RETROFIT55

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RETROFIT SOLUTIONS TO ACHIEVE 55% GHG REDUCTION BY 2030

Dissemination, Awareness raising and Communication Plan (DACP) - Updated

WP 8 – Dissemination, Promotion and Communication
Task 8.2 – Dissemination and Communication activities
D8.8 – Dissemination, Awareness raising and Communication Plan (Updated)
Partners involved: SFD, all
Authors: Reuben D'Souza, Vassilios Zagkas, Dimitris Ntouras

Project details

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01	01/09/2024	Reuben D'Souza, Vassilios Zagkas, Dimitris Ntouras (SFD)	First Draft
02	12/09/2024	Reuben D'Souza, Vassilios Zagkas, Dimitris Ntouras (SFD)	Comments and integrations by partners included
Final	27/09/2024	Reuben D'Souza, Vassilios Zagkas, Dimitris Ntouras (SFD)	Final version

Quality check review

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Cecilia Leotardi (CNR)	Technical and editorial review
All istitutions	Comments and integrations to partners' activity
Cecilia Leotardi and Alessandro Iafrati (CNR)	Final review of contents and submission to EC.

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List of Acronyms

Acronym	Meaning
ALS	Air Lubrication System
DACP	Dissemination, Awareness Raising and Communication Plan
DSS	Decision Support System
ESD	Energy-Saving Device
GDPR	General Data Protection Regulation
GHG	GreenHouse Gas
KPI	Key Performance Indicators
PALS	Passive Air Lubrication Systems
PU	Public
WASP	Wind Assisted Ship Propulsion

Executive Summary

Advances in science and technology have made it possible for energy-saving solutions to be adopted in retrofitting. In this context, the EU-funded RETROFIT55 project targets, by the end of 2025, to achieve reduction of 35% greenhouse gas emissions through retrofitting ships with new energy-saving solutions.

Specifically, the retrofit solutions developed within the project combine mature technologies (ship electrification, hydrodynamic design optimization and operational optimization) with two new technologies (wind-assisted ship propulsion and innovative air lubrication system).

The end goal is to create a decision-support system that integrates these solutions. This will allow users to compare retrofitting options in terms of cost, return on investment, and performance. RETROFIT55 involves a consortium of universities, research institutions and ship operators, as well as experts in design and retrofit, technology providers for Wind Assisted Ship Propulsion (WASP) and Air Lubrication Systems (ALS), electrification, and green digital technologies.

Further to the initial Dissemination and Communication Plan (D8.1), this deliverable lists out all dissemination activities that were carried out for the RETROFIT55 project to the end of the first reporting period of the project. The report also provides some very encouraging key statistics to indicate user engagement, acquisition of followers, etc.

This document outlines the mandatory requirements and guidelines for briefings, written materials, press conferences, presentations, invitations, publishing web content, and all other tools used to disseminate the project and its results. It also includes the activities that will be carried out by the consortium, identify the specific channels that will be used to disseminate the project, its findings, and progress, as well as the key stakeholder categories (ship-owners, industry associations, maritime authorities).

1 Introduction

The urgent need to combat climate change and reduce GreenHouse Gases (GHG) emissions has propelled the maritime industry towards seeking innovative solutions to decarbonize its operations. In this context, a consortium of stakeholders has joined forces to develop a comprehensive set of decarbonization solutions and green technologies that can revolutionise the shipping sector.

With a primary focus on enhancing ship efficiency and harnessing renewable or low-emission energy sources, this collaborative effort aims to reduce fuel consumption and GHG emissions, while ensuring the industry's long-term sustainability.

To effectively achieve these ambitious goals, it is crucial to establish a well-defined Dissemination, Awareness Raising, and Communication Plan (DACP). This strategic framework serves as a guiding principle to engage and inform various stakeholders about the project's objectives, progress, and outcomes.

By disseminating valuable insights, fostering collaboration, and advocating for supportive policies, this plan aims to create a transformative impact across the maritime industry. The following interim report details the Dissemination and Communication activities performed so far, highlighting the progress and achievements made as forecasted in the DACP.

2 Scope and objective of the report

The purpose of this deliverable is to provide a comprehensive account of the communication and dissemination activities undertaken in the RETROFIT55 project till the end of the first reporting period.

Significant efforts have been made to raise awareness about RETROFIT55 since the project's inception. As technical advancements continue and measurable results are achieved, the dissemination activities will lay a solid foundation for the project's success and continued engagement of the targeted stakeholders.

This interim report details RETROFIT55 comprehensive dissemination plan, building upon the strategy established in the early stages of the project (D8.1) and presents the Dissemination/Communication Activities concerning the first reporting period of the project. Central to this plan is the collaborative work undertaken by our partners in achieving the technical objectives of RETROFIT55.

Furthermore, this report reviews the activities of the past months, providing explanations for the actions taken, justifying the activities that did not occur, discussing the reasons behind them as provided by relevant partners, and outlining any mitigation measures or substitute actions planned for the future. By continually informing our stakeholders and sharing our results, we aim to ensure that RETROFIT55 has a lasting and significant impact on the maritime industry and beyond.

