

2023 NEWSLETTER



European Lightweight Clusters Alliance

ELCA NEWSLETTER

4TH EDITION

NEWSLETTER

FOREWORD

The start of 2023 set an impressive tone for the year ahead for ELCA. With the formation of valuable consortia and the writing of three out of four European funding proposals, including many of the ELCA members, we have already achieved the main objective set at the end of 2022. The RIGHTWEIGHT project has successfully come to an end. Additionally, the SALIENT and AMULET projects are running at full speed, allowing us to jointly make an impressive impact in the lightweighting industry. We've achieved international recognition, validated by multiple requests to speak, moderate, and attend the most relevant events in our industry. Throughout the year, we will continue setting this trend, pushing beyond our boundaries and expectations as our network learns and grows. Let's now look back at what was achieved through this new ELCA newsletter edition. Enjoy the read!

WHAT'S HAPPENED SO FAR?

Attending the JEC World 2023

At the JEC World, we had the privilege of taking the stage as experts in a discussion panel, alongside the European Lightweight Alliance (ELA) and European Lightweighting Network (ELN). Additionally, ELCA was chosen by both Mr. Werner Loscheider of the German Federal Ministry for Climate Action and Economic Affairs and Dr. George Kotsikos from the European Commission Health & Digital Executive Agency to moderate the keynote speeches. ELCA partners were present around the JEC, representing the alliance by showcasing their work and the projects accomplished within the ELCA network.

Expanding Horizons

During this period, we have successfully submitted proposals for Horizon Europe, Interreg NS, and M-ERA net, covering a wide range of topics and expanding to sectors such as Circular Economy, Artificial Intelligence, Construction, Biobased, and 2D materials. If all goes well, ELCA would have collectively secured approximately 20 million euros in funding in the first quarter alone.



Collaborative Plans for Innovation

The exploratory phase of the working groups has begun with great enthusiasm. All working groups have convened to express their interest and commitment for the upcoming years. Plans have been put in place to harness the knowledge and expertise of our members, seeking opportunities for collaboration and synergies in the future. We hope to find fruitful results from these gatherings in the second half of this year. Together, we will continue to drive innovation and make significant contributions to the lightweighting industry.

