



**Enhancing H<sub>2</sub> & CO Combustion Risk Management**

Research and Innovation Action

NFRP-2019-2020

# **D6.1 - Communication & Dissemination Strategy & Plan**

## **WP6 - Task 6.1**

Date [M3]

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



@amhyco



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## Abbreviations and Acronyms

Acronym	Description
C&D	Communication and Dissemination
WP	Work Package
H <sub>2</sub>	Hydrogen
CO	Carbon monoxide
SAMGs	Severe Accident Management Guidelines
PARs	Passive Autocatalytic Recombiners
SA	Severe Accidents
CFD	Computational Fluid Dynamics
LP	Lumped Parameter
NPP	Nuclear Power Plant
PWR	Pressurised Water Reactor
EUG	End User Group



## Executive Summary

The main purpose of deliverable D6.1- Communication & Dissemination Strategy & Plan is to describe the communication and dissemination strategy of AMHYCO. The C&D plan will give more visibility to the project itself through targeted actions. This document includes a section on the context of the project and identifies the communication objectives, the target groups, key messages, and expected Key Performance Indicators (KPIs). It also defines the tools and channels used to communicate with the audience and to disseminate the project's results.

## Keywords

Nuclear, combustion, SAMG, communication, dissemination, visual identity, poster, roll-up, website, LinkedIn, events, workshops, and scientific publications.



# 1. Introduction

## 1.1. Purpose and Target Group

Communication and dissemination activities have become a top priority in European collaborative research projects funded under the EU's Horizon 2020 programme.

The Communication and Dissemination (C&D) Strategy & Plan outlines the actions and strategies for communication, dissemination and engagement of stakeholders throughout the project. It includes descriptions of the communication objectives and expected results (number of followers, views, etc.), target audiences, overall strategy to follow, key messages, channels and tools to be used.

The scope of the C&D strategy includes all actions taken in and outside the project, in terms of knowledge dissemination and public communication on the project and its results. These communication actions will be continuously monitored and updated during the project.

## 1.2. Project Objectives and Context

Severe accidents in nuclear power plants are costly and potentially dangerous to both humans and the environment. To prevent and/or mitigate the consequences of these accidents, it is paramount to have adequate accident management measures in place. During a severe accident, combustible gases can be released, leading to a potential explosion risk in the nuclear containment building. These gases — including hydrogen and carbon monoxide — need to be managed to avoid threatening the containment integrity, which can result in the release of radioactive material into the environment.

The Severe Accident Management Guidelines (SAMG), which guide the reactor operators on how to handle the response of the nuclear power plant against severe accidents, need to be regularly updated and include knowledge gained from international efforts, including recent and ongoing research projects. **AMHYCO will contribute to this objective by improving the understanding of H<sub>2</sub>/CO combustion and incorporating this knowledge into SAMGs.**

The main objective of the AMHYCO project is to propose innovative enhancements in the way combustible gases are managed in case of a severe accident in currently operating reactors. To reach this main objective, the AMHYCO project has three more specific objectives:

1. **To improve the Severe Accident Management Guidelines** for both in-vessel and ex-vessel phases with respect to combustible gases risk management, using theoretical, simulation and experimental results.



2. **To experimentally investigate phenomena that are difficult to predict theoretically:** H<sub>2</sub>/CO combustion and PARs (Passive Autocatalytic Recombiners) behaviour under realistic accidental conditions, taking into account their interaction with safety systems.
3. **To improve the predictability of analysis tools** - Lumped Parameter (LP), 3D and Computational Fluid Dynamic (CFD) codes - used for explosion hazard evaluation inside the reactor containment and providing support to SAMG's design and development.

### 1.2.1. C&D Objectives

Based on the needs of the project, the main **C&D objectives** are:

- To promote the project's activities, objectives and the uptake of its results;
- To disseminate the knowledge acquired in AMHYCO to key stakeholders, including nuclear power plant owners, engineering companies, nuclear regulatory bodies, academia and research organisations, etc.
- To engage in a two-way dialogue with stakeholders in the nuclear sector and civil society; including the young generation of nuclear researchers;
- To raise public awareness and contribute to the public acceptance of nuclear energy via the improvement of nuclear safety management in severe accidents with combustion risk, which will decrease the probability of release in case of an accident.

To achieve these goals the C&D Strategy will follow the EU's five-stage model:

- **Why:** the objectives of communication;
- **What:** the results to communicate;
- **Who:** sharing the responsibilities with all partners;
- **How:** the best channels and tools to get the word out;
- **How good:** monitor and evaluate actions.



## 2. Communication and Dissemination Strategy

### 2.1. Target Audiences

The main target groups of AMHYCO C&D strategy are the stakeholders of the project, as well as the general public. In the next version of the communication plan, these groups will be further refined into a more specific set of audiences.