2.1 Structure of the report

The report is organized as follows. The project executive summary is followed by an introduction a brief overview of the RETROFIT55 project and the importance of communication and dissemination activities. Then, the scope and objective of the report is briefly outlined, explaining how the present communication and dissemination activities support the overarching goals of RETROFIT55, ensuring that our messages are focused, our audience is expanded, and our communication channels are effectively utilised. A section addressing the overview of communication and dissemination activities is therefore presented, including an introduction of the objectives of the DACP follow by a detailed account of the activities carried out, categorised by the channels outlined in our dissemination strategy with specific examples of our efforts, showcasing their effectiveness and reach. As well as justification for activities that did not take place, including the reasons and any foreseen mitigation measures or substitute actions. This section includes:

- *Objectives of the DACP*
- *Key performance indicators and project visibility*
- *Activities review*
- *Impact and lessons learned*
- *Proposed next steps to improve*
- *Detailed publication reports*

A Forward-Looking Strategy is finally presented, including the consortium strategic plans for the last phase of the project to ensure that RETROFIT55 has a lasting impact on the maritime industry.

3 Overview of communication and dissemination activities

The GANNT chart of the activities has been updated as reported in Table 1.

Table 1: Updated communication and dissemination GANTT chart.

RETROFIT55	Task	Sub-task	Responsible	2023												2024												2025											
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Traditional communication activities	Project Visibility	Project logo	SFD		x																																
		Template for PPT presentation & other material	SFD		x																																
		Project Video	SFD																								x										
		Leaflet	SFD						x						x																						
		Poster	SFD												x											x					x	x	x	x	x	x	x
	Scientific, Technical & Industry Publications	Press releases	ALL																		x																x
		Articles for magazines	ALL		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
WEB 2.0 Communication activities	Project website	Design, develop and launch the site	SFD		x				x																												
		Set Google Analytics for the project website	SFD		x				x																												
		Public Deliverables	SFD			x			x			x			x			x			x						x			x	x		x		x		x
		Posting news about the project, evaluate regularly the website analytics, SEO	SFD		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Social media	Create accounts in LinkedIn	SFD		x																																
		Post news about the project	ALL		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		Reshare posts	ALL		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Online Newsletters	All partners provide content for Newsletter	ALL			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		Create the content for the Newsletter	ALL	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		Submit to subscribers and publish it on website	ALL				x			x					x	x					x				x		x					x	x	x	x	x	x	x
Events	EU Conferences	Participation and presentations	ALL																			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Training Events		NTUA																																x	x	x
	Workshops		NTUA												x												x										
	Third-party events	TBD																																			
Monitoring	All partners monitor media and websites		ALL		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

3.1 Objectives of the DACP

The project aims to effectively raise awareness, engage stakeholders, and encourage the adoption of decarbonization solutions and green technologies among shipowners and industry players, by strategically implementing the following objectives through the following tailored activities:

- **Establish a project brand**: Develop a distinct and recognizable project brand, including a logo and visual identity, to ensure consistency and enhance brand recognition across all materials (including website).
  Target Groups: Shipowners, maritime industry professionals, policymakers, and regulatory authorities.
- **Design promotional materials**: Create project flyers and roll-ups to showcase the project's objectives, achievements, and key messages used to generate interest at events.
  Target Groups: Event attendees, industry professionals, researchers, and general public.
- **Develop and maintain a dedicated project website**: Design an accessible and usable website to provide up-to-date information, resources, and other relevant information. The WP8 leader is committed to regularly update the site to keep it reliable.
  Target Groups: Project stakeholders, industry professionals, researchers, policymakers, and the general public.
- **Social media presence**: Manage social media accounts on three channels (LinkedIn, YouTube, and Instagram) to share updates, highlight project value, and promote content among the broader society and engage with the online community to build a network.
  Target Groups: Online community, industry professionals, researchers, and general public.
- **Design of targeted communication tools and materials**: Create communication materials tailored to the project's priority audiences, involving audience segmentation and targeted messaging that resonates with each group's needs.
  Target Groups: Shipowners, maritime industry professionals, policymakers, researchers, general public and other organisations with strong links to the maritime industry and national initiatives.
- **Create infographics (factsheets and posters)**: Develop visually appealing and informative infographics or factsheets to present key project findings and benefits. The consortium has promoted these through the website, social media, conferences, and European initiatives and will continue to update them to finally publish them in the website.
  Target Groups: Stakeholders, industry professionals, researchers, policymakers, and the general public.
- **Outreach through newsletters and information sharing**: Prepare monthly newsletters with updates on project progress, achievements, and upcoming events, translated into national languages for wider reach. Together with the regular updates through the project website, social media and newsletters will keep stakeholders informed about the latest developments, milestones, and opportunities.
  Target Groups: Global stakeholders, industry professionals, researchers, students, policymakers, and the general public.
- **Publications and articles in local media**: Publish at least 10 articles in local media outlets to disseminate project information and raise public awareness, promoted through the project's communication channels and European networks.

Target Groups: Local communities, general public, industry professionals, and policymakers.

- **Stakeholder engagement at events and related research activities**: Participate in workshops, national and international conferences, and other gatherings to present project outcomes, exchange knowledge, and engage with key stakeholders. Including Conferences, Workshops, Exhibitions and Publications.
  Target Groups: Industry professionals, researchers, policymakers, and other stakeholders
- **Organise an international conference**: Prepare an international conference in M36 to bring together experts, industry professionals, policymakers, and other stakeholders to showcase achievements, share knowledge, and foster collaboration.
  Target Groups: Experts, industry professionals, researchers, policymakers
- **Other promotion and local events**: Promote project information through the website, social media platforms, and local face-to-face events to ensure broad visibility and engagement in both digital and physical spaces.
  Target Groups: General public, action communities, ship owners, ship operators, shipyards and ship design consultancy companies.

3.2 Key performance indicators and project visibility

The project dissemination and communication activities will be evaluated based on a set of Key Performance Indicators (KPIs, outlined in Table 2), which are intended to measure their overall impact.

Table 2: Key performance indicators and project visibility.