The ELCA network



13

–
Hubs



11

–
Countries



875

–
SMEs



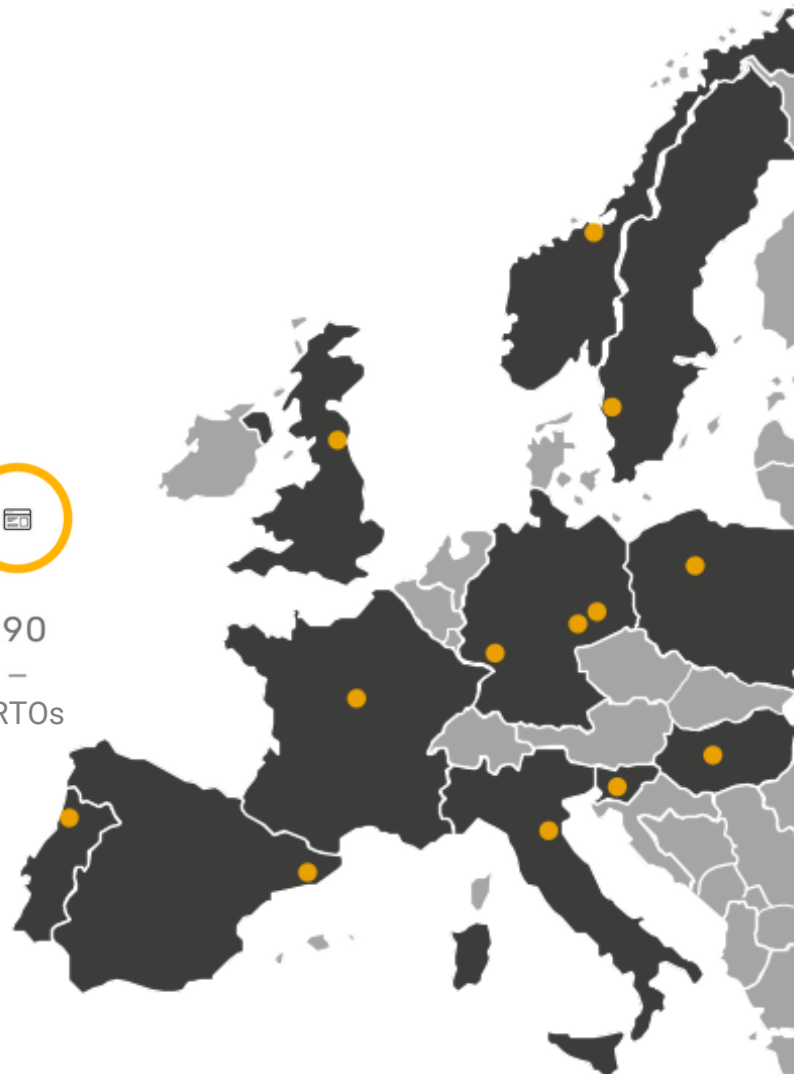
258

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Large Corp.



190

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RTOs





Driving Lightweight Technology:

Insights from lead players in the industry

WERNER LOSCHEIDER

Federal Ministry for Economic Affairs and Climate Action

What advice would you give to other countries to improve their positioning in the field of lightweight technology?

The key point is to understand this transformative technology as a philosophy leading to decreasing material and energy consumption. Lightweighting is not limited to a specific material or technology. This diversity is a great asset since it allows us to approach the many facets of lightweighting in a holistic way.

Since conception, what major changes, if any, does the Lightweight Strategy have to adopt to maintain its relevance?

Our Lightweighting Strategy was recently revisited. Although the big picture hasn't changed, every step forward is accompanied by quiet and carefully executed adjustments. For example, a better balance has been struck between the three cornerstones of sustainability – the environment, a resilient economy and social aspects.

How did you ensure the engagement of German stakeholders in your initiative?

To ensure we have representative participation, we approached all of Germany's federal states and a wide range of industrial sectors. All the stakeholders need to network if the initiative is to keep bearing fruit. Backing this with additional R&D funding increases the success.

What have been the greatest obstacles you found during the implementation of your initiative? How did BMWK address these obstacles?

Big challenges are communicating the lightweighting philosophy, raising awareness of its concepts, bringing together many different perspectives and overcoming biases – lightweighting is way more than just composites. Of course, certain lightweighting materials face challenges in terms of circularity and we have to work hard to tackle this aspect.

Lightweighting is not limited to a specific material or technology. This diversity is a great asset since it allows us to approach the many facets of lightweighting in a holistic way.

What benefits do you think other regions and countries could gain by joining the ELN?

Others can benefit from the exchange of experiences and the strong partnership. The lightweighting community also benefits from the activities and open collaborations. To keep up the momentum and gain a critical mass, ELN still needs additional partners willing to shape this strong partnership.

What are the long-term goals of the ELN? Are there any outcomes or achievements that the ELN is aiming for in the future, beyond its current recommendations and initiatives?

The long-term goals of the ELN are developing a European lightweight strategy, starting from a research and development agenda and establishing transnational research funding. Furthermore, a lightweighting hub should be established in Brussels, and using Lightweighting Satellite Accounting is important in order to measure the economic impact.

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Could you provide examples of successful lightweight material applications or projects that have been supported or facilitated by the ELN?

Examples are the LIGHTer PhD network and various delegation visits. M-ERA.NET and EUREKA calls were announced and will continue. Additionally, efforts for a lightweighting satellite account are ongoing and lightweighting has been anchored in the draft of the eco-design directive.

Driving Lightweight Technology:

Insights from lead players in the industry

LIGHTer has been driving the lightweight policy agenda in Sweden since 2013. What would you say are the major changes that this domain has experienced during the last 10 years?

I've observed three significant changes over the past 10 years:

Firstly, there has been a notable increase in international interest in LIGHTer. When we began in 2013, we were the first lightweight platform in Europe. To respond to this growing interest, we have updated our international strategy. It is essential for Sweden to actively support the establishment and development of ELCA and ELN and to collaborate on shaping a European lightweight strategy. We aim to define the role of lightweight technologies in achieving the goals of the European Green Deal.

Secondly, we have improved and expanded our sustainability tools, adopting a life cycle perspective on lightweight solutions. The LIGHTer Sustainability Support programme assists all LIGHTer projects in enhancing their sustainability performance across various aspects related to the 17 UN sustainability goals. The primary advantage of lightweight solutions lies in the reduction of fossil fuel consumption.



CECILIA RAMBERG

RISE/LIGHTer

When these solutions also demonstrate resource efficiency throughout their life cycle, they become highly relevant in an industrial context.