<b>Nuclear Power Plant (NPP)owners</b>	NPP owners will have access to the latest advances in H <sub>2</sub> and CO combustion risk management, including practical guidelines on how to handle that combustion risk in Severe Accidents (SA) based on experiments and simulations with realistic conditions.
<b>Nuclear Regulatory Bodies</b>	The outcomes of the project will directly contribute to the enhancement of the Severe Accident Management Guidelines (SAMG) regarding combustion risk management and will have a potential impact on European and worldwide nuclear safety regulations.
<b>Academia and research centres</b>	International scientists and researchers will benefit from the outcomes of the project, which will be widely disseminated to increase their knowledge on H <sub>2</sub> and CO combustion risk management.
<b>Students</b>	AMHYCO will enhance the knowledge of PhD students, post-docs through workshops, thesis support and a student mobility programme.
<b>International organisations</b>	The project outcomes regarding combustion risk management will be of interest to international organisations, such as IAEA or NEA, which have specific departments which are specialised in Nuclear Safety.
<b>European policymakers</b>	European policymakers, involved in energy, industry and innovation sectors, represent an important target group, as elements resulting from the project will feed into discussions and help inform the creation of initiatives at the EU-level.
<b>Nuclear engineering companies and designers</b>	Results of the project will allow nuclear engineering companies to design even safer containment systems and/or update current containment designs to reduce the risk of combustion in SA.
<b>General public and the media</b>	It is important to inform the general public about the research funded by the EU which ultimately aims to better the lives of Europeans, and to raise awareness of the efforts to improve public perception of nuclear as a clean and safe energy source.

Table 1. Target groups for the AMHYCO project

### 2.2. Key Messages

An initial set of key messages for AMHYCO has been developed to educate and inform the target audiences about the project. Additional tailored messages are being drafted to promote AMHYCO in the most effective way.

Based on the results and analyses carried out in the project, the messages below will be further refined and developed for each user type (existing, potential, private/public), including a general description of the AMHYCO project:

<b>NPP owners and nuclear engineering companies</b>	<ul style="list-style-type: none"> <li>● The AMHYCO team will conduct experiments and simulations replicating realistic conditions of SA in order to respond to practical questions, such as the right timing and mode for actuation of containment safety systems (i.e., FCVS, sprays, fan coolers) to better manage combustion risk in a SA.</li> <li>● Workers and the environment will be better protected through the recommendations and guidelines resulting from the project.</li> <li>● The results from AMHYCO will contribute to Long Term Operation Upgrades of Gen II and III reactors.</li> <li>● Reducing the risk of combustion can help reduce the economic impact if an SA occurs.</li> </ul>
<b>Nuclear regulatory bodies and international organisations</b>	<ul style="list-style-type: none"> <li>● AMHYCO will perform deep analysis on the danger of combustion during the late phases of SA and raise awareness of these risks</li> <li>● The research will look at the impact of safety systems in the combustion risk, providing a holistic picture of the SA scenario.</li> <li>● The outcomes of the research undertaken in the project will provide new guidelines to enhance the SAMG, updating and enriching the resources available to ensure safety in nuclear facilities.</li> </ul>
<b>Academia and research centres</b>	<ul style="list-style-type: none"> <li>● The AMHYCO research teams will conduct experiments and simulations with realistic SA conditions in order to respond to practical questions, such as the right timing and mode for actuation of containment safety systems (i.e., FCVS, sprays, fan coolers).</li> <li>● Cutting-edge tools will be used in the project, such as LP, 3D and CFD codes, to help reduce the threat posed to containment integrity.</li> <li>● State-of-the-art experiments will be carried out in the field of combustion and PARs.</li> <li>● The outcome of the project will be a robust investigation of the conditions of combustion in SA and practical recommendations of how to reduce that risk.</li> </ul>
<b>European policymakers</b>	<ul style="list-style-type: none"> <li>● The guidelines provided by AMHYCO will result in updates to SAMG and other nuclear safety guidelines and databases.</li> </ul>



	<ul style="list-style-type: none"> <li>● AMHYCO will continue to improve the public perception and acceptance of nuclear industry and activities, allowing for further exploration of this source of clean energy and new policies implemented in the field of energy.</li> </ul>
<b>Students</b>	<ul style="list-style-type: none"> <li>● AMHYCO will provide opportunities for students to contribute to the project's goals. The project will provide funding to allow PhDs to research in different organisations, to access different experimental platforms, and enhance their knowledge on nuclear safety issues and SAMG.</li> </ul>
<b>General public</b>	<ul style="list-style-type: none"> <li>● AMHYCO will improve the public perception and acceptance of nuclear industry and activities, allowing for further exploration of this source of clean energy.</li> </ul>

**Table 2. Target audiences and messages**

## 2.3. AMHYCO Description

A text describing AMHYCO has been drafted in order to ensure a coherent and common message about the project. This description was created when drafting the press release at the launch of the project, which was agreed by all AMHYCO partners. This text will be used consistently by all the AMHYCO partners, and in materials dedicated to promoting and communicating about the project.

Officially launched in October 2020, AMHYCO is an EU-funded Horizon 2020 project that will last 4 years. This project consists of 12 organisations from 6 European countries and one from Canada. Led by the Universidad Politécnica de Madrid (UPM). AMHYCO will benefit from the worldwide experts in combustion science, accident management and nuclear safety.

AMHYCO will target an area that has not been addressed in previous EU and OECD projects: hydrogen and carbon monoxide ( $H_2/CO$ ) combustion risk management in severe accidents for nuclear power plants. Severe accidents in nuclear power plants are costly and potentially dangerous to both humans and the environment. During a severe accident, combustible gases can be released, leading to an explosion risk in the nuclear containment building. These gases — including hydrogen and carbon monoxide — need to be managed to avoid threatening the containment integrity, which can result in the release of radioactive material into the environment.

The Severe Accident Management Guidelines (SAMG), which guide the reactor operators on how to handle the response of the nuclear power plant against severe accidents, need to be regularly updated and include knowledge gained from international efforts, including recent and ongoing research projects. AMHYCO will contribute to this by improving the understanding of  $H_2/CO$  combustion and incorporating this knowledge into SAMG.