Communication activity	KPI(s)
Project website setup and maintenance	More than 2000 accesses 1st year; 25% growth in website traffic 2nd year; more than 5000 visits by the end of the project; more than 300 downloads of public reports and dissemination material.
Project Logo	More than 500 appearances in dissemination material
Social media accounts management	100 members on LinkedIn; more than 1000 views on YouTube.
Distribute project information via digital publishing	More than 1000 views
Training material and training course	More than 20 trained user (students and training staff)
Public presentations at events	More than 20 participants per event
Press releases / interviews at radio and TV	More than 10 articles/interviews on media
Newsletters distributed to subscribers	More than 200 subscribers
Leaflets distributed to various events	More than 200 leaflets distributed
Liaison with similar projects and initiatives	More than 3

Organise a conference at EU level to present the final results	More than 30 participants

3.3 Activities review

3.3.1 Project brand and promotional materials

RETROFIT55 project has established a strong and consistent brand identity to ensure effective communication and recognition across all its activities. Key components of the project brand include the logo (Figure 1) and visual identity for the communication actions with specific colour schemes, a selected typography, and design elements that are used consistently across all project materials. The visual identity aims to reflect the green and sustainable goals of the project, providing a professional look.

Figure 1: Different color schemes for RETROFIT55 logo.

In addition to these core branding elements, standardised document templates have been meticulously created to help maintain a consistent visual style in all project-related communications for all partners. These templates are integral to the project's communication strategy, as they ensure that every document, such as reports, presentations, or official correspondence, adheres to the established brand guidelines. Each template is designed to be user-friendly, enabling partners to easily incorporate them into their workflows without compromising the visual coherence. By using these templates, all partners can seamlessly produce materials that not only align with the project's brand, but also enhance the overall professional image of RETROFIT55. This homogenisation across documents reinforces the project's commitment to its sustainable and green objectives while making sure that all stakeholders are on the same page visually and contextually.

Moreover, a project brochure has been prepared and spread during the first reporting period, in order to rise the project awareness and ease its content dissemination (see Figure 2).

Figure 2: RETROFIT55 information brochure (side A, upper image and side B, lower image).

3.3.2 Project website

The project website[1] offers an easy way for visitors to learn about the project's mission, targets, technologies and the activities of its partners. Regular updates ensure that stakeholders and the general public stay informed about the latest developments. Herein follow the key sections of the website.

[1] https://www.retrofit55.eu/

- Project: this section provides an overview of the RETROFIT55 project, detailing its goals and main innovative components.
- Technology: this section shows the different technological solutions being developed and implemented, aimed at enhancing energy efficiency and reducing emissions.
- Partners: this section introduces the consortium's partners, highlighting their roles and contributions in a general way.
- Resources: this section is a repository of valuable materials, including publications, deliverables and dissemination content, which is regularly updated as the project progresses.
- Blog and News: The blog features updates and information about project, such as events, partners involvement and technical progress. The news tab is for project meetings.

Figure 3 reports a series of analytic data regarding the project website.

	Page title and screen class	Views	Users	Views per user	Average engagement time	Event count All events
		4,427 100% of total	1,337 100% of total	3.31 Avg 0%	1m 02s Avg 0%	13,093 100% of total
1	RETROFIT55 Decision Support System	935	652	1.43	20s	3,297
2	Homepage - retrofit55	834	460	1.81	26s	2,810
3	RETROFIT55 decarbonization solutions to reduce fuel consumption and Greenhouse Gas (GHG) emissions - Retrofit55	291	205	1.42	38s	790
4	Partners - retrofit55	249	149	1.67	47s	696
5	Resources - Retrofit55	234	78	3.00	48s	556
6	Partners - Retrofit55	220	158	1.39	31s	546
7	Project - retrofit55	219	123	1.78	52s	597
8	Technology - Retrofit55	152	116	1.31	54s	396
9	Technology - retrofit55	152	96	1.58	1m 00s	416
10	OPERATIONAL DATA ANALYSIS - Retrofit55	146	31	4.71	20s	278
11	Login - retrofit55	121	45	2.69	33s	417
12	Resources - retrofit55	86	57	1.51	21s	216
13	RETROFIT55 Decision Support System - retrofit55	84	46	1.83	22s	267
14	News - retrofit55	82	46	1.78	27s	214
15	Contact Us - Retrofit55	74	66	1.12	14s	188
16	Meet the Partners #14 – SimFWD, Greece - Retrofit55	64	4	16.00	59s	84
17	News - Retrofit55	64	49	1.31	16s	160
18	Hydrodynamic Optimization of Ships - Retrofit55	53	23	2.30	21s	121
19	Blog - Retrofit55	37	26	1.42	13s	91
20	Hydrodynamic Optimization of Ships - retrofit55	34	28	1.21	14s	90
21	Contact Us - retrofit55	27	23	1.17	12s	72
22	Login - Retrofit55	23	16	1.44	6s	74
23	Meet the Partners #2 - Laskaridis Shipping Co. Ltd. , Greece - Retrofit55	21	1	21.00	22s	30
24	GENERAL ASSEMBLY MEETING M1-M6 - retrofit55	19	14	1.36	30s	43
25	RETROFIT55 decarbonization solutions to reduce fuel consumption and Greenhouse Gas (GHG) emissions - retrofit55	18	13	1.38	56s	58

Figure 3: Google analytics report for RETROFIT55 WebPage.