Thirdly, we have witnessed an increase in multidisciplinary research that addresses industrial needs. Many companies are now engaged in long-term research to discover innovative and radical solutions. This accelerates the transition towards sustainability and enhances effectiveness when multiple industrial sectors simultaneously implement these solutions. The Swedish Lightweight Agenda has played a constructive role in driving this development forward.

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How did you manage to ensure the engagement of your regional/national authorities in your strategic agenda?

The foundation for ensuring the engagement of our national authorities has been our strategic research and innovation agenda, titled "Lightweight Innovation for Sustainable Development."

LIGHTer is an industry-driven initiative that began discussions on lightweight technologies in 2008. We developed a strategic agenda to involve various industrial sectors, universities, industrial research institutes, regions, and organisations.

In 2013, three Swedish financing authorities collaborated and issued a call for strategic research and innovation agendas. LIGHTer submitted the agenda as a project proposal, and it was accepted as one of five 12-year programs to receive funding. Out of 114 strategic research agendas, a total of 17 programs were funded between 2013 and 2018, and we were among the first five programs. Since then, we have updated our strategic research agenda every third year, and our open calls for proposals are prepared and written in consultation with the financing authorities.

Our strategic research and innovation agenda remains our primary tool for developing regional, national, and international cooperation and expanding our network to include more partners.

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What are the greatest obstacles you found during the implementation of your strategic agenda?

Finding international cooperation was a challenge for us, particularly during the initial five years. We operate across various industrial sectors and employ a multidisciplinary approach. Most international lightweight platforms were either confined to a single industrial sector, encompassing all materials, or focused on a specific type of material, encompassing all industrial sectors. However, we successfully overcame this obstacle in the last three years, thanks to the excellent efforts within ELCA, ELA, and ELN.

Additionally, we encountered difficulties when attempting to implement lightweight solutions in the public sector, as in infrastructure projects. This challenge stemmed from stringent regulations governing procurement. To effect changes in procurement rules, we needed to engage in international efforts related to standards and certification. Fortunately, these doors have now opened. LIGHTer has funded several projects that led to the installation of Sweden's first carbon fiber composite bridge in Malmö in 2017. LIGHTer's network has actively participated in the development of European standards for building structures.

Looking ahead, what are LIGHTer's top three priorities for the near future?

LIGHTer is driven forward by our strategic agenda. In it, we point out three recommendations.

Optimise resource and energy efficiency:

Lightweight solutions are important enablers for increased energy and resource efficiency. The need for improved resource management is being accelerated by the diminishing globalisation brought on by the recent pandemics and conflicts.

Create sustainable value circles:

Creating value circles, where each part of the life cycle and supply chain is analysed and put into a context early in the design phase, minimising the risk of future pitfalls. Getting there requires new collaborative partnerships and new business models. Although a fully circular approach can entail goal conflicts, the overall sustainability perspective must remain front of mind.

Bolster lightweight integration in more areas:

Demands for reduced carbon dioxide emissions in the automotive, aviation and shipping industries have been around for quite some time. Construction, agriculture, forestry, and energy are examples of industries where lightweighting shows great promise from a sustainability perspective.

WHERE HAS THE ELCA BEEN?

ELN 3rd EUROPEAN LIGHTWEIGHTING NETWORK CONFERENCE

On June 8-9, 2023, the European Lightweighting Network (ELN) organised its 3rd conference in Stockholm, Sweden. The purpose of the event was to bring more visibility to policymakers on the efforts made on lightweight technologies across different sectors. LIGHTer was the host of this year's edition that took place at the Fotografiska building of the Swedish capital. Close to 100 participants coming from academia, policy and industry attended the 2 days event where they shared and discussed best practices of how lightweight technologies and innovation can help achieving sustainable growth and contribute to achieve the EU Green Deal.

The ELCA was represented at the event by RISE and Fraunhofer IWU, with the support of the ELCA office (Bax and Company).



R2B RESEARCH TO BUSINESS EVENT IN BOLOGNA

In June 2023, partners from the AMULET H2020 project, including six ELCA members, convened at the R2B Research to Business exhibition in Bologna, Italy. This year's R2B edition provided a remarkable platform for research labs, large companies, universities, and startups to showcase their cutting-edge technologies and foster innovative project developments.

