



NICOLHy - Novel Insulation Concepts For LH2 Storage Tanks

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The NICOLHy Consortium

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3	DLR	Germany
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5	NTUA	Greece

Abstract

The website is a key element for the projects Dissemination, Exploitation, and Communication activities. This document provides an overview of the setup and design of the website.

Content

1	Introduction	5
2	Website	6
2.1	Infrastructure	6
2.2	Structure and Navigation	6
2.3	Website optimization	11
2.4	Performance evaluation.....	11

Abbreviations:

BAM	Bundesanstalt für Materialforschung und -prüfung
DLR	Deutsches Zentrum für Luft- und Raumfahrt e.V.
GA	Grand Agreement
M	Project month
NTNU	Norwegian University of Science and Technology
NTUA	National Technical University of Athens
PU	Public
SAB	Stakeholder Advisory Board
UniBo	Alma Mater Studiorum - Università Di Bologna
WP	Work package

1 Introduction

The website is a key element for the projects Dissemination, Exploitation, and Communication activities. This document provides an overview of the setup and design of the website and is a deliverable of NICOLHy's WP 6.

2 Website

2.1 Infrastructure

The website is hosted by Strato and realized by a homepage construction kit, which allows a high level of customization, enables easy management and content updates, and provides access to Newsletter subscription. Strato is a German eco-friendly company located in Berlin, with data centers in Berlin and Karlsruhe.

The website for NICOLHy can be accessed via the following links:

- <https://www.nicolhy.eu>
- <https://www.nicolhy.net>
- <https://www.nicolhy.info>

2.2 Structure and Navigation

The website enables the direct communication between the project and the public. The visitors will be continuously informed by news, literature, deliverables, and publications related to the project on the web. Furthermore, the website offers the possibility to subscribe to the newsletter.

To keep this approach as simple as possible for the potential user of the website, the website has a flat structure, where the home page enables access to the sub-pages 'The Project', 'News', 'Resources', 'Consortium', and 'Contact'. Only the sub-page 'Resources' is subdivided into 'Deliverables', 'Publications', and 'Literature'. The overview of the website structure is shown in Figure 1.

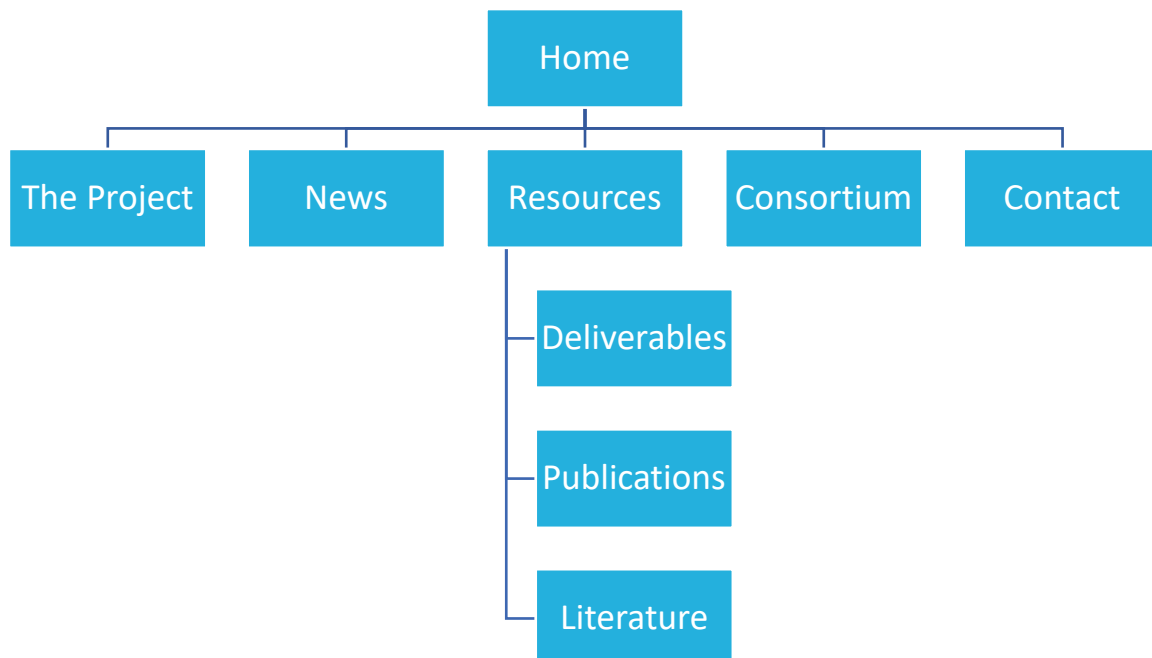


Figure 1 Structure and Navigation within the website

Project funding details are reported on every page-bottom regarding the relevant information defined in §17 of the Grand Agreement (GA). Details on funding are defined in Appendix 1 of this document.

