i>
Porte-parole partner (not contributing)			<i>For coordination purpose only</i>
Partners providing background knowledge willing to claim rights			<i>Only those not listed in 4</i>
Partners providing background knowledge NOT willing to claim rights			<i>However may request NDA on their Foreground Knowledge</i>
Partners providing foreground knowledge willing to claim rights			<i>Only those not listed in 4</i>
Partners providing foreground knowledge NOT willing to claim rights			<i>However may request NDA on their Foreground Knowledge</i>

Table 5 Ground identification template



In the basis of the previous table, a role for each partner is defined according to the following table

	P1	P2	DETAILS
M			<i>Manufacturing, Realisation</i>
A			<i>Assembly</i>
R			<i>Research</i>
C			<i>Consultancy, Training</i>
U			<i>Utilisation in other business</i>
SD			<i>Saling, Distribution</i>
S			<i>Services</i>

Table 6 Role specification template



5 CONCLUSIONS AND NEXT STEPS

The Elyntegration Consortium will work on the exploitation activities in base on the methodology proposed by the European Commission as part of the H2020 Common Exploitation Booster programme. Therefore, it is considered that a successful exploitation strategy plan will be developed by all the partners.

The methodology has been agreed by all the partners (Step 1) and the Consortium will continue working on the KER characterization (Step 2) defined in the different templates provided in this deliverable.

The main next steps to be carried out in the following months are the following:

- A workshop focused on sharing knowledge and exchange experiences and challenges from current electrolyser users and operators besides hydrogen consumers is foreseen to be held during fall 2017. The main goal is to identify potential markets, barriers and recommendations to policy makers, current challenges related to maintenance, operation, design, transport, etc. This workshop will be highly beneficial to focus better the business plan and define the strategy plan which has to be developed in the step 3.
- Once step 2 is finished (KER characterization), there will be a clear view to work on the step 3 with the definition of the exploitation strategy.
- Prior to developing the business plan, some documents have to be taken into account, e.g. deliverables prepared during the project within the WP2 and WP6 and the report “Study on early business cases for H2 in energy storage and more broadly power to H2 applications” delivered by the FCH-JU at mid July 2017. These reports will provide useful insight about the potential business cases which are profitable taking into account the current technology and the market conditions.

This information will be useful to continue with task 6.3 in order to develop a specific business case which can be implemented in the business plan along with the exploitation strategy.