One of the primary focuses of the AMULET project is the development of a comprehensive technology roadmap for advanced lightweight materials. This roadmap is expected to facilitate groundbreaking advancements across various sectors. It was presented during the workshop titled "Preparing for Tomorrow's Lightweight World: Future Challenges and Competencies in Advanced Materials Applications."

ELCA, in collaboration with UNIBO, Mitsubishi Chemical Advanced Materials, Cluster-MECH, and Polymeris, played an integral role in the workshop discussions. The workshop served as a forum to underscore the importance of collaborative efforts throughout the entire value chain.



JEC WORLD 2023

On the 24th-27th of April 2023 the ELCA visited the JEC World in Paris. The JEC World is the global trade show for composite materials and their applications. For the ELCA the JEC World was an important place for networking and for discovering the state of play of the lightweighting industry specifically in the composites sector.

DISCOVERING STATE OF PLAY IN LIGHTWEIGHTING INDUSTRY

ELCA partners were present for the event, Fraunhofer IWU, RKW Sachsen, Polymeris had a booth showcased at the event and many ELCA partners were present.






ELCA had the honour of moderating a keynote session featuring Werner Loscheider from the German Federal Ministry of Economic Affairs and Climate Action. The following day started off by introducing another keynote speech from Dr. George Kotsikos from the European Commission. These engaging sessions provided a platform for the ELCA to work closely with public authorities, fostering awareness about lightweighting.

On the final day, the ELCA was invited by the JEC to participate in a panel discussion alongside members from ELA (European Lightweight Association).

This roundtable allowed representatives from both organisations to delve into their hopes and concerns for the lightweighting industry. The dialogue served as an important stepping stone, as the ELCA, ELA, and other affiliated alliances like EuCIA and Composites United, as well as public authorities, plan to hold further discussions throughout 2023.



KEY FINDINGS

-  The industry is gearing up for a circular transition, but this transformation cannot proceed without legislation at the EU level.
-  Conducting a study to assess the impact of lightweighting on a country's prosperity is essential to prioritise lightweighting initiatives.
-  At the local level, when value chain actors in close proximity are brought together, substantial knowledge and goods exchange can occur.
-  Research centres can collaborate with SMEs to explore and seize new business opportunities through innovation.
-  The availability of secondary materials for recycled lightweight materials is not yet guaranteed and requires scaling up.



Final results of the RIGHTWEIGHT project

The RIGHTWEIGHT project set out to increase the competitiveness of auto and aero SMEs by delivering new solutions that met environmental and affordability targets. RIGHTWEIGHT fostered cross-sectoral collaboration between automotive and aerospace and offered dedicated support to help these businesses increase their capacity to co-develop solutions that met the needs of car and aircraft makers.

To achieve this, RIGHTWEIGHT supported the development of competitive solutions by SMEs from NWE (Northwest Europe) and Italy that could meet the cost and environmental targets set by EU end-users, who acted as challenge-givers. A total of **32 challenges** from the auto and aero sectors were collected within the framework of cross-cutting topics.

In response, **54 applications were received**, and **38** were selected for support. The three RIGHTWEIGHT field labs supported the development of these solutions and increased the capacity of SMEs to co-develop market-oriented solutions with end-users.

The long term effect

RIGHTWEIGHT created a transnational ecosystem connecting seven partner regions with complementary expertise (France in the aero sector, Germany and Belgium in the auto sector, and the Netherlands and Italy in both sectors).

For the long-term sustainability of the project, RIGHTWEIGHT has set up a network of field labs focused on lightweight solutions, involving additional regions from NWE (Belgium, United Kingdom, Germany) and beyond (Portugal, Spain).

PARTNER SPOTLIGHT

BYDGOSZCZ INDUSTRIAL CLUSTER TOOL VALLEY

How relevant is lightweight for BIC and its members?

In the process of the growing use of recyclates and bioplastics, a major challenge for the moulding industry is to develop tools for processing polymeric materials with new parameters. For manufacturers in the automotive sector, reducing the environmental impact of the production process is now a top priority. There are value chain management concerns that most of the growth in the global automotive industry will occur outside the EU. This requires leading and implementing the twin transition and ensuring the EU industry remains resilient and has access to the global growth market which will be strongly affected by the switch from ICE-powered vehicles to EVs.

For companies working on the manufacturing of plastics, what are the biggest challenges for the upcoming years? What are the opportunities?

