VESSEL ADVANCED CLUSTERED AND COORDINATED ENERGY STORAGE SYSTEMS

Multidisciplinary approach to accelerate the development of innovative energy storage systems to complement batteries for zero-emission vessels.

D6.2 Dissemination, Exploitation, and Communication Plan, IPR management - Update

Document Identification			
Status	Final	**Due Date**	31/07/2024
Version	1.0	**Submission Date**	23/07/2024

Related WP	6	**Document Reference**	D6.2
Related Deliverables	D6.1	**Dissemination Level**	PUB
Lead Participants	UOB	**Lead Author**	Pietro Tricoli, UOB
Contributors	All partners	**Reviewers**	RSE

Keywords
Dissemination plan, exploitation plan, communication plan, IPR management

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831

Table of content

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831

1. Executive summary

This report is the second version of Dissemination, Exploitation, and Communication Plan, IPR management produced within WP6 “Dissemination, communication and exploitation”, Task 6.1 “Dissemination and communication of the project results” and Task 6.2 “IPR Management”.

The 2 main objectives of WP6 are:

- raise the awareness of the technologies proposed by V-ACCESS to the scientific community and other potential stakeholders through a detailed plan of dissemination activities
- review and update the process that identifies, assesses, and manages the intellectual property rights (IPR) generated during the project.

Deliverable D6.1 provides an update on the dissemination activities and IPR developed in the period Feb 2024 – January 2025.

This deliverable has the following sections:

- Section 2 defines abbreviations and acronyms used in this report;
- Section 3 describes the progress of the project on dissemination project’s background and its current situation to identify the best strategy to achieve an effective communication of the project’s results to different audiences;
- Section 4 provides an update on the project’s main objectives;
- Section 5 provides an update on the project’s target audience;
- Section 6 reviews the V-ACCESS dissemination strategy;
- Section 7 reports on the recent project’s external communication activities;
- Section 8 reports the update on the IPR generated by the project and protection activities;
- Section 9 draws the conclusions.

This project has received funding from the European Union’s Horizon Europe research and innovation programme under grant agreement No. 101096831

2. Abbreviations and acronyms

ESS	Energy storage system
GDPR	General Data Protection Regulation
HiL	Hardware in the loop
IPR	Intellectual property right
KPI	Key Performance Indicators
NDA	Non-disclosure agreement
SMES	Superconducting magnetic energy storage
TCO	Total cost of ownership
TRL	Technology readiness level
ZEWT	Zero-emission waterborne transport

3. Updated situation of the project on dissemination

After the first year of research, the analysis of the selected case studies is progressing according to the original plan. The updated SWOT analysis has been presented here to understand how to best overcome challenges and future obstacles regarding the communication and dissemination of the project's results.

Strengths	Weaknesses
• Strong technical knowledge of consortium's partners in the proposed technologies with clear connection to shipbuilding industry and ESS suppliers • Skills on modelling of electrical systems and control approaches (simulations, control HiL, power HiL) that facilitate the study of several use cases and customised solutions • Demonstration of the V-ACCESS technologies across the supply chain (ESS suppliers, shipbuilders, system integrators)	• Complexity of the new system due to additional ESS and integration on vessels subject to strict constraints and safety requirements. *This will be mitigated by the optimised battery design and longer lifetime that reduce the TCO of the storage system* • Potential substantial investment for scaling up the technologies for a small market (tens of vessels). *This will be mitigated by the introduction of more types of vessels profitable for electrification in comparison to battery-only vessels*
Opportunities	**Threats**
• The proposed research originates from urgent policy requirements of introducing more zero-emission vessels and industrial needs of building such vessels with reasonable investment and final cost for the end-users • Advances in the sectors of power systems, power electronics, vessel's integration provide opportunities for application of supercapacitors and SMESs leading to the acceleration of these technologies to meet the needs of the maritime industry.	• New emerging technologies, competitive to supercapacitors and SMES. *V-ACCESS will use the existing supply chain (with the necessary modifications/additions), keeping investments costs low and exploiting internal knowhow* • Competition from Asian countries. *Products made in EU will ensure ethical and environmental responsibility, high quality. Specific advanced skills not available overseas.* • Changes in regulations towards emissions for waterborne transport. *Disseminate the project widely to the general public to raise awareness about the importance of improving the environmental sustainability of maritime transport.*

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831

4. Objectives – update

The main objectives of the dissemination strategy of V-ACCESS are:

- Develop a project brand identity in order to allow an easy identification of the project, obtained with a logo including the key elements of the research (vessels and energy storage) and a clear differentiation from other ZEWT projects (M6) – **100% completed**;
- Communicate the main impacts of V-ACCESS to specialised and non-specialised target audiences (M1-M36) – **in progress, 50% completed**;
- Communicate the competitive advantages of the project to selected target groups (M1-M36) – **not started – 0% completed**;
- Disseminate and ensure public access to the non-confidential project's results (M1-M36) – **in progress, 30% completed**;
- Facilitate the exploitation of the project's results (M1-M36) - **in progress, 30% completed**;
- Provide up-to-date information about the project (M1-M36) – **in progress, 50% completed**;
- Translate the scientific results into messages for public outreach, accessible also to the non-technical audience and the general public to ensure the wider dissemination of the results (M1-M36) – **in progress, 50% completed**;
- Raise awareness of relevant stakeholders from the wider energy storage sector and the marine sector of the proposed technologies and results of the demonstrator (M1-M36) – **not started, 0% completed**.

5. Target audience

As indicated in D6.1, the selected target audiences of V-ACCESS are:

- Marine-sector stakeholders.
- Scientific community
- General public

5.1. Marine-sector stakeholders

As indicated in D6.1, the marine-sector stakeholders identified for this project are:

- shipbuilders
- suppliers of power equipment;
- technology providers;
- systems integrators;
- shipowners and transport operators.

The first advisory board meeting has been held on the 15th of May 2024. In this occasion the project has been presented and the board has been briefed on the technical progress to date. The advisory board has provided valuable feedback on the continuation of the research work and suggestion for the commercialisation phase.

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831

5.2. Scientific community

The following papers and scientific outputs have been published so far using the results from the project activities:

No.	Title	Authors	Partners
1	Feasibility Study of a Modular Multi-Purpose Frigate with an Integrated Power & Energy System. 2023 IEEE Electric Ship Technologies Symposium (ESTS), Alexandria, VA, USA, 2023, pp. 1-9 doi: 10.1109/ESTS56571.2023.10220489.	L. Braidotti, A. Vicenzutti, D. Bosich, V. Bucci, G. Sulligoi, and G. Trincas	UNITS
2	A Multi-objective Optimization for the Power Management of Shipboard Zonal DC Microgrids. 2023 IEEE Electric Ship Technologies Symposium (ESTS), Alexandria, VA, USA, 2023, pp. 484-489 doi: 10.1109/ESTS56571.2023.10220500.	A.A. Tavagnutti, D. Bosich, A. Vicenzutti, V. Pediroda, and G. Sulligoi	UNITS
3	A Stability-Aimed PMS for Shipboard Zonal DC Microgrids: The C-HIL Tests on Real-Time Platform. 2023 IEEE Electric Ship Technologies Symposium (ESTS), Alexandria, VA, USA, 2023, pp. 453-457 doi: 10.1109/ESTS56571.2023.10220502.	A. A. Tavagnutti, M. Chiandone, D. Bosich, and G. Sulligoi	UNITS
4	Optimisation and control of electric ship microgrids with short-term energy storage systems IEEE Transactions on Transportation Electrification doi: 10.1109/TTE.2023.3326355	F. Hardan and P. Tricoli	UOB
5	Management and control of short-term energy storage systems in electric ship 2023 International Conference on Clean Electrical Power (ICCEP), Terrasini, Italy, 2023, pp. 70-75 doi: 10.1109/ICCEP57914.2023.10247426	F. Hardan and P. Tricoli	UOB
6	Design of a Test Bench for 1.5kV Solid State Circuit Breaker for Transport Electrification. 7ª edition of the International Conference on Electrical Systems for Aircraft, Railway, Ship Propulsion and Road Vehicles (ESARS) and International Transportation Electrification Conference, Naples, Italy, 2024	M. Meraj, P. Weston, and P. Tricoli	UOB