3.3.3 Social media

The creation and management of social media accounts are essential components of the RETROFIT55 project's dissemination and communication strategy. Social media platforms offer dynamic channels for engaging with stakeholders, sharing project updates, and promoting the project's innovations and achievements. To effectively communicate the project's aims, share updates, and highlight added value for potential users, RETROFIT55 has focused on using LinkedIn as its primary social media platform. The decision to utilise LinkedIn over other social media options, such as Twitter or Facebook, was based on the nature of our target audiences, as per Figure 4.

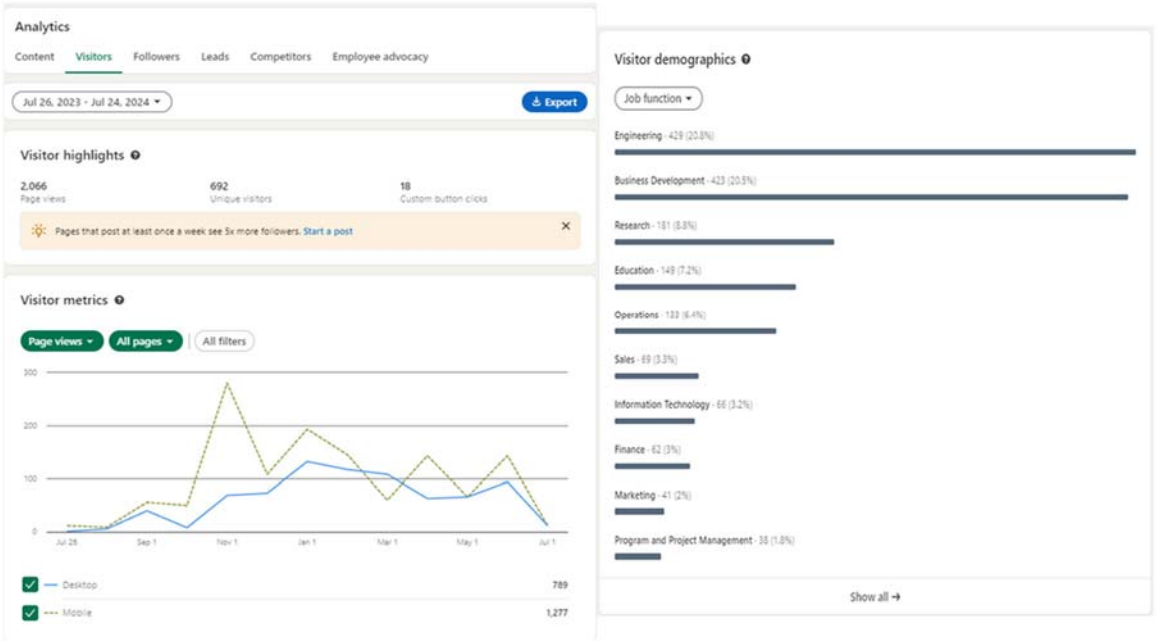

Figure 4: Statistics for RETROFIT55 LinkedIn Page (Visitors and demographics).

The RETROFIT55 LinkedIn page[2] has been actively managed to engage with professionals in the maritime industry. With more than 600 followers, the page has achieved a good reach, highlighted by the engagement metrics and interactions on posts. Key Activities on LinkedIn include regular posts about the progress of the project, which keep the audience informed about ongoing developments. Information on upcoming events, workshops, and conferences, where RETROFIT55 will be present, is also shared, providing opportunities for stakeholders to engage with the project partners in person (see, as an example, Figure 5). Additionally, the LinkedIn page features contributions and achievements of project partners, showcasing the collaborative efforts within the consortium and other educational content explaining technical aspects of the project. As shown below, some of our posts have a good level of engagement and allows us to link with other relevant Horizon Europe projects.

[2] www.linkedin.com/company/retrofit55/

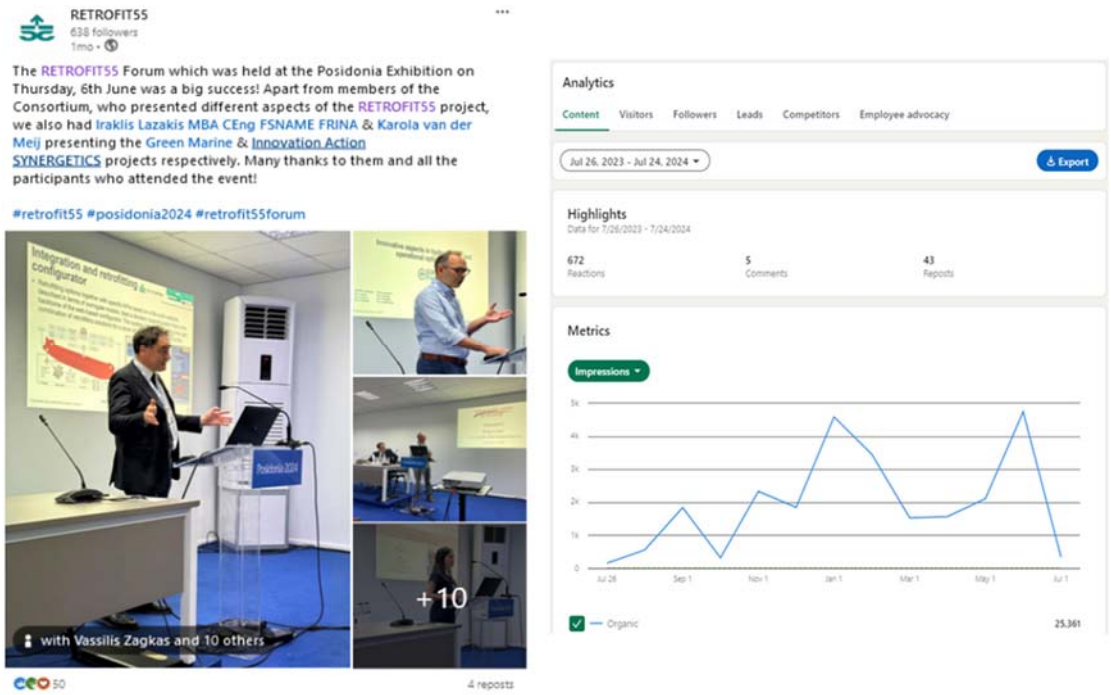

Figure 5: Post example (left) and page impressions (right).