The websites ‘Home’ page shows Figure 2. It is structured in a way to get a fast and simple impression of the project content, objectives, timeline, partners and funding. The ‘home’ page, as well as any other page, enables one to navigate to the sub-pages using the tabs at the top of the page.



Figure 2 The websites page 'Home'

‘The Project’ page presents the content of the project, and its objectives in detail (in a more extended way with respect to the information reported in the ‘Home’ page). Additionally, this page contains a description of the methodology followed in the project. The page shows Figure 3.

The Vision

The NICOLHy project aims to develop a novel Insulation concept based on Vacuum Insulation Panels (VIP) that enables the safe, cost- and energy efficient storage of large quantities of liquefied hydrogen (LH2). Such large scale LH2 storage technology is necessary for establishing a hydrogen economy with dimensions between 40.000 m³ and more than 200.000 m³ of LH2. However, new design concepts are needed because the currently available technologies used in small and medium storages today are not suitable for up-scaling. The main problems prohibiting the up-scaling are the long production time due to the process chain, the low failure tolerance and the spherical shape, which reduces the payload in technical applications by up to 50% compared to other shapes. The novel concept will change these conditions by a system which is modular, open-form, time- and cost efficient while production, operation and service, multi-failure tolerant and applicable for onshore and offshore applications. The NICOLHy consortium is ideally suited for this ambitious project. It brings together experts from the fields of cryothermodynamics, marine, chemistry, process, and safety engineering.

Objectives

TO1:
Design a tank, its thermal insulation and its support structure, which is suitable for the large-scale storage of LH2, scalable, energy efficient, sustainable, having low construction and operation costs, and which achieves improved safety standards.

TO2:
Define materials and predict the overall thermal insulation performance.

TO3:
Testing of the novel insulation concept at laboratory scale.

TO4:
Perform safety and risk analysis during operation and fire scenarios.

TO5:
Perform circularity, sustainability and scalability assessment of the developed concept.

NTO1:
Maximize the impact of NICOLHy and accelerate the use of the application.

Methodology

Stakeholder Advisory Board (WP6)
• Industry, policymakers, standardization bodies, (WP6)

Knowledge (WP1)
• State of the art
• Projects (past & ongoing)
• Industry
• Novel insulation concept proposal (WP1)

Project Coordination (WP7)

Insulation design (WP2)
• Material selection
• Thermo-mechanical evaluation
• Performance modelling (WP2)

Proof of concept (WP3)
• Material testing
• Accident scenario testing (fire) (WP3)

Risk analysis (WP4)
• Hazard identification
• Risk analysis & safety barriers (WP4)

Sustainability (WP5)
• Circularity, sustainability, scalability
• Techno-economic analysis
• Gap analysis (WP5)

Implementation (WP1)
• Novel insulation concept
• Design guidelines
• RCS recommendation (WP1)

Patents Regulations Standards (WP6)

Funding

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Do you want to know more?
Register for the Newsletter

Figure 3 The websites page 'The Project'

The news within the project will be published on the **'News'** page shown in Figure 4. The latest key information about the project is published at the top of this page. The News page contains:

- regular updates on the activities and achievements of NICOLHy,
- events within the project and events attended by project partners where NICOLHy is promoted and presented,
- relevant results and research activities of the partners that are strongly related to the project.



Figure 4 The websites page 'News'

Of large relevance for dissemination and exploitation of the project outcomes is the **'Resources'** page, which is subdivided into **'Deliverables'**, **'Publications'**, and **'Literature'**. These pages provide all interested stakeholders with a data repository for project-relevant documents presented from different perspectives. In addition, the literature supports stakeholders with a wide range of background information on the project.

The **'Consortium'** page shown in Figure 5 presents the contributors to the project in detail. Furthermore, the supporters of the project participating in the Stakeholder Advisory Board (SAB) will be presented on this page soon.



Figure 5 The websites page 'Consortium'

The '**Contact**' page contains the contact details of the project consortium, the legal notice for the website, and registration for the newsletter as shown in Figure 6. The latter enables stakeholders to be informed about project results without having to visit the website frequently. For the registration of the newsletter, only the E-Mail address is mandatory. Further information on data management is described in the 'Privacy Policy' available for download on the contact page.