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831

7	A Cross-Current Compensation Control Scheme to Improve Voltage Regulation and Power Sharing in DC Shipboard Microgrids. 2023 IEEE Electric Ship Technologies Symposium (IEEE ESTS 2023), Old Town Alexandria, VA, USA, August 1-4, 2023 doi: 10.1109/ESTS56571.2023.10220498	F. D'Agostino, F. Silvestro, and F. Sivori	UNIGE
8	Average Modeling of DC-DC Converters for DC Shipboard Microgrids with Constant Power Loads 2023 IEEE International Conference on Electrical Systems for Aircraft, Railway, Ship Propulsion and Road Vehicles & International Transportation Electrification Conference (ESARS-ITEC) doi: 10.1109/ESARS-ITEC57127.2023.10114903	F. D'Agostino, F. Silvestro, F. Sivori, A. Fidigatti, and E. Ragaini	UNIGE
9	Short-circuit DC Current Estimation of Hybrid Energy Storage Systems 7ª edition of the International Conference on Electrical Systems for Aircraft, Railway, Ship Propulsion and Road Vehicles (ESARS) and International Transportation Electrification Conference, Naples, Italy, 2024	F. Sivori, et al.	UNIGE
10	Novel Current Source Converter for Integrating Multiple Energy Storage Systems Energies 2024, 17(11), 2495 https://doi.org/10.3390/en17112495	M. Barresi, D. De Simone, L. Piegari, and R. Scalabrin	POLIMI
11	Life cycle assessment of emerging hybrid storage systems for maritime sector SETAC Europe 34th Annual Meeting 5 – 9 May 2024, Seville, Spain	M. L. Carvalho, M. A. Cusenza, and P. Girardi	RSE
12	Assessing the Life Cycle of Up-and-Coming Hybrid Storage Systems in the Maritime Industry: state of art. ICEER 2024 - The 11th International Conference on Energy and Environment Research; 24 – 26 July 2024, Coimbra, Portugal	M. L. Carvalho, M. A. Cusenza, and P. Girardi	RSE

5.3. General public

New publications have been done on social media to disseminate the project to the public.

Communication and dissemination activity was carried out on the social channel with visuals of technical content, but also relating to events and periodic meetings of the partners. Furthermore, several Linkedin posts and press releases were issued over the last year.

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831

6. Dissemination strategy

6.1. Timeline of dissemination activities

This table indicates the planned communication and dissemination activities for the second year of the project (M12-24) and will be updated again in 2025. The activities listed here have been also collected in the log-file held by UOB and uploaded on the shared repository of the consortium.

ID	Partner	Activity	Date(s)	Place	Link
1	UOB	Planning of a special session on "Electrification for transport vehicles and components" at the International conference on Clean Electrical Power	22-24 May 2024	Villasimius, IT	https://www.iccep.net
2	UOB	UK Clean Maritime Research Hub Conference	3 Jul 2024	London, UK	https://www.eventbrite.co.uk/e/clean-maritime-research-conference-tickets-866647103817
3	UOB	Centre for Power Electronics Annual Conference	8-9 Jul 2024	Newcastle, UK	https://www.powerelectronics.ac.uk/centre-for-power-electronics-annual-conference/
4	UOB	Maritime Innovation Week	19-21 Nov 2024	Newcastle, UK	https://www.portoftyne.co.uk/about-us/2050-innovation-hub/miw
5	ALL	7ª edition of the International Conference on Electrical Systems for Aircraft, Railway, Ship Propulsion and Road Vehicles (ESARS) and International Transportation Electrification Conference	26-29 Nov 2024	Naples, IT	https://www.esars.eu/esars2023/

6.2. Evaluation of dissemination activities

The evaluation of the dissemination activities will continue according to the strategy identified in D6.1. For easy referencing, they are reported here.

Initiation and preparation	
Budgeting	Factor in the cost to participate to workshops, conferences, etc..
Stakeholder analysis	Identify the key stakeholders to engage at the event.
Terms of reference	Consider the expectations and needs of stakeholders, especially language, format of the report (written, video, etc.), other products to be developed (PPT, pamphlet, etc.), involvement in stakeholder/dissemination workshops.
Management	
Data collection	Collect the main data for the creation of the knowledge product and generate the results.
Report writing	Organise the results in a legible way and appropriate for the selected target audience.
Follow-up and use	
Management response	The team leader of each partner will evaluate the knowledge product within 4 weeks of the finalisation of the report. During this time, it will be identified the event where the knowledge product will be disseminated.

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831

Finalisation and implementation	The dissemination strategy should be coordinated and agreed between the partners and then implemented. This includes the attendance to the selected events or the organisation of the dissemination workshops, the collection of information of new stakeholders, the generation of new ideas with other academic institutions and industry.

7. External communication

7.1. Project Identity

The project logo, the template for the oral presentations and lectures, and the template for the poster have been consistently used by all the project partners for all public presentations and stakeholders meeting. Therefore, it can be concluded that this activity has been delivered in full and in a successful way.

7.2. Promotional materials

Templates have been prepared for all the presentations and posters used for dissemination of the project's activities. All project partners have been invited to take advantage and to use these templates for communication and dissemination activities. Reports have also been formatted in the project template and consistently used for all deliverables.

7.3. Project banner and leaflets

The digital banner and leaflets have been used during the dissemination events in 2023 as planned. They will be used again for 2024 events, as indicated in section 6.1.

7.4. Project webpage

The project webpage www.v-access.eu is operational and includes the links to all the public deliverables of the project. The links will be activated as soon as the deliverables are approved by the EU.

The private online storage space has been used to host and share all the documents of the project. This space is accessible to all partners with a login system and some folders have different privileges, so that the IPR can be properly granted.

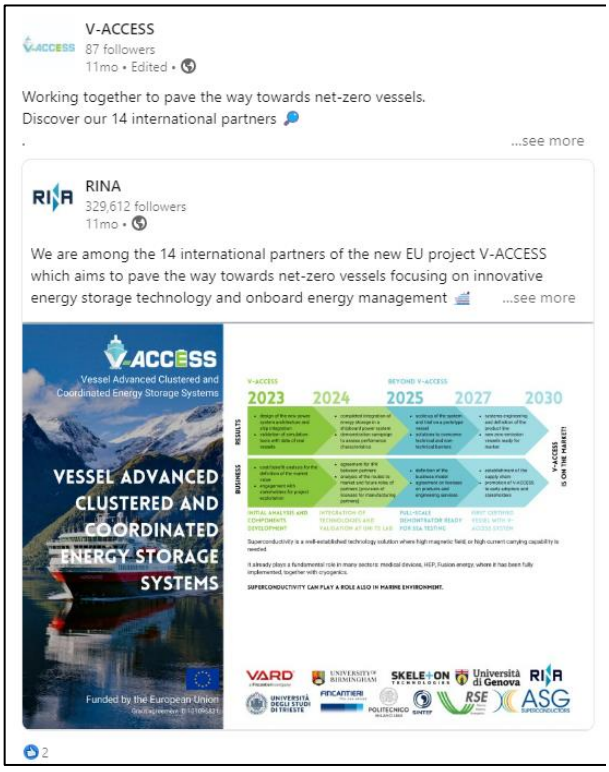
7.5. Twitter

The work on the Twitter page is in progress and it will be opened within M18 (July 2024).