3.3.4 Design of targeted communication tools and materials

Recognizing that different audiences require tailored messaging, the consortium has employed a multi-faceted approach to communication that balances technical detail with accessibility.

- **Custom infographics and interactive outputs**: To visually represent the complex technical processes and benefits of the retrofitting solutions being developed, the project has designed a series of infographics that distil key information into easily digestible formats. These infographics have been strategically utilised in presentations, publications and online platforms, to enhance audience engagement. Additionally, we developed interactive digital media, including animations and video explainers, which illustrate the functioning of technologies, such as Wind Assisted Ship Propulsion (WASP) and Air Lubrication Systems (ALS). These tools have been particularly effective in reaching non-technical audiences, including policymakers and the general public, who may not be familiar with maritime engineering concepts.
- **Sector-Specific flyers and fact-sheets**: In an effort to address the specific needs and interests of various segments within the maritime industry, we have produced a fact sheet like the one shown in Figure 2. The materials have been developed to meet the specific needs of distinct groups, including shipowners, regulatory bodies and maritime engineers. Each group will find information tailored to their particular interests and requirements. For instance, a brochure targeting shipowners emphasises the economic benefits of retrofitting and the potential for return on investment, while materials designed for regulatory bodies focus on compliance with international environmental standards and the project's alignment with global decarbonization goals. A total of 100 brochures/flyers were distributed at TRA2024, with a further 250 distributed at Posidonia 2024 events. 50 brochures were also handed at the CAESES User Meeting in Berlin.

It is important to understand the significance of regional nuances, and local languages have been employed wherever feasible.

3.3.5 Participations at events and fairs

Transport Research Arena – TRA 2024

The project coordinator, Alessandro Iafrati, delivered a 5-minute presentation introducing the project, its objectives and back-to-back talks with other speakers. A picture of the talk is shown in Figure 6. The corresponding poster has been showed in the poster section that followed the pitch presentation of the project. Furthermore, a roll-up outlining the project's objectives was on continuous display at the Waterborne stand (Figure 7).

Figure 6: RETROFIT55 presented by the Project Coordinator at TRA 2024.

Figure 7: RETROFIT55 roll-up at the WATERBORNE stand at TRA 2024.

POSIDONIA 2024

The consortium had a dedicated presence at the exhibition. Furthermore, an information forum was held at the exhibition venue for a duration of 1 hour and 45 minutes. This forum was attended by representatives from many partners in the consortium, who discussed their role in the project. There were also speakers from two other Horizon Europe projects, funded within the same call, therefore having similar goals as those of RETROFIT55. The discussions had the intended effect of increasing the reach and impact of the topic as outlined in the call. A photo of the room during the forum is shown in Figure 8.

Figure 8: RETROFIT55 forum at Posidonia 2024.

43rd International Conference on Ocean, Offshore, and Arctic Engineering – OMAE® 2024

Singapore, June 9-14, 2024, with a number of participants at the presentations of about 30-40 (Figure 9).

Figure 9: RETROFIT55 Presentation (left) and presentation material (right) for OMAE® 2024.

The 15th International Marine Design Conference – IMDC 2024

The Netherlands, from June 2-6, 2024, with a number of participants of about 40-50 at the presentations of about 40-50 (Figure 10).

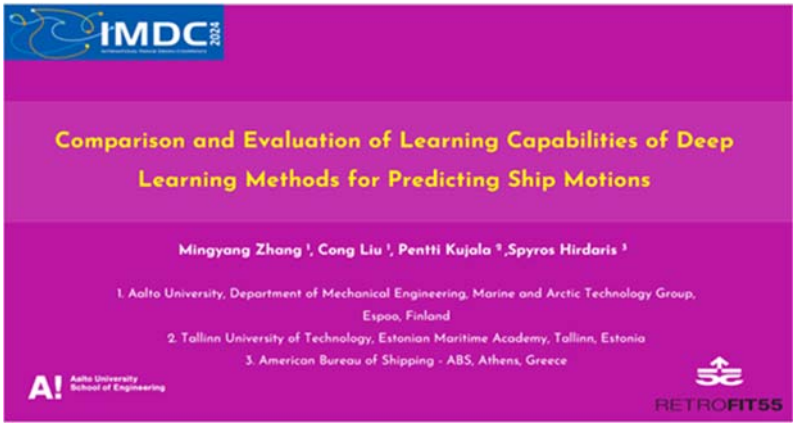

Figure 10: RETROFIT55 Publication (left) and presentation material (right) for IMDC 2024.

The Gulf of Finland Science Days 2023

Tallinn, on November 16–17, 2023, with a number of participants at the presentations of about 50-60 (Figure 11).

Figure 11: RETROFIT55 presentation (left) and presentation material (right) for Science Days.

Workshop on Digital Twins – BUILD-IT 2023

Rome, October 19-20, 2023, with a number of participants at the presentations of about 40-50 (Figure 12).