Visit our website for more information: <http://amhyco.eu>

**Coordinator:** Gonzalo Jiménez, UPM

## 2.4. Official AMHYCO Logo and Colours

All of the communication and dissemination tools described in the following section use a consistent brand identity for AMHYCO, which matches the image that the project wishes to convey. The logo and its alternate versions can be found in *Templates Documents* folder in the FLEXX collaborative platform to which all partners have access.



**Figure 1. AMHYCO official logo**

The AMHYCO logo was voted on by the partners at the beginning of the project. This logo was chosen as it represents the **two molecules in the project that are at the core of the issue of combustion: hydrogen and carbon monoxide**. Each atom has the correct number of bonds to the other, so the forms of hydrogen and carbon monoxide is clear to an expert audience. The tagline explains the goal of the project in clear terms so audiences can quickly determine what the project is about.

Colour	Rationale	Web	RGB
Grey	Neutral colour	#35495E	53, 73, 94
Yellow	Representing the hydrogen atom and is also a common colour in a nuclear context	#FCD621	252, 214, 33
Blue	Representing the oxygen atom and is a calming colour	#0A9CD6	10, 156 ,214
Green	Representing the carbon atom and is a colour representing clean energy	#A6C624	166, 198, 36

**Table 3. AMHYCO Colour Palette**

### 2.4.1. Alternative Logo Versions

Alternative versions of the logo were created to be used in different contexts: a black and white logo, a logo suitable for dark backgrounds and a "short" logo without the tagline.

**Figure 2: Alternate AMHYCO logos**

### 2.4.2. Rules when using the logo

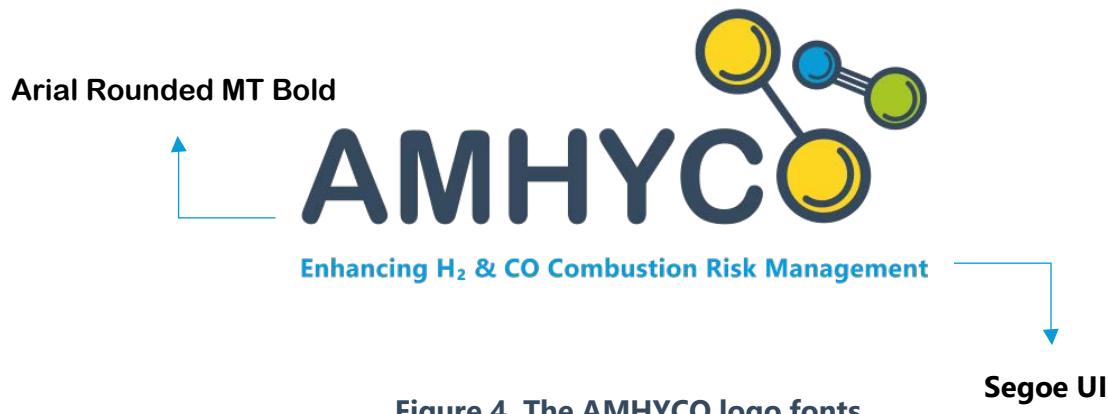
- The logo must be used in PNG, i.e. with a transparent background or EPS if it is to be placed on printed materials.
- Keep the logo proportionate to other logos present in the material
- Keep a space between logo and other items/colours according to the boundary box. This is built into the files so do not crop the logo or put anything in the boundary box.

**Figure 3. Correct and incorrect logo positioning**

- Do not warp the logo or icons
- Do not alter the colours of the logo

### 2.4.3. Fonts

The AMHYCO logo uses 2 fonts:



**Figure 4. The AMHYCO logo fonts**

#### Documents and printed materials

For Microsoft Office documents and materials (Word, PowerPoint, etc) use Segoe UI for all text:

**Segoe UI** in bold and grey for headers and titles:

**ABCDEFGHIJKLMNOPQRSTUVWXYZ**  
**Abcdefghijklmnopqrstuvwxyz**  
**123456789?,.:/-@**

**Segoe UI** in black for body text:

ABCDEFGHIJKLMNOPQRSTUVWXYZ

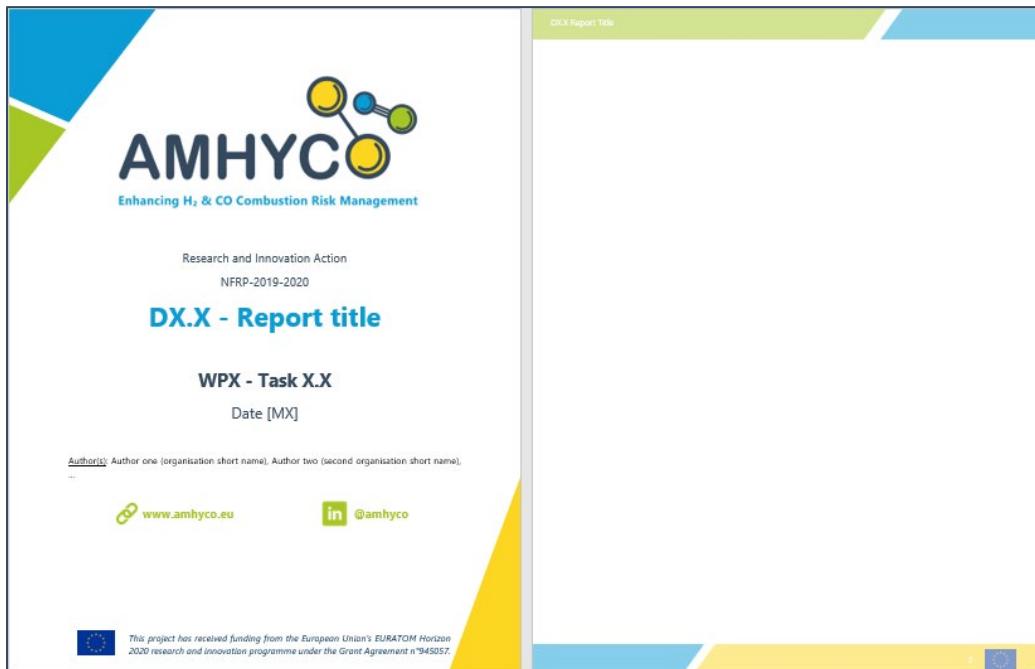
Abcdefghijklmnopqrstuvwxyz

123456789?,.:/-@

## 2.5. Templates

### Deliverable Template

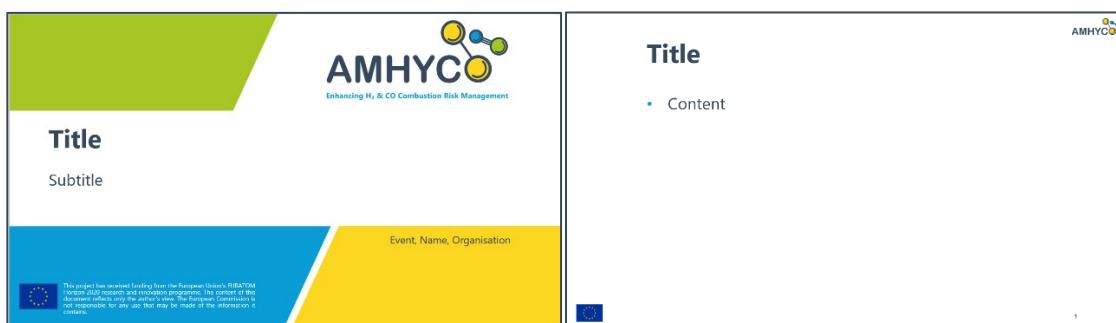
A template was created for project deliverables in M1 (October 2020) and cannot be altered in structure or style, but the content will depend on each deliverable. An optional cover page was created for public deliverables hosted on the website to replace the pages automatically generated by FLEXX, the project's collaborative platform:



**Figure 5. The AMHYCO deliverable template with optional cover page**

### PowerPoint Presentation Template

A PowerPoint slide deck was created to be used by partners when presenting the project internally and externally (conferences, workshops, meetings with stakeholders...):





**Figure 6. AMHYCO slide deck**

## 2.6. EU Emblem and Acknowledgement

According to the European Commission Horizon 2020 rules, all materials, including scientific papers and publications produced by the project, must contain the mandatory EU emblem with the following funding acknowledgement and required disclaimer with the sentences below (article 29). Moreover, it is important to note that “when displayed together with another logo, the EU emblem must have appropriate prominence” (article 38):



This project has received funding from the Euratom research and innovation programme 2014-2018 under Grant Agreement n°945057.

**Figure 7. EU flag and funding acknowledgement**

In material disseminating the project’s results (scientific publications), the acknowledgement must also include a disclaimer excluding the EC’s responsibility (article 29.5):

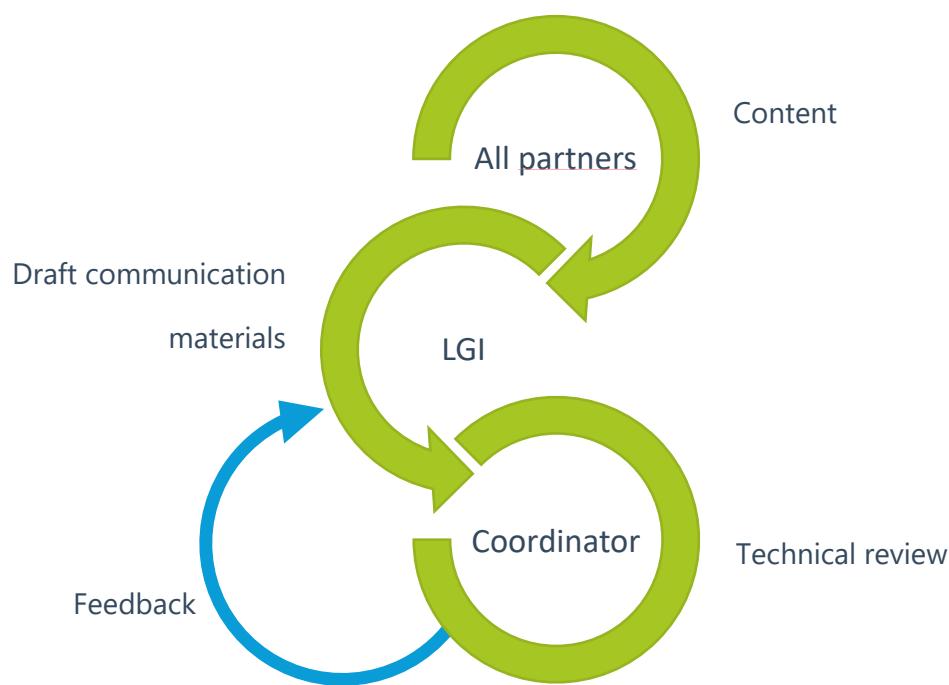
***This research is part of the AMHYCO project, which has received funding from the Euratom research and training programme 2014-2018 under Grant Agreement n° 945057. The content of this document reflects only the author's view. The European Commission is not responsible for any use that may be made of the information it contains.***

**Figure 8. EU disclaimer**

### 3. Content Flow

LGI will send a monthly email to the AMHYCO partners with updates on communication and dissemination actions. LGI will also periodically remind all partners to share their upcoming activities, announcements, media and results and will inform them of the communication materials at their disposal. The communication activities will also be presented at the annual plenary meetings.