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831

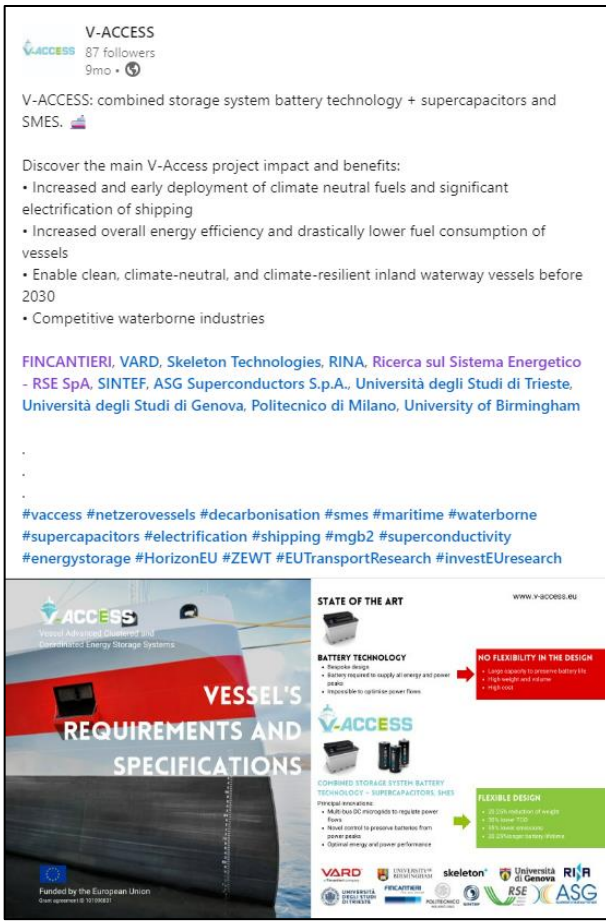
7.6. LinkedIn

The following news from the project have been disseminated through Linkedin.



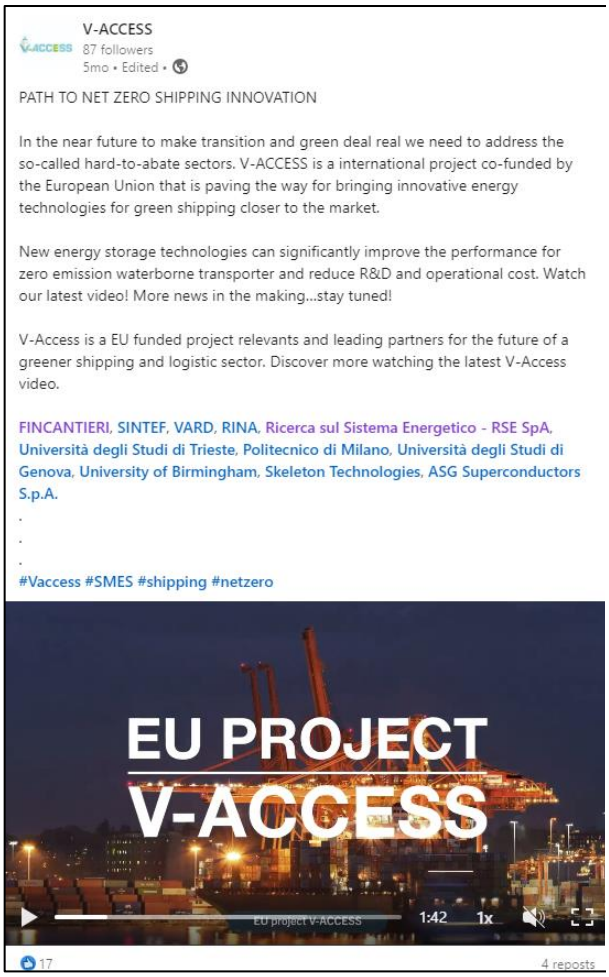
This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831

Multidisciplinary approach to accelerate the development of innovative energy storage systems to complement batteries for zero-emission vessels.

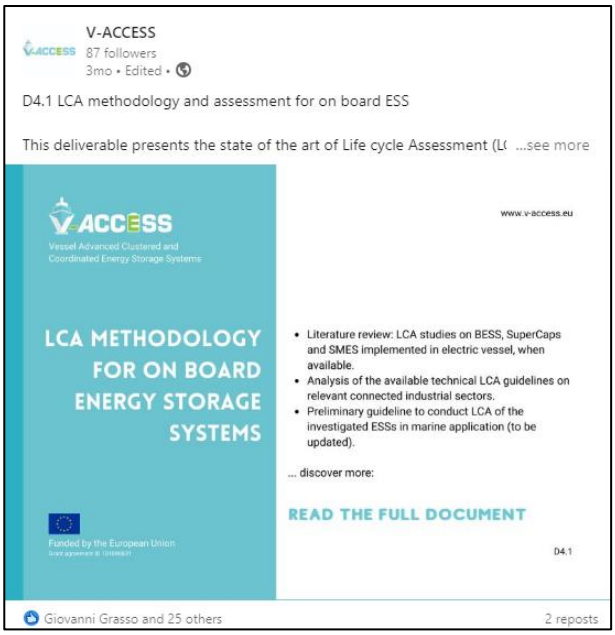


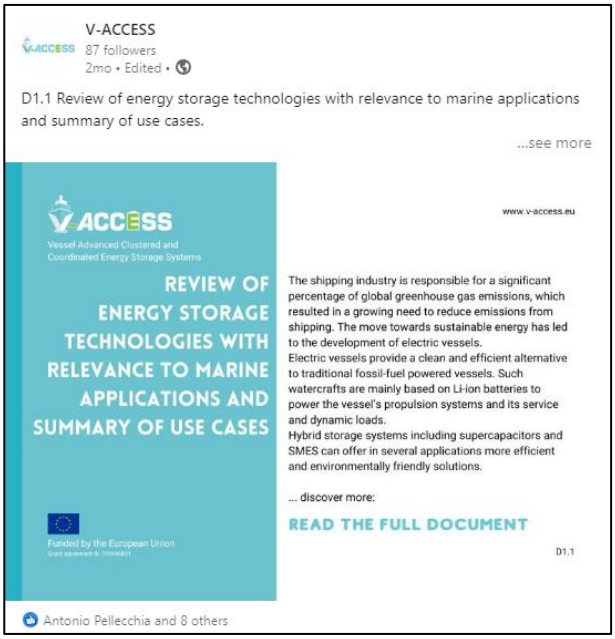
This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831

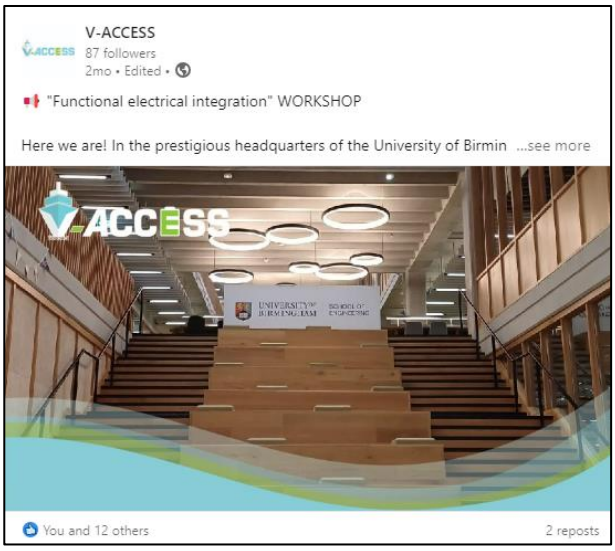


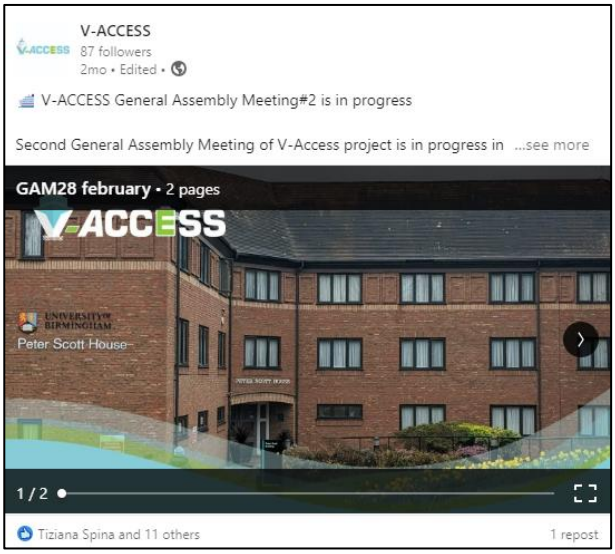
This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831