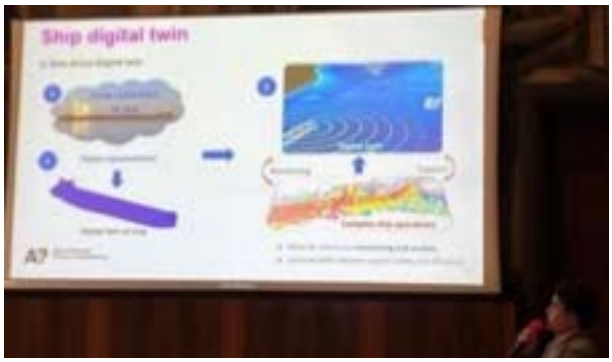

Figure 12: RETROFIT55 presentation (left) and presentation material (right) BUILD-IT 2023.

Members of the consortium participated at these initial events with the objective of disseminating information and awareness about the project. At this stage, questionnaires have not been prepared

for the purpose of collecting feedback from attendees. These will be prepared for use at future events.

3.3.6 Publications

The project, which initially aimed to publish a minimum of 4 papers in relevant scientific and/or commercial conferences and at least 3 peer-reviewed papers with (relatively) high impact factor in their respective fields during the project, has surpassed this KPI and at the time of this report has published 1 book chapter, 2 peer-reviewed papers in specialised journals, 11 papers for conferences and 3 posters. Specifically:

Book chapter

Chapter Title: A Ship Digital Twin for Safe and Sustainable Ship Operations.
Authors: Spyros Hirdaris, Mingyang Zhang, Nikos Tsoulakos, Mashrura Musharaff, Pentti Kujala
Reference Contact: mingyang.0.zhang@aalto.fi
Book: DT4GS-eBook (in association with WEGEMT and DT4GS EU Horizons project lead by Intelek)
Publication Date: Under review.
Open Access: YES.

Journal publications

Paper Title: Efficiency Enhancement of Marine Propellers via Reformation of Blade Tip-Rake Distribution
Reference Contact: kbel@fluid.mech.ntua.gr
Authors: Dimitra Anevlavi, Spiros Zafeiris, George Papadakis, Kostas Belibassakis
Journal: Journal of Marine Science and Engineering.
Volume: 2023, 11(11), 2179
DOI: https://doi.org/10.3390/jmse11112179
Publication Date: 16.11.2023.
Impact Factor: 2.7
Open Access: Open Access.

Paper Title: A deep learning method for the prediction of ship fuel consumption in real operational conditions
Reference Contact: mingyang.0.zhang@aalto.fi
Authors: Mingyang Zhang, Nikolaos Tsoulakos, Pentti Kujala, Spyros Hirdaris
Journal: Engineering Applications of Artificial Intelligence.
Volume: 108. **Pages**: 45-67.
DOI: https://doi.org/10.1016/j.engappai.2023.107425
Publication Date: 04.01.2024.
Impact Factor: 7.5
Open Access: Hybrid Open Access.

Conference papers

Paper Title: Hydrodynamic Optimization of Ships with Retrofitted WASP-Systems
Authors: Hannes Renzsch, Fabian Thies
Reference Contact: renzsch@friendship-systems.com
Conference: Innov'Sail conference
Presentation Date: 31-05-2023

Link to the file: https://www.retrofit55.eu/2023/07/20/hydrodynamic-optimization-of-ships-with-retrofitted-wasp-systems-hannes-f-renzsch-friendship-systems-ag-germany-fabian-thies-friendship-systems-ag-germany/

Paper Title: Analysis of compressible fluid flow during the the water entry of a body equipped with an air lubrication system
Authors: Tavakoli, S. and Hirdaris S.
Reference Contact: s.tavakoli@unimelb.edu.au
Conference: Nutts 2023 : 25th Numerical Towing Tank Symposium, Ericeira, Portugal
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Paper Title: A SHIP DIGITAL TWIN FOR SAFE AND SUSTAINABLE SHIP OPERATIONS
Authors: Zhang, M., Hirdaris, S., Tsoulakos, N.
Reference Contact: mingyang.0.zhang@aalto.fi
Conference: Build IT 2023 Workshop, CNR, Italy
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Paper Title: Operational data analysis to aid the optimization of Retrofit solutions within the RETROFIT55 framework
Authors: Nikos Themelis, George Nikolaidis, Vassilios Zagkas, Nikolaos Tsoulakos
Reference Contact: nthemelis@naval.ntua.gr
Conference: Annual Meeting of the Marine Technology Institute
Presentation Date: 15-11-2023

Paper Title: Artificial intelligence based digital twin models to monitor ship safety and efficiency
Authors: Zhang, M.
Reference Contact: mingyang.0.zhang@aalto.fi
Conference: The Gulf of Finland Science Days 2023
Presentation Date: 16-17/11/2023
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Paper Title: Retrofit solutions to reduce GHG emissions in maritime transport
Authors: Alessandro Iafrati, Spyros Hirdaris, Thomas Koch, Hannes Renzsch, Nikos Themelis, Laura Herrera, Nikolaos Tsoulakos, Vassilios Zagkas, Alessandro Maccari, Gregory Johnston, Sabino Jose Chapero, Milad Armin, Roger Armson, Cosimo Cervicato
Contact: alessandro.iafrati@cnr.it
Conference: Transport Research Arena (TRA)
Presentation Date: 15-18/04/2024
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Paper Title: Comparison and Evaluation of Learning Capabilities of Deep Learning Methods for Predicting Ship Motions
Authors: Zhang, M., Liu, C., Kujala, P., & Hirdaris, S.
Reference Contact: mingyang.0.zhang@aalto.fi
Conference: 15th International Marine Design Conference
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Paper Title: AI-Based Surrogate Model for the Prediction of Ship Fuel Consumption Reflecting Hydrometeorological Conditions