As coordinator and work package leader, UPM will validate and review all communication materials containing technical descriptions.



**Figure 9. Content Flow**

#### Actions for M3-M9

M1 (October 2020)	Communication Toolkit	Production of a communication toolkit to support communication activities including: project branding, i.e. graphic identity & logo, presentation template, brochure and poster. Project brochures and poster will be developed according to partner's needs due to the situation around COVID-19
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<b>M3 (December 2020)</b>	<b>Event Monitoring and Scientific Publication Monitoring Plans</b>	Creation of a method to punctually monitor partner's attendance to events or scientific publications (described further in section 3.5)
<b>M4 (January 2021)</b>	<b>AMHYCO public website</b>	Interactive, dynamic permanent online hub for wide scale dissemination of project objectives and public results. Bi-directional links with websites of other related projects and initiatives (multiplier effect).
<b>M4 (January 2021)</b>	<b>Social media strategy</b>	Identification of LinkedIn groups to join, other initiatives to follow and editorial strategy
<b>M4 (January 2021)</b>	<b>Event Mapping</b>	Identification of interesting events for AMHYCO partners to attend

**Table 4. C&D actions for M3-M9**

## 4. Resources

### 4.1.1. Print Materials: poster, rollup and commercial brochures

A poster and rollup will be produced following the project's visual identity to represent the project at external events. Commercial brochures will be created to communicate towards the industrial and scientific partners in order to create synergies with stakeholders.

These will be created based on partner needs as the COVID-19 pandemic has changed the format of many events.

As part of Subtask 6.1.5, a public, final report will be created (led by UPM) which will give a summary of the AMHYCO achievements in one document. In this report, a technical summary of the main project results and discoveries will be included, taking into account the scientific work performed in the different WPs.

### 4.1.2. Website

The AMHYCO website was officially launched in January 2021: <http://amhyco.eu>

It will be updated regularly and will promote the project by playing a key role as the main information point, and delivery channel for results and the progress achieved. It will also disseminate the key messages to the target audiences, inform on events, in particular the training sessions and workshops organised in WP6 – Dissemination, Communication, Education and Training, publications or activities of interest to the AMHYCO community, and foster participation among the consortium members. This website will be the central tool for dissemination: any stakeholder can access it to gain information or contact the project coordinator.



**Figure 10. The AMHYCO homepage**

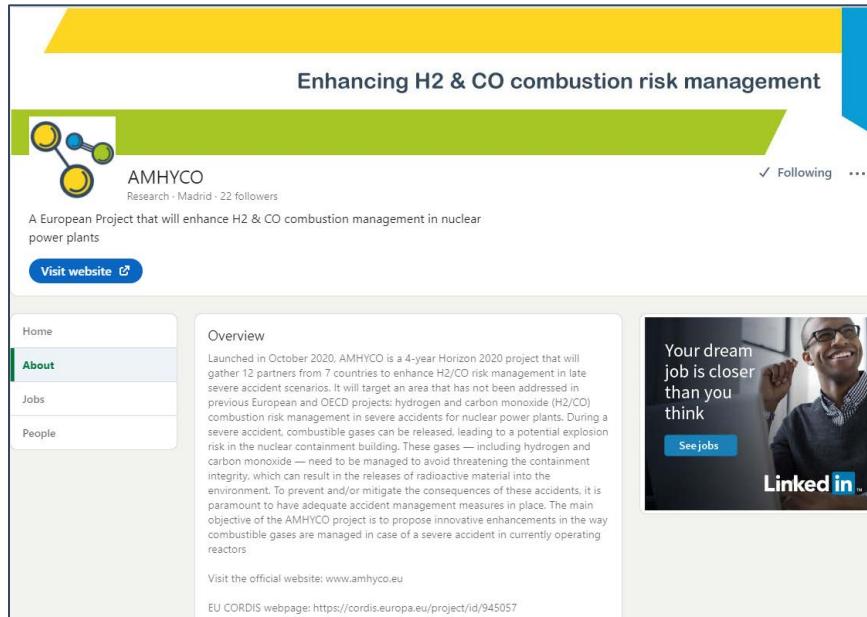
Three main sections will be used to communicate and disseminate information:

1. **News:** relevant activities, milestones and results of the project will be communicated and disseminated.
2. **Events calendar:** list of past and upcoming events, organised within the framework of AMHYCO or by other international organisers.
3. **Resources:** project media, public deliverables and scientific publications produced during the project will be shared and available in this section.

Further information about the project website will be elaborated on in the next deliverable: **D6.2 Website** due in March 2021 (M6).

### 4.1.3. LinkedIn

A LinkedIn profile was created in M1 in order to share project results and news, results, events and other items of interest from the project: <https://www.linkedin.com/company/amhyco>



**Figure 11. AMHYCO LinkedIn page**

#### 4.1.3.1. Main targets

A selection of targets for the LinkedIn page have been initially identified:

- other related EU projects;
- EU institutions;
- nuclear regulators;
- nuclear associations (e.g. SNETP);
- young researchers and students in the nuclear sector;
- European policymakers;
- industrial stakeholders;
- influencers;
- the general public;

LinkedIn will serve as a channel to distribute the news about the project, advertise events that will be attended and hosted by AMHYCO partners, monitor related initiatives and promote the engaging content generated by the project.