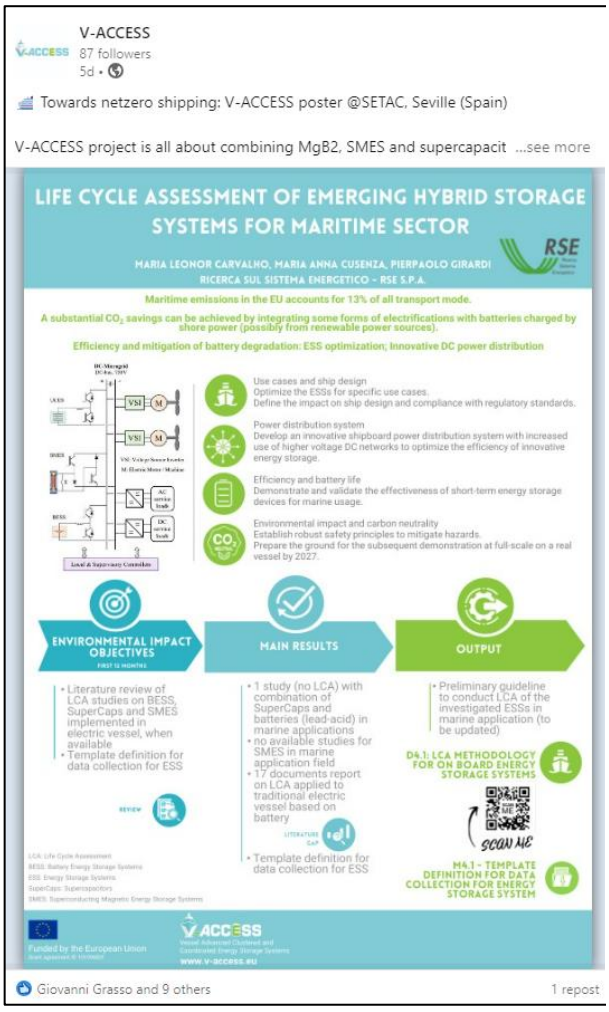
This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831





This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831

Multidisciplinary approach to accelerate the development of innovative energy storage systems to complement batteries for zero-emission vessels.



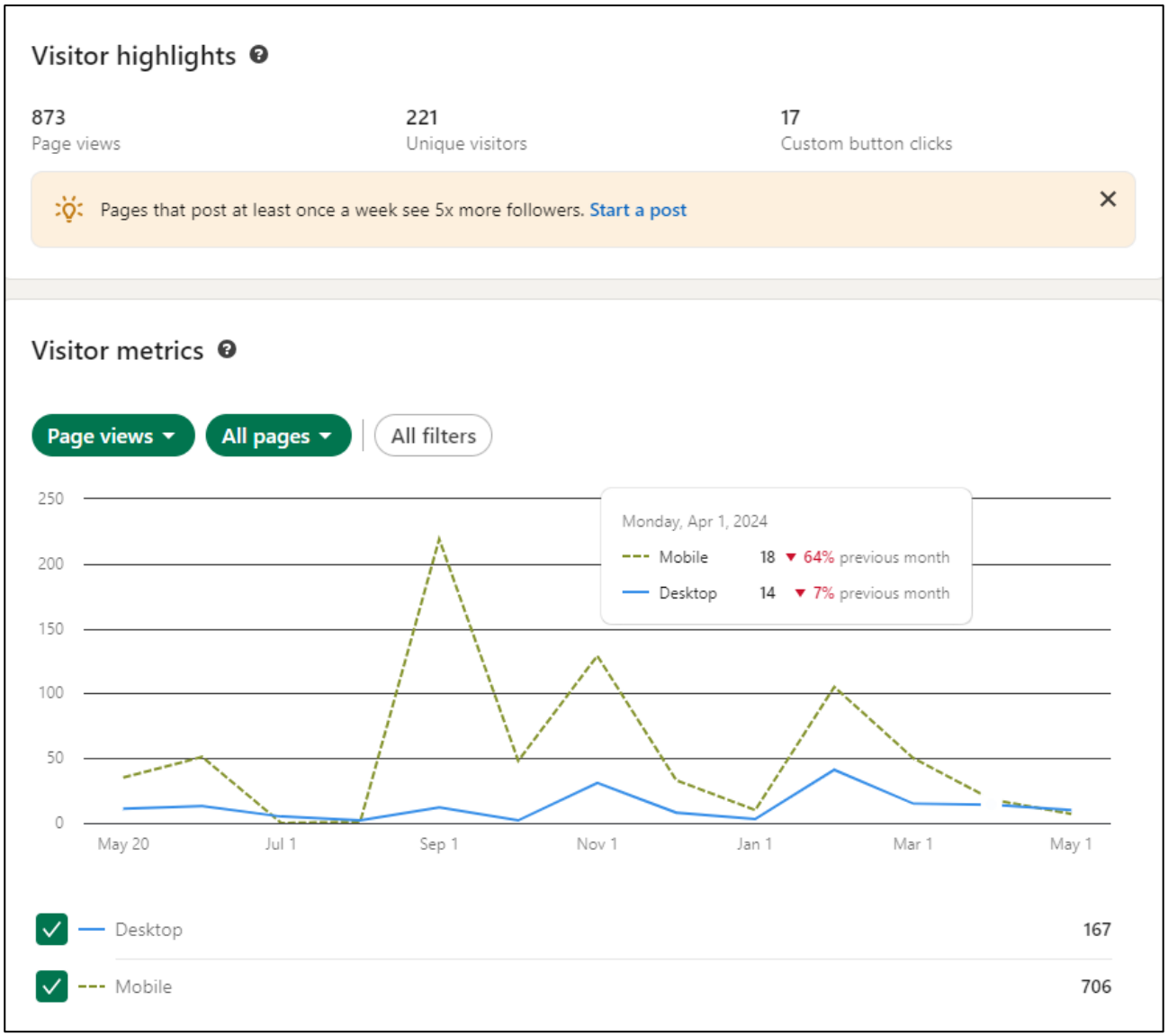
This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831

The project can be searched using the following hashtags:

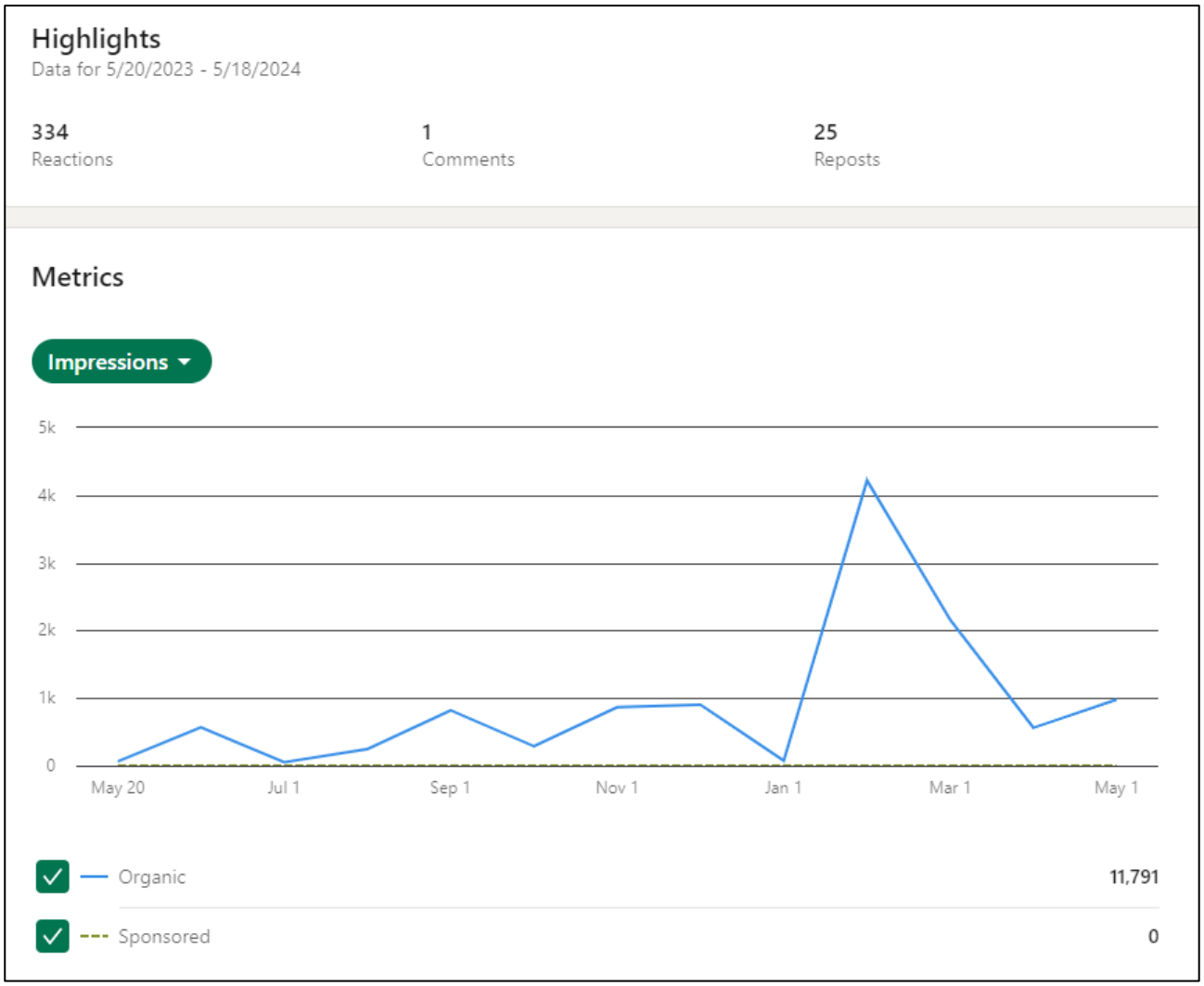
- #vaccess #netzerovessels #decarbonisation #smes #maritime #waterborne #supercapacitors #electrification #shipping #mgb2 #superconductivity #energystorage #HorizonEU, #ZEWT, #EUTransportResearch and #investEUresearch;

The page has 87 organic followers.

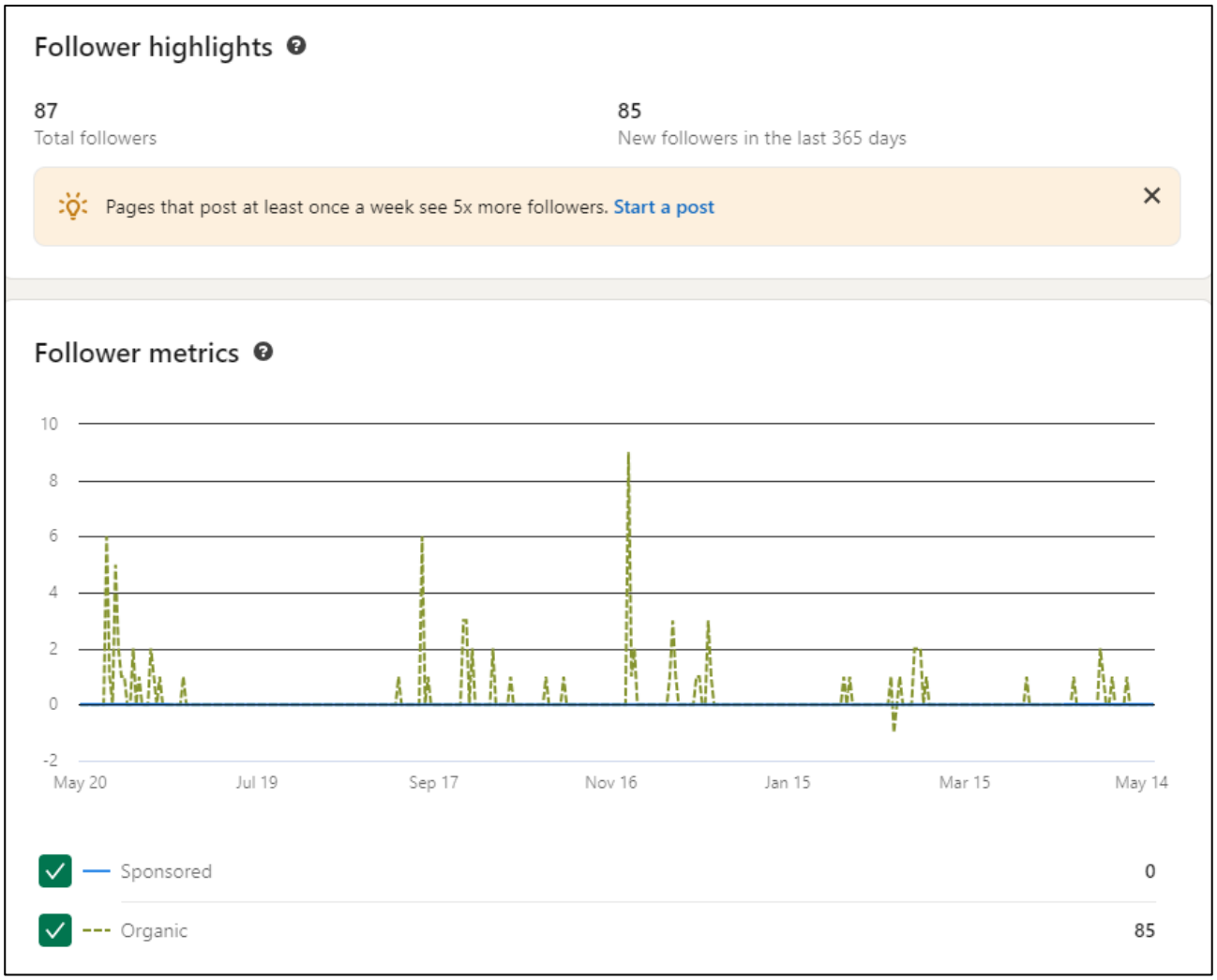
The following analytics for the period May 2023 – May 2024:



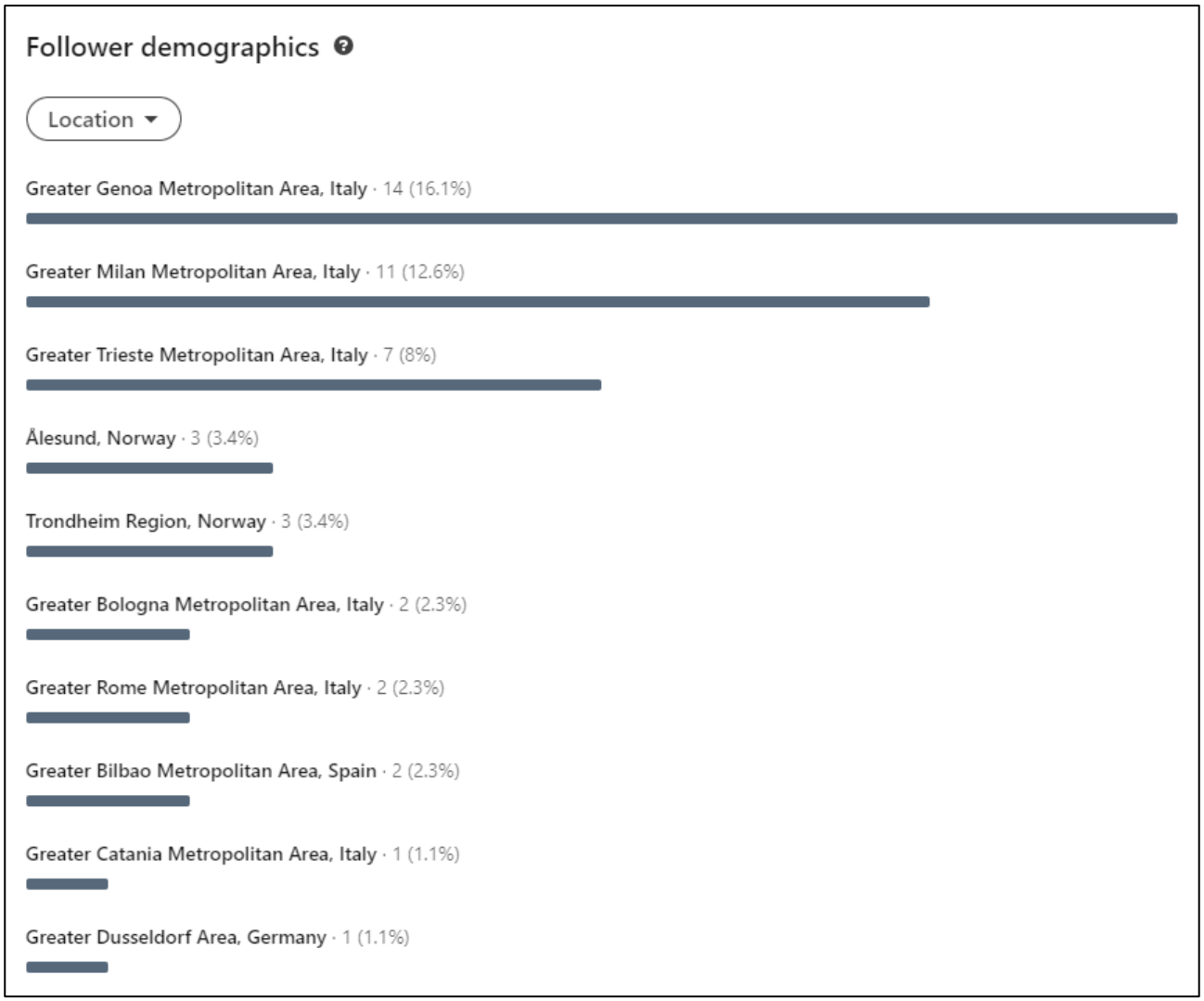
This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831



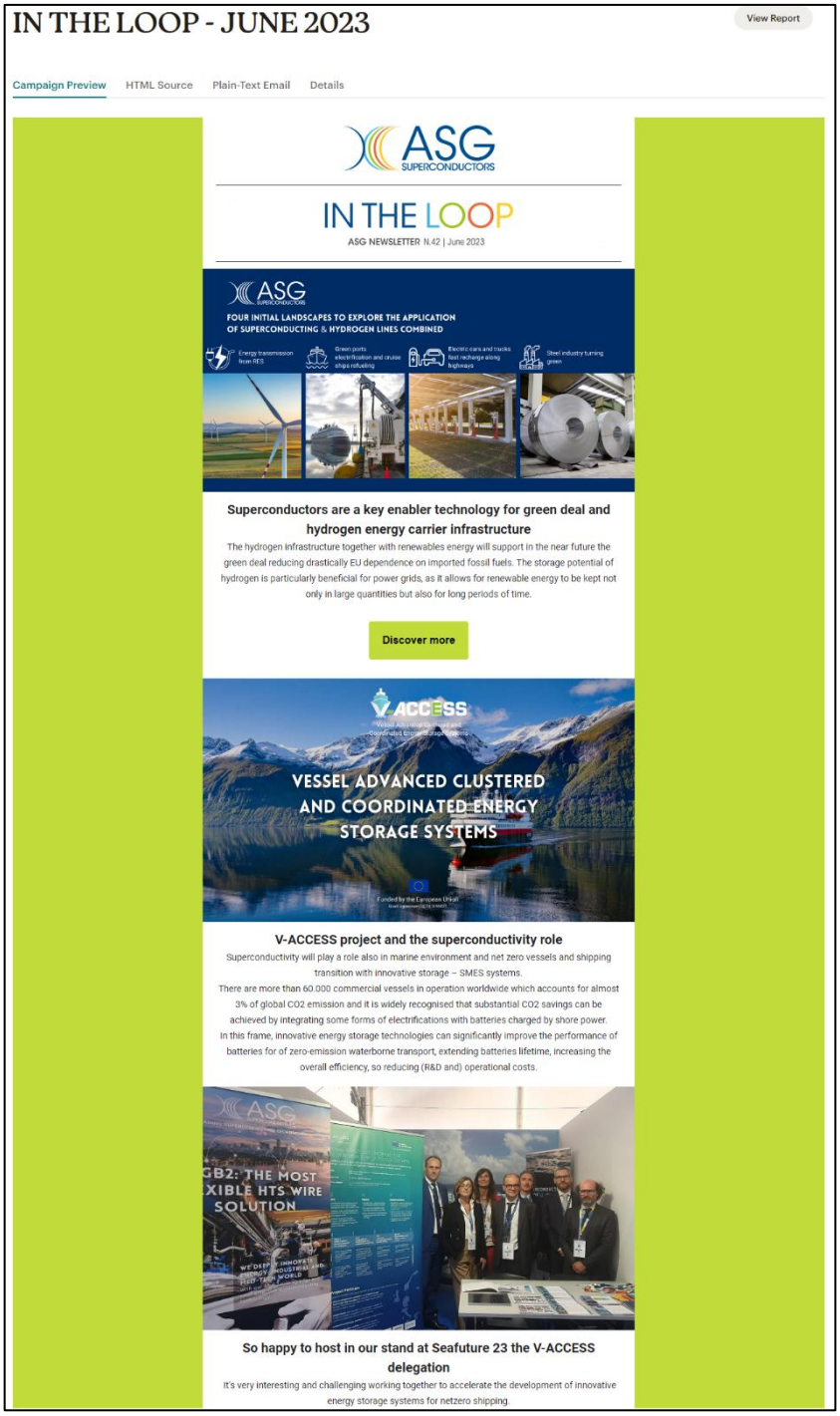
This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831