Authors: Zhang, M., Tsoulakos, N., Kujala, P., & Hirdaris, S.
Reference Contact: mingyang.0.zhang@aalto.fi
Conference: International Conference on Offshore Mechanics and Arctic Engineering
Presentation Date: 9-14/06/2024
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Paper Title: Optimisation of an Air Lubrication System for Geometry and Topology: A Proposed Solution for Ship Retrofitting
Authors: Hannes Renzsch, Andrew Spiteri, Milad Armin, Eduardo Blanco-Davis, Alex Routledge
Contact: renzsch@friendship-systems.com
Conference: 16th Symposium on High-Performance Marine Vehicles - "Technologies for the Ship of the Future", Germany
Presentation Date: 10-12/06/2024

Paper Title: A vortex-element method for the calculation of waves and ship motions effects
Authors: Kostas Belibassakis
Reference Contact: kbel@fluid.mech.ntua.gr
Conference: The 34th International Ocean and Polar Engineering Conference, Rhodes, Greece
Presentation Date: 16-21/06/2024
Link to the file: https://www.researchgate.net/publication/381582719_A_vortex-element_method_for_the_calculation_of_waves_and_ship_motions_effects_on_propeller_performance

Paper Title: Status and future trends of electrification-based solutions for efficiency-oriented ship retrofitting
Authors: Maria Carmela Di Piazza, Marcello Pucci, Alessandro Iafrati
Reference Contact: mariacarmela.dipiazza@cnr.it
Conference: IEE ESARS ITEC Europe 2024
Presentation Date: 26-29/11/2024 (to be presented, but the paper has already been provided).

Posters

In addition to the proposed KPI for publications, three posters have been presented in events in late 2023 and early 2024 such as Blue Planet Economy Event at 2023 Fiera di Roma, TRA 2024, and 2024 IEEE International Conference on Electrical Systems for Aircraft, Railway, Ship Propulsion and Road Vehicles & International Transportation Electrification Conference (ESARS-ITEC).

Other dissemination activities

- **ASTANDER**
  The director of Astander spoke as a representative of the maritime cluster of Cantabria (Association of companies in the Naval sector in Cantabria), and director of AStillero Astander of the RETROFIT55 project in Navalia.
- **AALTO**
  The representatives of AALTO attended the following academic events and presented the related research outcomes of RETROFIT55 as presented in the Participations in events and fairs section above.
    - The 43rd International Conference on Ocean, Offshore, and Arctic Engineering (OMAE® 2024) in Singapore, from June 9-14, 2024.

- The 15th International Marine Design Conference (IMDC 2024) in the Netherlands, from June 2-6, 2024. The Gulf of Finland Science Days 2023 in Tallinn, on November 16–17, 2023.
- BUILD-IT 2023 – Workshop on Digital Twins, on October 19-20, 2023.

- **AALTO and SFWD**
  Representatives of AALTO and SFWD attended the ECMAR brokerage event in Bruxelles on May 2023.
- **CNR**
  CNR representatives disseminated the project activities at the following events:
  - **BLUE PLANET ECONOMY** – Rome, Italy, 10 -12th October 2023.
    The CNR participated to the Blue Planet Exhibition in October 2023, exposed a Roll-Up and presented the project in a booth dedicated to the Institute of Marine Engineering of CNR and to other projects carried out by the institute.
  - **CNR Centenary** – Rome, Italy, October 2023
    On the occasion of the Centenary of the National Research Council of Italy, the Institute of Marine Engineering hosted a celebration event, in which different projects were illustrated to the general public. The event was held in three Saturdays of October 2023 with an average of about 160 visitors per day.
  - **Green Marine M6 GA meeting** – Rome, Italy, September 2023.
    The CNR was invited to attend the public event of the GA meeting of the Green Marine project in M6. CNR delivered a short presentation of the RETROFIT55 project.

3.4 Impact and lessons learned

The RETROFIT55 project has yielded significant insights into the multifaceted challenges and opportunities within the maritime decarbonization landscape. Central to our initiative is the integration of advanced technologies with traditional maritime practices, a symbiosis that has proven both fruitful and instructive according to the general comments received at the various events and has marked the need of adaptive strategies in achieving substantial greenhouse gas reductions.

The lessons learned span technical, operational, and strategic dimensions, each offering critical takeaways for the broader maritime industry.

- ***Technical Impact***: The deployment of hybrid propulsion systems and retrofitting strategies has highlighted the need for precision in adapting new technologies to existing ship designs. The data derived from these integrations have provided invaluable insights into the optimization of fuel efficiency and the mitigation of retrofitting challenges. Particularly, the application of digital twins has emerged as a powerful tool in simulating and refining retrofitting options before actual implementation, reducing costs and enhancing outcomes.
- ***Operational Impact:*** The real-world application of our proposed solutions has revealed the importance of comprehensive crew training and operational adjustments. The shift towards more sustainable practices necessitates a rethinking of operational protocols, and our findings emphasise the critical role of human factors in the successful adoption of new technologies. Moreover, the iterative feedback loop established with ship operators has been instrumental in refining our strategies, ensuring that technological advancements are matched by operational efficacy.
- ***Strategic Impact:*** The collaboration among consortium members, encompassing universities, research institutions, and industry players, has been a cornerstone of our success. This partnership has not only facilitated the sharing of knowledge and resources

but has also fostered a culture of innovation that transcends organisational boundaries. The strategic alliances formed during this project will undoubtedly serve as a foundation for future endeavours, both within and beyond the scope of RETROFIT55.