The AMHYCO LinkedIn account will aim at:

- sharing content published on the AMHYCO website, or relevant content from another source, on the AMHYCO LinkedIn page or on appropriate LinkedIn groups.
- managing the followers' community and replying to messages or comments.
- looking for LinkedIn groups to engage dialogue with experts and professionals of the nuclear sector, as well as building a community.

When posting the best practices for social media will be kept in mind such as using visuals will be used to enhance engagement, hashtags such as #nuclear, #H2020 and #combustion and tagging associated people/organisations to use the multiplier effect. It will be managed daily and aim **to post at least once a week**.



**Figure 12. Examples of LinkedIn posts and visuals**

#### 4.1.4. Newsletters

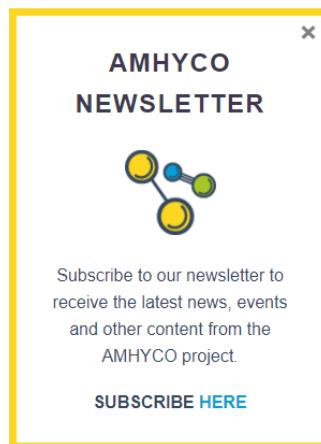
Four yearly electronic newsletters will be produced and distributed to interested stakeholders to inform them on the latest achievements of the project, outputs and relevant events, publications, conferences or workshops.

To create and develop interest for this newsletter, partners are encouraged to share all relevant information related to the project. The newsletter will contain different sections such as a news and events section and contributions from the partners, such as notable results and descriptions of deliverables and a "word from the coordinator" section. To create engagement among the

consortium members, the newsletter will contain a call-to-action asking readers to contribute by sharing information.

Results and statistics will be monitored for each newsletter. Conclusions and possible areas of improvement will be also indicated, with the aim to help optimise future mailings.

The newsletters will be sent to the subscribers that have signed up through the website, at events and more. A **subscription pop-up box** was embedded into the public website, complying with the European GDPR regulation and allowing subscribers to opt in to receive the latest achievements and results generated by the project.



**Figure 13. Newsletter subscription pop-up box**

#### 4.1.5. Press Releases

A press release was created and distributed at the launch of the project. It described the main aspects of the AMHYCO project, including its objectives, partners, timeline, project information and links to the website and LinkedIn profile. The press release will be available on the website in the Resources page and is included in Annex I of this document.

It was distributed to the 24 partners who then diffused it using their networks (NUGENIA, European Nuclear Society, NEA, etc) and sent to 6 large, nuclear organisations including the European Nuclear Society, IAEA and the OECD Nuclear Energy Agency. The press release gained some coverage in the media including [World Nuclear News](#), [Nucnet.org](#), [CEIDEN](#) and [Sociedad Nuclear Española](#).



**Figure 14. Article on the AMHYCO project from World Nuclear News**

#### 4.1.6. Videos

A project video will be produced further along the project's progress (around M18) to show the main aspects of the project in an easy-to-understand way, as the technical details of SA, combustion and nuclear facilities in general can be confusing for an audience of non-experts.

The video will be shared on the project public website and promoted on AMHYCO social media channels.

### 4.2. European Dissemination Channels

When AMHYCO has newsworthy results or activities relevant EU dissemination channels will also be targeted:

Magazines	Links
Research*eu results magazine	<a href="http://www.cordis.europa.eu/research-eu/home_fr.html">www.cordis.europa.eu/research-eu/home_fr.html</a>
Horizon – The EU Research and Innovation Magazine	<a href="https://horizon-magazine.eu/">https://horizon-magazine.eu/</a>
Portals	Links
CORDIS	<a href="http://www.cordis.europa.eu/home_fr.html">www.cordis.europa.eu/home_fr.html</a>
Horizon 2020 newsroom	<a href="http://www.ec.europa.eu/programmes/horizon2020/en/newsroom">www.ec.europa.eu/programmes/horizon2020/en/newsroom</a>

**Table 5.List of identified EU dissemination channels**

### 4.3. Scientific Publications

The AMHYCO partners will be encouraged to publish in Open Access journals. An appropriate amount of budget has been allocated to allow for gold Open Access, ensuring that the publications from AMHYCO are accessible to everyone. Scientific publications in this instance means scientific information refers to peer-reviewed scientific research articles (published in scholarly journals), articles, conference papers and research data. These publications will then be easily findable from the project website and disseminated through social media. The partners will be encouraged to publish in high impact-factor journals such as those below:

<b>Journals &amp; Magazines</b>	
Annals of Nuclear Energy	Nuclear Engineering and Technology
Combustion and Flame	Nuclear Science and Engineering
European Journal of Physics	Nuclear Science and Technology
Fluid Mechanics	Nuclear Technology
International Journal of Heat and Mass Transfer	Physics of Fluids
International Journal of Hydrogen Energy	Progress in Nuclear Energy
Nuclear Engineering and Design	Science and Technology of Nuclear Installations

**Table 6. Journals of interest for AMHYCO scientific publications**

### 4.4. Event and Publication Monitoring

Two Excel documents were created and are available on the internal project platform [FLEXX](#) in order to monitor the event attendance and scientific publications of the AMHYCO partners. The partners are encouraged to fill out the tables periodically and punctually in order to allow for communication and dissemination measures to be planned and implemented for the highest impact.