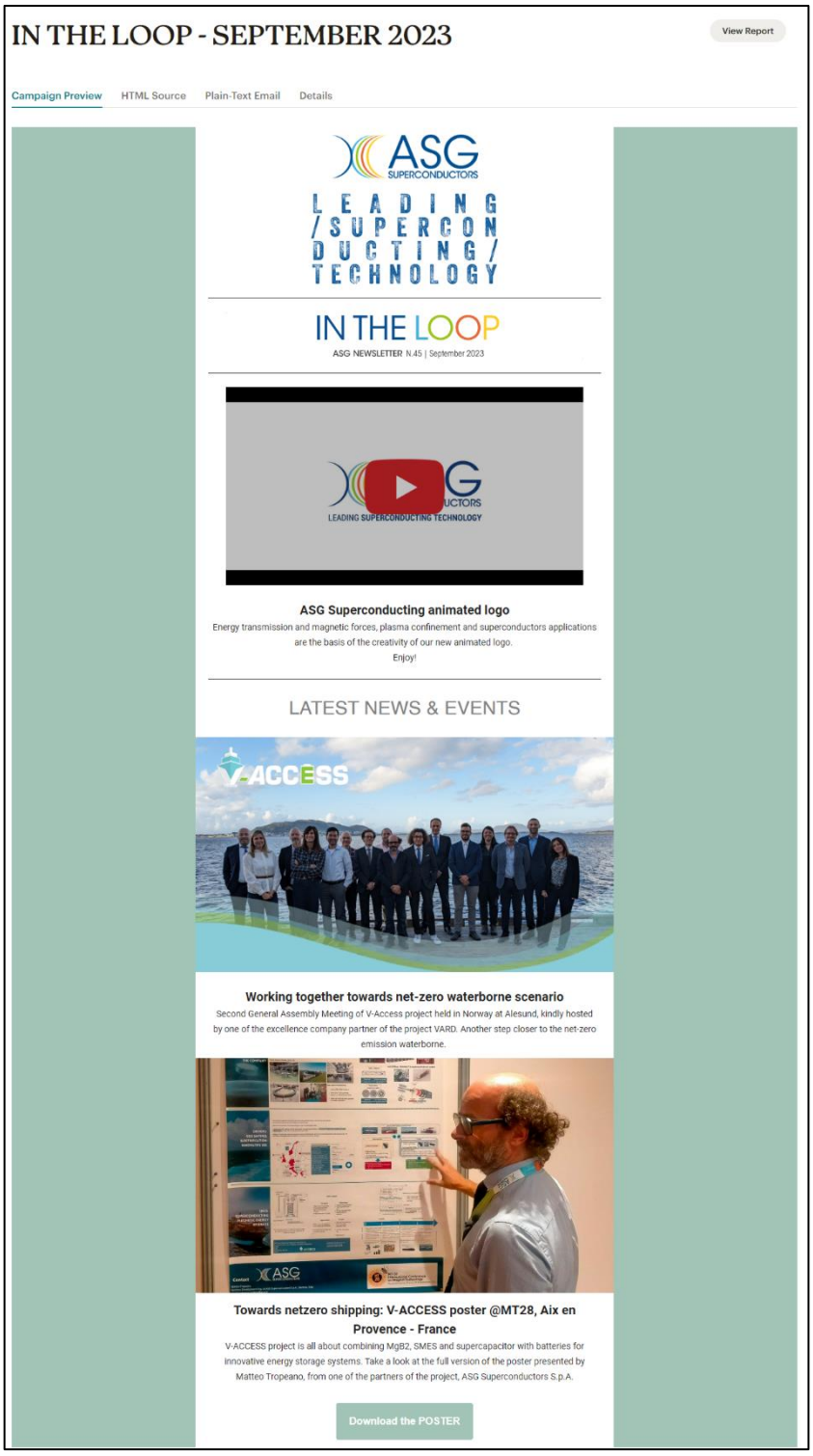
This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831

7.7. Project newsletter

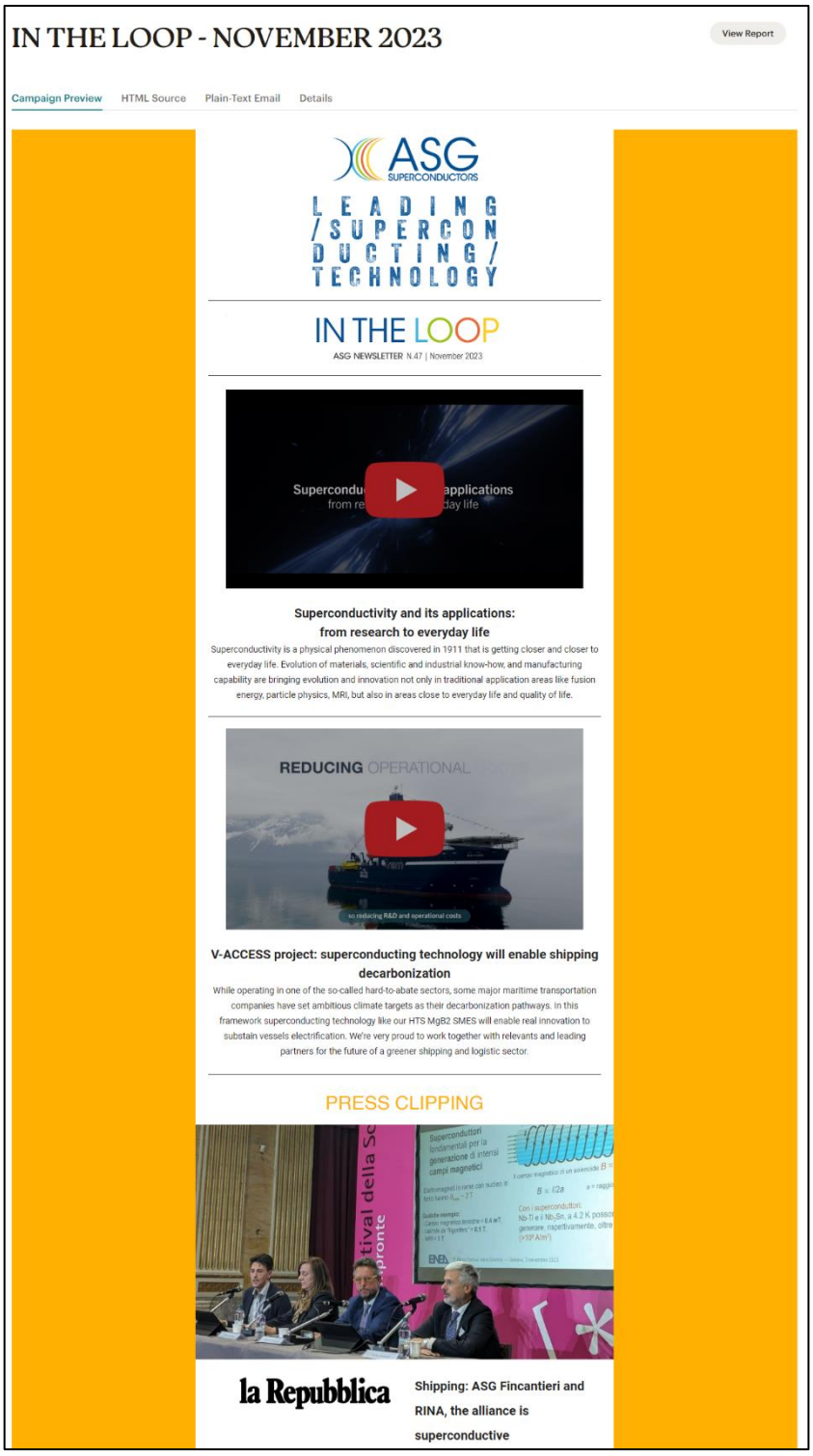
The project has been disseminated through the ASG Superconductors newsletter “In the Loop”, reaching about 2500 people, international and technical audience.