The reuse, recyclability, and upscaling of waste have become increasingly concerning for manufacturing companies. This is driven by factors such as the rising cost of waste treatment, sustainability considerations, and risks in value chains. These concerns can be addressed through the adoption of newly



Agnieszka Matuszak
Bydgoszcz Industrial Cluster

developed biomaterials and sustainable materials, which can lead to the establishment of innovative industrial symbioses and 'by-product' value chains for plastic recovery. This represents an innovative strategy for reducing plastic waste.

Furthermore, due to escalating energy costs, workforce shortages, and increasing labour expenses, nearly one-third of small and medium-sized manufacturing companies are planning to introduce automation within the next three years.

What are the main activities that BIC carries out for its members?

The mission of BIC is to create optimal development conditions, stimulate cooperation and integrate processors and toolmakers of the plastics sector in the Kuyavian-Pomeranian Region.

The activities aimed at the systematic development of cooperation with foreign partners include economic missions, study visits, and international projects.

BIC actively participates in various types of fairs, conferences, and seminars, promoting both cluster activities and its members. Cluster is also organising technical training but the most important event for BIC, as the organiser, is the INNOFORM trade fair.

What value has ELCA had for you in your organisation? How has ELCA broadened your network of individuals within the field of innovation and lightweight technologies?

The cluster's aim is to integrate processing and tool experts, represent their interests outside the industry, and also establish a network of business connections facilitating company operations, access to human resources, increase technological development, and boost innovation in production. ELCA represents a qualified and highly operational observatory for gathering information and opportunities in the field of structural lightweighting. It is an opportunity for our members to grow further to remain competitive in a constantly changing market.

How in your opinion, does ELCA foster innovation in the field of Lightweighting?

We believe that participation in such a large innovative project like AMULET will provide SMEs with new development opportunities, valuable business contacts, and offer a completely fresh perspective on their activities. ELCA's role is to connect and support partners with the necessary expertise to promote innovation. We anticipate that the ELCA platform will become a new tool for our members to establish cooperation with entities across Europe.

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NEWS FROM OUR ELCA PARTNERS

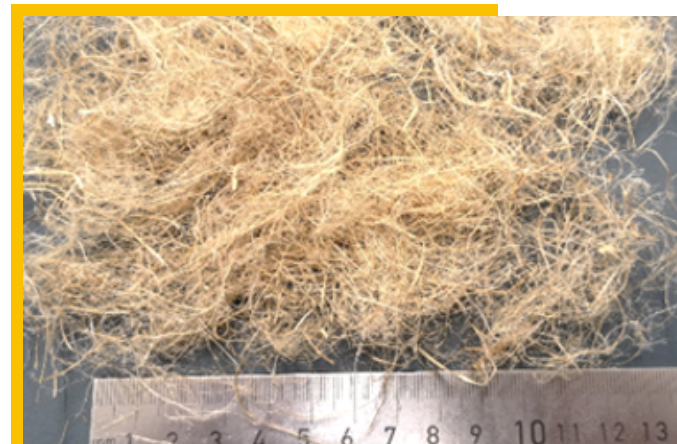
Economical viability meets Sustainability

Fraunhofer Plastics Technology Center Oberlausitz



The motivation driving our work is the development of partially renewable and low-carbon alternatives to conventional glass fiber materials. Natural plant fibers have a carbon footprint 5 to 10 times smaller than that of glass fibers, which becomes even smaller when considering carbon storage in the material. Natural fibers offer a promising approach to sustainable development and eco-friendly alternatives to synthetic materials. Their diverse properties and renewable nature make them appealing for various applications in textiles, construction, and composites. Ongoing research and development in this field are expected to unlock new opportunities and promote the widespread use of natural fibers, contributing to a more sustainable and environmentally conscious future. Despite their numerous advantages, natural fibers face challenges related to processing techniques, limited availability, and competition from

cheaper synthetic alternatives. Our objective is to bridge the gap between research laboratories and the large-scale application of biobased materials. Our focus is on identifying suitable materials for specific applications and subsequently developing manufacturing processes suitable for industrial use. Material and process costs, along with production scale, are critical factors in this development. With expertise in materials science, mechanical engineering, and process technology, our team possesses the knowledge and skills to assist you throughout the entire development process.