- ***Exploitation and Business Plans***: The consortium partner ARMADA is deploying the technology via dedicated pilot on LNGC Cool Husky in October of this year. More info can be found here: https://www.offshore-energy.biz/armada-to-install-air-lubrication-tech-on-coolcos-lng-carrier/ AWS is developing relationships with commercial partners. AWS has entered into an agreement with Lomar Labs to join their accelerator program. This can include access to ships for trials. Negotiations are advanced with a production, assembly and service partner for the delivery of our wing sail system to the market. A number of other collaborations are being explored. Work done under WP1, WP2 and WP4 have been significant in advancing these relationships. The scale model of the AWS wing-sail system was displayed at Posidonia, at SMM and at the CAESES Users conference. This exposure has helped to promote the RETROFIT55 activities and also the AWS system itself. B4B's expected results, aimed to improve the implementation of their technology by facilitating and solving specific challenges in certain vessels segments, are advancing and currently under commercial evaluation.

3.5 Proposed next steps to exceed our KPIs

Building upon the foundation of success laid thus far, the proposed next steps are designed to not only meet, but also to exceed the Key Performance Indicators (KPIs) outlined for the RETROFIT55 project. Our strategic focus will be on four critical areas: enhanced technology deployment, stakeholder engagement, strategic dissemination and publication impact.

- ***Enhanced Technology deployment****:* The deployment of hybrid propulsion systems and retrofitting strategies has highlighted the need for precision in adapting new technologies to existing ship designs. The data derived from these integrations have provided invaluable insights into the optimization of fuel efficiency and the mitigation of retrofitting challenges. Particularly, the application of digital twins has emerged as a powerful tool in simulating and refining retrofitting options before actual implementation, reducing costs and enhancing outcomes.
- ***Increase stakeholder engagement****:* The real-world application of our proposed solutions has revealed the importance of comprehensive crew training and operational adjustments. The shift towards more sustainable practices necessitates a rethinking of operational protocols, and our findings emphasise the critical role of human factors in the successful adoption of new technologies. Moreover, the iterative feedback loop established with ship operators has been instrumental in refining our strategies, ensuring that technological advancements are matched by operational efficacy
- ***Sustainable strategic dissemination***: The collaboration among consortium members, encompassing universities, research institutions, and industry players, has been a cornerstone of our success. This partnership has not only facilitated the sharing of knowledge and resources but has also fostered a culture of innovation that transcends organisational boundaries. The strategic alliances formed during this project will undoubtedly serve as a foundation for future endeavours, both within and beyond the scope of RETROFIT55.
- ***Publication's impact****:* A key component of our strategy has been the active dissemination of our findings through participation in prominent conferences and the publication of research in high-impact journals. These efforts have not only enhanced the visibility of RETROFIT55

but have also established a strong publication track record. Our peer-reviewed articles have already begun to accrue citations, signalling the project's influence within the academic and professional communities. Participation in international conferences has provided a platform for presenting our work to a global audience, fostering dialogue and collaboration that are essential for driving innovation in maritime decarbonization.

3.6 Detailed activity feedback by consortium members

Consortium members have provided valuable feedback on the activities conducted thus far, reflecting a high level of engagement and commitment across the board. The general consensus is that the project's communication and dissemination strategies have been effective in raising awareness and fostering collaboration.

It is noteworthy that most of the consortium members have highlighted the success of the project and echoed social media post helping in reaching a wide audience and facilitating a broader knowledge exchange.

However, some partners noted challenges in coordinating activities across different time zones and cultural contexts, which occasionally led to delays. To address this, we will implement more flexible meeting schedules and provide additional support for cross-cultural communication.

3.7 Activities not performed and rationale

The newsletter has not been prepared. The plan was to prepare a newsletter by M18-M20. Unfortunately, preparation for POSIDONIA 2024 got in the way and SFWD was unable to deliver this. The plan is now to have the first edition of the newsletter ready in M21. In order to make up for lost time, the second edition shall be issued in the period Dec 2024 – Feb 2025.

4 Updated communication and dissemination guidelines

Here are some suggestions for the given set of rules and guidelines for partners when implementing and reporting dissemination and communication activities:

- SFWD is responsible for coordinating the dissemination and communication process and keeping all partners informed.
- Before publishing or uploading promotional materials, articles, press releases, and newsletters, the consortium shall review them internally.
- Partners are responsible for submitting press releases to media outlets in their respective countries.
- Presentations at events will adhere to the templates designed for this purpose.
- Partners are responsible for identifying suitable events in their countries where they can present the project.
- If partners organise workshops or presentations at third-party events, they will inform SFWD and CNR, so that the information can be disseminated on the project website and social media.
- When organising press events, a list of participants should be circulated at the beginning of the event. Short questionnaires should be prepared for collecting feedback from the audience at the end of the event.
- All public events will have printed leaflets distributed to participants.
- Partners will collaborate to produce articles that can be submitted to topic-specific magazines and journals.
- Partners report all dissemination and communication activities to SFWD and RETROFIT55's project managers regularly.

5 Closing remarks

The communication and dissemination plan of the RETROFIT55 project outlines a comprehensive approach that will aid in effectively sharing of the outcomes and the activities of the project. The partners involved in the RETROFIT55 project will use this plan as a starting point, which can be adjusted as they evaluate the effectiveness of various dissemination materials and strategies in reaching specific stakeholders and achieving project goals. As much as possible, the DACP outputs will be made available under a Creative Commons Licence CC-BY. By identifying the key target groups and the best methods for reaching them, future efforts to spread information about the RETROFIT55 project will aim to generate increased interest and showcase the project's results to the chosen audiences.

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