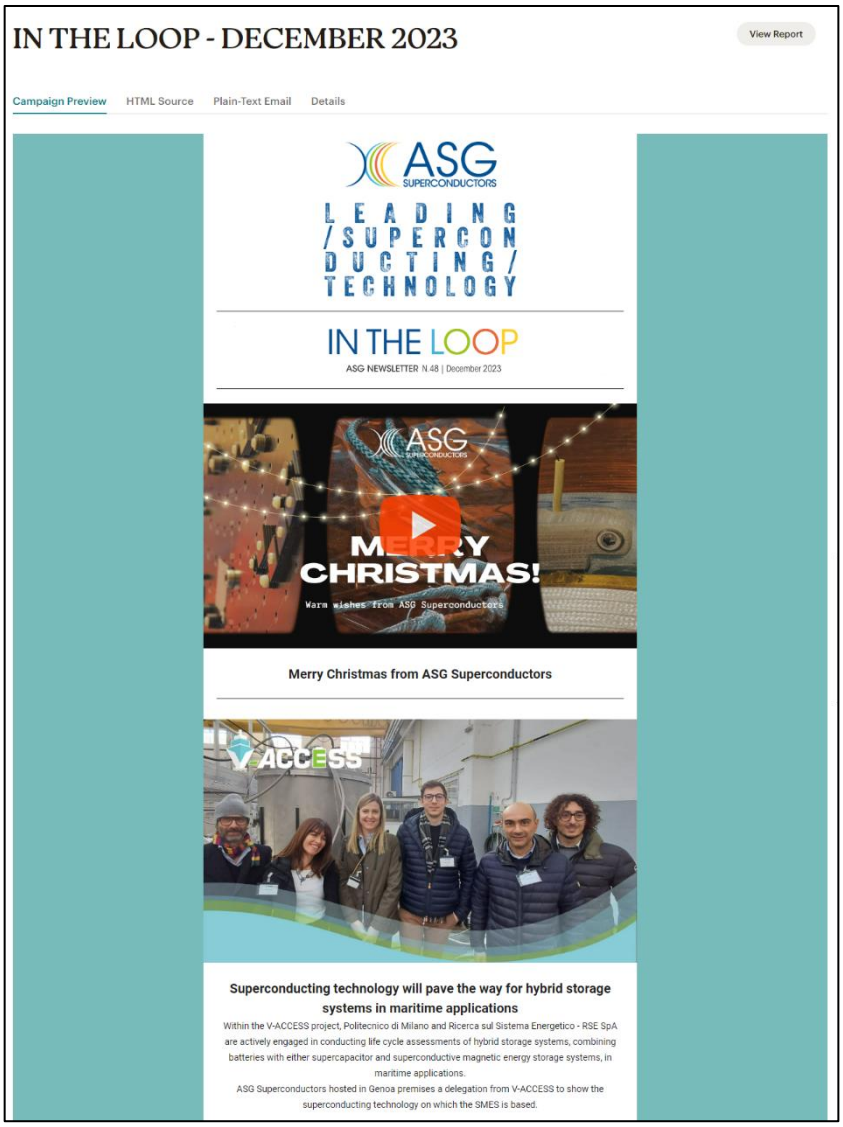
This project has received funding from the European Union’s Horizon Europe research and innovation programme under grant agreement No. 101096831



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831

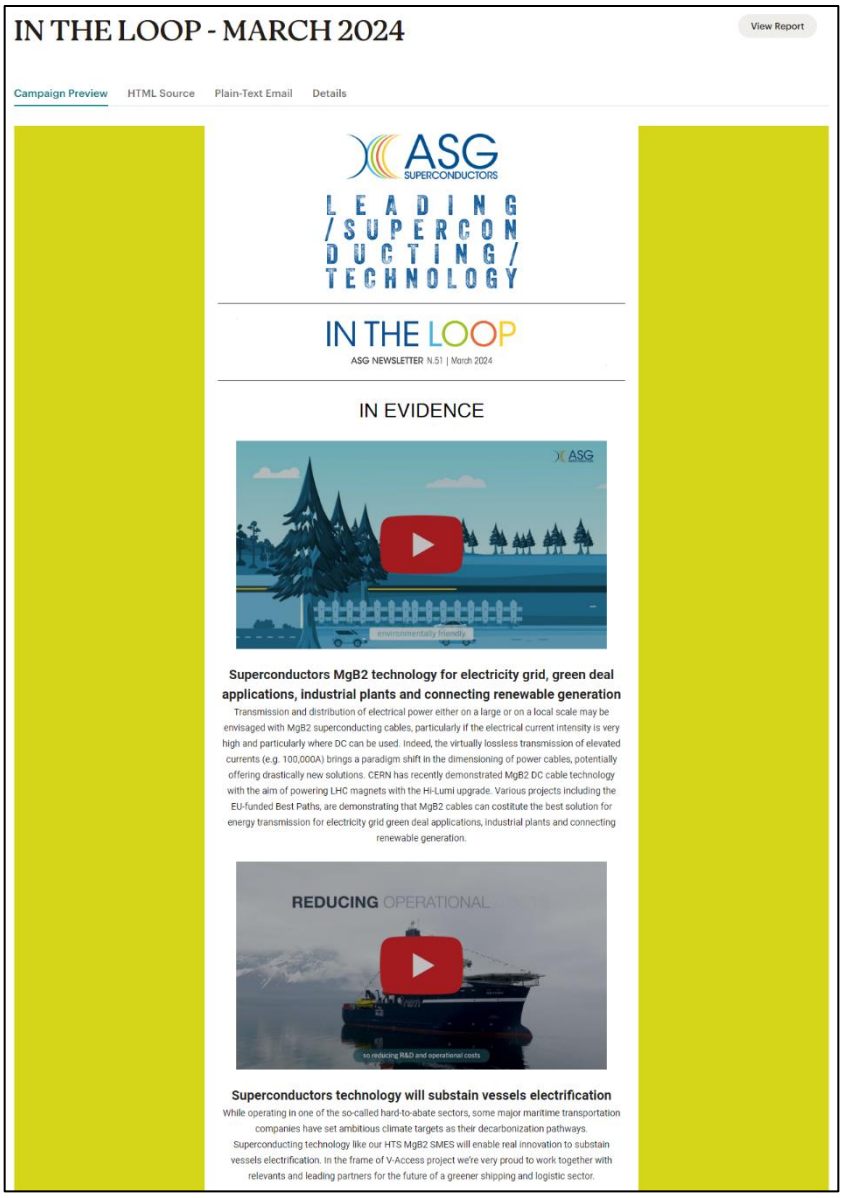


This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831

8. IP register

THE IP register has been updated and the latest version is reported in Figure 1.

No.	Name of Intellectual Property (IP)	Brief Description	Ownership (%)	Background IP	Ownership of Background IP	Potential Stakeholders	Potential for Exploitation	Status of Protection	Next Actions
Background IP - Existing IP at the beginning of project									
1	ETEF test facility	Plant layout, control design, hardware and software, operating system software, digital signal processing software, measurements solutions	UniTS (100%)	-	UniTS (100%)				
2	D-ETEF laboratory	Components/sub-systems libraries in offline simulations, components/sub-systems libraries in HIL emulations, real-time platform for digital twin, platform/approach/solution for Software-HIL/Control-HIL/Power-HIL studies	UniTS (100%)	-	UniTS (100%)				
3	Ship design	General ship design technical background such as general arrangements and technical space arrangements.	VE (100%)	-	VE (100%)				
4	Electrical systems on vessels	Design of electrical systems on vessels including single-line-diagrams (SLD) for AC/DC-grids and ESS.	VE (100%)	-	VE (100%)				
5	RINA rules	RINA public rules and guidelines related to the scope of Project	RGER (100%)	-	RGER (100%)				
New IP generated during the project									
1	Electromechanical model of a propulsion system for electric vessels	Model of a propeller driven simultaneously by an internal combustion engine and an electric motor. The electric motor is fed by supercapacitors	UoB (100%)	Model of a frequency drive with field-oriented control	UoB (100%)	Shipbuilders, End-users, Naval architects	New research projects, commercial projects, consultancy	Not started	Use the model for case studies, disseminate expertise to stakeholders
2	RINA rules	RINA Rules for the Classification of Ships, 2024 Edition	RGER (100%)	RINA rules	RGER (100%)	Shipbuilders, ship owners, ship operators	Commercial projects	Already protected	None
3									
4									
5									
6									

Figure 1. V-ACCESS IP register at M18.

9. Conclusions

The deliverable has shown an update of the communication and dissemination activities of V-ACCESS with the respect to the plan published at M6.

All partners have been actively involved in the communication and dissemination of V-ACCESS to assure the proper exploitation of the project's results and maximize the impact of the innovative technologies that will be produced in the framework of this project.

The consortium is regularly updating the content of the documents distributed to the stakeholders using the results developed in the project. The communication team has been busy in engaging with different target audiences with news for the website, LinkedIn posts and tweets. Several scientific papers have been already published and others are in preparation.

The effectiveness of the project's communication activities has been regularly monitored by considering the key performance indicators illustrated in D6.1. The analysis shows that the communication plan is working well, and the project is raising interest in the maritime community.

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101096831