In the field of Bio-Composites and SMC technologies, the Fraunhofer Plastics Center Oberlausitz is your contact for:

- Compression molding processes for competitive large components made from sustainable natural fiber SMC (Sheet Moulding Compound)
- Economic processing of biogenic residues into materials
- Developing economical manufacturing processes and molds for alternative materials

Building Networks and Excellence: The Bydgoszcz Industrial Cluster Experience



The Bydgoszcz Industrial Cluster Tool Valley (BIC) is committed to developing the tool and plastic processing industry, contributing to enhancing the competitiveness of the regional economy. During the General Meeting of BIC's Members held in June 2023, the Deputy Voivode of the Kujawsko-Pomorskie Region recognised the Chairman of the Board and Managing Director with medals for their special contributions to the region's economic development. We are delighted that the cluster's efforts are being acknowledged and yielding positive results.

Additionally, the second branch of BIC opened in June this year in Rzeplin near Wrocław. This expansion creates opportunities to grow our network, foster collaboration among members, companies, and universities in Lower Silesia, and enhance our cluster's visibility and services.



Fostering Research Excellence at IPSSC's 15th International Conference

From 31st May to 2nd June 2023, the 15th International Conference of the Jožef Stefan Postgraduate School (IPSSC) was held live at the Mekinje Monastery in Kamnik. This year's conference, themed "Turning Problems into Solutions," emphasised the significance of problem-solving and well-organised work, which young researchers consistently encounter in their research work and daily life in science, ultimately leading to new achievements.

The IPSSC brings together postgraduate students from various fields, including ecotechnologies, nanosciences, nanotechnologies, sensor technologies, information and communication technologies, biotechnologies, medicine, and other natural sciences. Among them, four young researchers—Uroš, Nina, Petruša, and Blaž—from the Advanced Materials Department (K9) were involved, either as active participants or members of the organising committee.

Such conferences offer young researchers a valuable chance to network across diverse research fields and broaden their insights into research engagement. IPSSC was supported by JSI, IPS, NIB, and industry sponsors such as Akrapovič, SCAN Pfeiffer Vacuum, Istrabenz Plini, ETI, Salonit Anhovo d.d, Mikropolo, Primalab, Sanolabor, and Red Bull.

Turning Problems into Solutions with Jozef Stefan Institute

WORKING GROUP SPOTLIGHT

Working Group 5, assembly and joining led by RISE, covers innovative joining techniques developed and deployed by top research institutions from the ELCA.

Working group: Assembly and joining

With the increased use of multi-material solutions, assembly and joining techniques that enable the correct and responsible use of multiple materials become more crucial. Members of WG 5 will continue to collaborate to enhance the resource and time efficiency of joining and assembly, leveraging digital solutions, Industry 4.0, circular economy principles, and material characterisation for optimal outcomes.



WG 5 collaborates particularly closely with WG 2 and WG 6 due to the importance of modelling and simulation of materials and manufacturing-related material properties. Through planned inter and intra-working group meetings, WG 5 aims to harness the cross-value chain knowledge present within the ELCA partnership and network. WG 5 also plans to expand the catalogue of capabilities on the ELCA website further, to capitalise on potential synergies within ELCA and beyond.



WG 5 aims to increase the knowledge and capabilities for proper product and joint design, as well as disassembly methods and strategies for efficient product re-use and material separation and recycling to address issues arising with new circular business models and circular material flows, as well in response to new EU directives and regulations.

Andreas Reeb
RISE, Sweden



WHATS TO COME?

2023 and beyond

The last months of 2023 look strong for the ELCA with exciting prospects to bring into 2024. Here are the key points that the ELCA will be working on:

- Strengthening collaboration with ELN, ELA, and Composites United towards a joint event in Brussels aimed at raising awareness surrounding lightweighting and enhancing our positioning at the EU level.
- Preparing to address upcoming EU funding calls from various programmes, including Horizon Europe, Interreg, and EISMEA, focusing on bio-based technologies, 2D Materials, and SME support.
- Organising the General Assembly for 2023, with planning efforts commencing shortly.
- Revolutionising environmental solutions with GIANCE. The GIANCE project will kick off later this year, crafting the next generation of graphene and related materials (GRM)-based, lightweight, recyclable materials.
- Implementing activities for the working groups based on the outcomes of exploratory meetings, including the organisation of dedicated workshops and roundtable discussions.
- Holding consortium meetings for SALIENT and AMULET projects.
- Preparing for the publication of the second Eureka call on lightweight, expected by the end of 2023 or the beginning of 2024.
- Representing ELCA at the Global Automotive Components and Suppliers Expo in December 2023.
- Crafting an article on lightweight policy for the JEC magazine.

ELCA PARTNERS



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