Figure 6 The websites page 'Contact'

2.3 Website optimization

To increase the awareness of the website and the number of visitors, links to the website are published by the websites of participants, and the EU. The website is optimized for:

- Google by representative keywords, and its registration on google,
- The access by browsers on computers, mobile phones, and tablets.

2.4 Performance evaluation

The performance of the website regarding visitors and file downloads for instance can be reviewed by the website host Atrato. An exemplary statistic is presented in Figure 7.

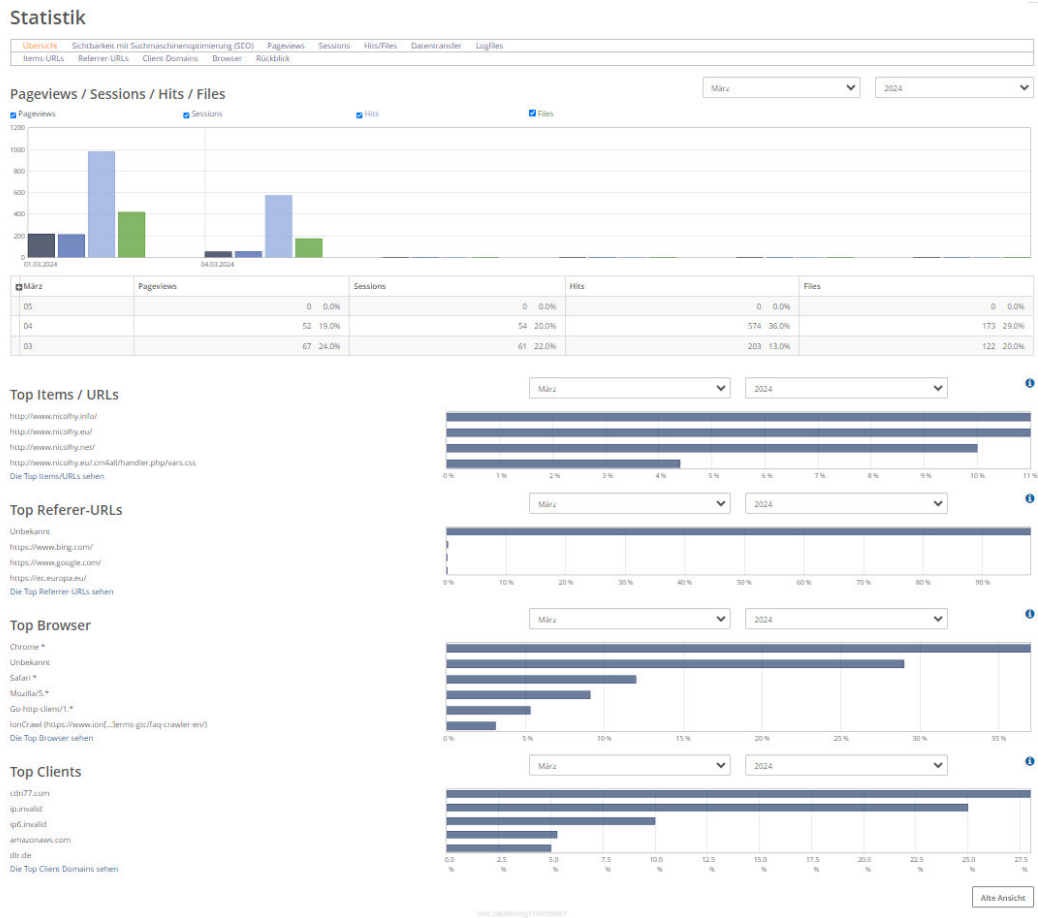


Figure 7 The websites statistics analysed by the website host strato

Appendix 1 Acknowledgement of funding and support

As reported in the Grant Agreement “any communication activities of the beneficiaries related to the action (including media relations, conferences, seminars, information material, such as brochures, leaflets, posters, presentations, etc., in electronic form, via traditional or social media, etc.), dissemination activities and any infrastructure, equipment, vehicles, supplies or major result funded by the grant must acknowledge EU support”, report the given funding statements, display the European emblem and Clean hydrogen Partnership logo. Thus, all partners shall include in their communication and dissemination activities the following:

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Moreover, any communication or dissemination activities shall report that despite the care that was taken while preparing the document and output the following disclaimer applies:

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