### 4.5. Conferences and Events

Speaking or showcasing the project and its results with a stand at specific events will be an important activity to disseminate and communicate the knowledge acquired during AMHYCO towards key stakeholders. Brokerage meetings in the nuclear domain will be proactively attended, if the COVID-19 situation allows.



### 4.5.1. External Events

The AMHYCO partners will be encouraged to attend external events in order to promote the project, disseminate the project results and form connections with partners in similar fields. So far, and in the current context of COVID-19 pandemic, a few relevant events have been identified:

Event	Location (Date)
<b>IHTC:</b> International Heat Transfer Conference	Cape Town, South Africa (2022)
<b>ICMF:</b> International Conference on Multiphase Flow	Kobe, Japan (2022)
<b>NUTHOS:</b> International Topical Meeting on Nuclear Reactor Thermal- Hydraulics, Operation and Safety	Taichung, Taiwan (2022), TBD (2024)
<b>NENE:</b> Slovenian Nuclear Society Annual Meeting	Bled, Slovenia (2021), TBD (2022-2024)
<b>SNE-RA:</b> Spanish Nuclear Society Annual Meeting	Granada, Spain (2021), TBD (2022-2024)
<b>ICAPP:</b> International Congress on Advances in Nuclear Power Plants	Abu Dhabi, United Arab Emirates (15- 19 March 2021), TBD (2023)
<b>NURETH:</b> International Topical Meeting on Nuclear Reactor Thermal Hydraulics	Brussels, Belgium (2022), TBD (2024)
<b>ICDERS:</b> International colloquium on Detonation, Explosion and Reactive Systems	Naples, Italy (1-6 August 2021)
<b>ICONE:</b> International Conference on Nuclear Engineering	Online (4-6 August 2021), TBD (2022-2024)
<b>CFD4NRS-9</b>	TBD (2022, 2024)

**Table 7. External events relevant to AMHYCO**

Forms of participation include:

- papers and presentation in a conference
- participation in a workshop or similar event
- poster presentation

### 4.5.2. AMHYCO workshops and events

Two workshops are planned to be held during the project, one in the middle of the project's timeline and one at the end:

**Middle step technical workshop (M36):** the experimental results will be shown in an open workshop, targeting the main nuclear industry partners and members from academia. This will

serve as a feedback to the work done at this point in the project and bring ideas to the final phase of the project (WP5: Enhancement of the SAMGs). It will include a one-day course for fundamentals, called "H<sub>2</sub>/CO safety for nuclear power plants", concerning the following points:

- H<sub>2</sub>/CO safety background,
- H<sub>2</sub> and CO generation in a severe accident and distribution in a containment building,
- H<sub>2</sub> and CO combustion fundamentals,
- H<sub>2</sub> and CO mitigation: PARs, igniters, etc,
- H<sub>2</sub> and CO management: SAMGs,

**Final step technical workshop (M48):** the results of the project, especially the guidelines, will be presented in a final workshop which will invite PWR owners' group, Safety Authorities and International Organisations (IAEA, OECD/NEA), the nuclear industry and academics.

## 4.6. Animation of the End-User Group

A subtask is dedicated to setting-up and managing an international End-User Group (EUG) to engage in two-way dialogue between the consortium and the EUG. AMHYCO will reach out to the EUG to discuss the project's achievements regarding enhancement of the SAMGs, seek feedback when relevant, and attract potential future users and developers of SAMGs. This task foresees a permanent contact between the AMHYCO Executive Board and a group of stakeholders tightly linked to the use and/or proposal of SAMGs, particularly in the aspects related to H<sub>2</sub>/CO risk. It is foreseen that the EUG will be invited to participate in the AMHYCO annual project meetings and the EUG will be kept informed of any aspect related to the AMHYCO outcomes, so that the deliverables from the project can be tailored the best way to the End User community for the project.

The composition of the EUG, agreed by the Governing Board of AMHYCO, will include:

- Nuclear Power Plant Owners;
- Nuclear Engineering Companies involved in SAMG development;
- Code developers.

Led by UPM, this task foresees engagement by regular community management actions (regular updates, invitation to project events (such as the technical workshops), online surveys to collect specific feedback, etc..).



## 4.7. PhD Thesis and Student Mobility Program

Attracting and supporting students are crucial to ensure the level of R&D in the nuclear sector is achieved, now and in the future. Some of the research that will be performed in AMHYCO, related to the main topics of the project, will be executed by researchers preparing their PhD thesis and postdoc researchers.

Within the first 4 months of the AMHYCO project, the partners with assigned "Doctoral dissertation" efforts and funding should select and confirm the title and funding of the study. The funding is allocated to organisation who host the PhD student, which is a member of the AMHYCO project that will follow the student's progress (located in the university or the organisation itself). This funding corresponds to the reporting activity of the results, obtained by the student.

The students mobility project proposal will be written by the student's supervisor and announced to WP6 Leader by email no later than 6 months before the start of the assignment. The proposal will be submitted to the Executive Committee (EC). Three criteria will be used to evaluate a mobility project:

- Is the proposed mobility project relevant for reaching the AMHYCO objectives?
- Is the requested duration appropriate for reaching desired objectives?
- Will the student/researcher improve his/her knowledge in the proposed project?

This strategy will aim to:

- create synergies between organisations involved in AMHYCO;
- create synergies among the European experimental platforms: MISTRA (CEA), REKO (FZJ) and Spherical Bombs and ENACCEF 2 (CNRS);
- favour crossed activities between two organisations involved in the same field of research;
- enhance exchange of knowledge and experience between partners.

Students benefitting from the AMHYCO programs will be presented on the project website, through newsletters and the project's LinkedIn page.



## 5. Key Performance Indicators

Work package 6 aims at delivering information and communicating about the results of the project, its goals and its achievements to targeted audience groups. Specific 3.6. Key Performance Indicators (KPIs) will be monitored to evaluate the success of communication and dissemination activities:

Channels	KPIs
<b>Website</b>	Number of page views and visitors Average time on page
<b>LinkedIn</b>	Number of followers Number of AMHYCO articles/posts published
<b>Newsletters</b>	Number of subscribers
<b>Media &amp; EU channels</b>	Number of mentions in the media Number of articles published about AMHYCO
<b>AMHYCO events and workshops</b>	Number of attendees
<b>Events</b>	Number of conferences and workshops participated in where the project/results were presented
<b>Publications</b>	Number of papers published
<b>Video</b>	Number of views at the end of the project

**Table 8: KPIs to be monitored**

## 6. Conclusion

The AMHYCO detailed C&D Strategy Plan will be updated regularly; its content and structure may evolve if necessary. The main objective is to maximise the impact of the project and boost awareness on the results and milestones to be accomplished during the project. Other communication materials (poster, roll-up, and brochure...) will be prepared and disseminated regarding the needs of partners and upcoming AMHYCO key events.



# Annex I: AMHYCO Press Release

 H2020 project 945057

## AMHYCO Horizon 2020 project launch

Officially launched on 1 October 2020, AMHYCO is an EU-funded Horizon 2020 project that will last 4 years from 2020 to 2024. This international project consists of 12 organisations from 6 European countries and one from Canada and is led by the Universidad Politécnica de Madrid (UPM). AMHYCO will benefit from the worldwide experts in combustion science, accident management and nuclear safety in its Advisory Board.

"The AMHYCO project is a chance to improve the way severe accidents are managed regarding combustion risk in nuclear power plants" says the project's coordinator, Associate Professor Gonzalo Jiménez from the UPM.

**AMHYCO will target an area that has not been addressed in previous EU and OECD projects: hydrogen and carbon monoxide (H<sub>2</sub>/CO) combustion risk management in severe accidents for nuclear power plants.**

**Context:** Severe accidents in nuclear power plants are costly and potentially dangerous to both humans and the environment. To prevent and/or mitigate the consequences of these accidents, it is paramount to have adequate accident management measures in place. **During a severe accident, combustible gases can be released, leading to a potential explosion risk in the nuclear containment building.** These gases — including hydrogen and carbon monoxide — need to be managed to avoid threatening the containment integrity, which can result in the releases of radioactive material into the environment.

The Severe Accident Management Guidelines (SAMG), which guide the reactor operators on how to handle the response of the nuclear power plant against severe accidents, need to be regularly updated and include knowledge gained from international efforts, including recent and ongoing research projects. **AMHYCO will contribute to this objective by improving the understanding of H<sub>2</sub>/CO combustion and incorporating this knowledge into SAMGs.**

**Goals:** The main objective of the AMHYCO project is to propose innovative enhancements in the way combustible gases are managed in case of a severe accident in currently operating reactors. To reach this main objective, the AMHYCO project has three specific objectives:

 PROJECT DETAILS

**Project Name:** Towards An Enhanced Accident Management Of The Hydrogen/CO Combustion Risk (AMHYCO)

**Project No:** 945057

**Start Date:** 01/10/2020

**Project Duration:** 48 months

**Project partners:** Universidad Politécnica de Madrid and Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas - CIEMAT (Spain), Institut de Radioprotection et de Sécurité Nucléaire, Centre national de la recherche scientifique CNRS and LGI Consulting (France), Forschungszentrum Jülich, Framatome GmbH and Ruhr-Universität Bochum (Germany), Jožef Stefan Institute (Slovenia), Energorisk (Ukraine), Nuclear Research and Consultancy Group (Netherlands) and Canadian Nuclear Laboratories (Canada).

**Acknowledgement:** This project has received funding from the Euratom research and training programme HORIZON 2020 under grant agreement No 945057.

 H2020 project 945057

**1. To improve the Severe Accident Management Guidelines for both in-vessel and ex-vessel phases with respect to combustible gases risk management, using theoretical, simulation and experimental results.**

**2. To experimentally investigate phenomena that are difficult to predict theoretically: H<sub>2</sub>/CO combustion and PARs (Passive Autocatalytic Recombiners) behavior under realistic accidental conditions, taking into account their interaction with safety systems.**

**3. To improve the predictability of analysis tools - Lumped Parameter (LP), 3D and Computational Fluid Dynamic (CFD) codes - used for explosion hazard evaluation inside the reactor containment and providing support to SAMGs design and development.**

The AMHYCO project idea and program have been supported by the NUGENIA Executive Committee, receiving the NUGENIA label, awarded to projects that show a high-level of quality in their research proposal.

**How to contribute:** The AMHYCO project will set up and manage an international End-User Group to provide information on the AMHYCO achievements, seek feedback when relevant, and attract potential future users. If your organisation is interested in participating in the End Users Group, please contact the AMHYCO project coordinator: [gonzalo.jimenez@upm.es](mailto:gonzalo.jimenez@upm.es).

Visit the official website: [www.amhyco.eu](http://www.amhyco.eu)

EU CORDIS webpage: <https://cordis.europa.eu/project/id/945057>