



elca



European Lightweight Clusters Alliance

2022 | NEWSLETTER



Issue 02

FOREWORD

2021 has been an important year for the ELCA network. We have continued with the consolidation of the community by engaging in activities to stimulate cooperation among our members and foster innovation. In this period, the ELCA platform has proved to be a relevant tool to foster innovation campaigns linked to ongoing projects (RIGHTWEIGHT, ELCA COSME, AMULET), as well as to share funding opportunities (Horizon Europe and EIT calls for example) and technology offers among our members. In this sense, the number of participants has been growing steadily, increasing the potential for the emergence of collaborative projects across Europe. Moreover, in 2021 webinars devoted to establishing international cooperation have been carried out while internal workshops have enabled collaborations among the ELCA partners and their members. Finally, achieving an effective external communication has been a core activity during the whole year, focusing on the promotion of the ELCA members and the events organized by the ELCA community is aimed at strengthening its position and raising awareness about lightweight topics and the work carried out by the network. We are grateful for the commitment of every ELCA member and are looking forward to a great year ahead. Enjoy reading the ELCA newsletter!

WHAT'S HAPPENED SO FAR

01

ELCA & Indian Stakeholders

In December 15th, the ELCA network in collaboration with ELCA project and EBTC organised an event where Indian stakeholders shared relevant insights about the most pressing topics where lightweight materials and related technologies could have an impact in the Indian market.

02

Dubai Event January

During the Expo Dubai 2022, partners from the ELCA internationalization project held a roundtable discussion on the sustainability aspect of lightweight. This event was organized by Clust-ER MERCH, and counted with the participation of experts and companies.

03

Rightweight's 1st selection

The first round of competitions finished on November 2021 and close to 20 solutions for automotive and aerospace were selected and are going to be supported by the project partners to improve their TRL.

04

India event December

ELCA community meets Indian aerospace and automotive stakeholders! On December 15th, the ELCA network in collaboration with EBTC organised an event where Indian stakeholders shared relevant insights about the most pressing topics where lightweight materials and related technologies could have an impact in Indian market.

05

EoY video

The first End-of-the-Year video of the ELCA network is out now and features dedicated interviews from the partners as well as an insight on the alliance's aim and capabilities.

THE ELCA NETWORK



12

HUBS



9

COUNTRIES



875

SMES



258

Large Corp.



190

RTOS



EXCLUSIVE



An interview with Dr. George Kotsikos, from the European Commission

Dr. GEORGE KOTSIKOS

European Commission
Health & Digital Executive Agency

"Organizations like ELCA are Key to providing input to the Commission"

In your opinion, what are the main challenges for European stakeholders in lightweighting?

The benefits of lightweight structural designs have been widely documented in the international literature, ranging from reduction of CO₂ emissions to resource efficiency. For transport applications in particular, electrification has increased the interest and demand for lightweight design solutions, which in turn require the development of innovative new materials, as well as their efficient manufacturing methods for these materials.

Whatever the lightweight material innovations might be, there are two challenges that are foreseen. One is recyclability of the new/novel material solutions, and the second is the development of new, efficient and commercially attractive (i.e., low cost) manufacturing/production methods to be in place.

How can European policy help to overcome such challenges?

European Research Policies can provide the incentives for industry to undertake the necessary research, de-risk

investments that industries would not otherwise undertake, and offer solutions that can provide both economic and societal benefits at the European level.

The European Green Deal whose main aim is to turn Europe into the first climate neutral continent by 2050 and thus improve the well-being and health of citizens and future generations, is currently the driver for future developments. To achieve its aims the European Green Deal addresses:

1. Fresh air and clean water
2. Healthy soil and biodiversity
3. Renovated, energy efficient buildings
4. Healthy and affordable food
5. Better public transport
6. Cleaner energy and cutting-edge clean technological innovation
7. Longer lasting products that can be repaired, recycled and re-used
8. Future-proof jobs and skills training for the transition
9. Globally competitive and resilient industry

It is within these pathways that industrial policy is created and developed.

The first part of the HE program included some calls related to lightweighting, e.g.:

- a.)2021-D6-01-10: Testing safe lightweight vehicles and improved safe human-technology interaction in the future traffic system (RIA)
- b.)2022-Resilience-01-11: Advanced lightweight materials for energy efficient structures (RIA)
- c.)2022-RESILIENCE-01-12: Functional multi-material components and structures (RIA)

What can we expect for the next parts of the program?

The work program will continue to support research in advanced materials development as well as innovations in process and discrete manufacturing technologies. The aim of the work program is to implement the wider policies of the European Union as well as meet industry needs and promote innovation and excellence.

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European Lightweight Clusters Alliance

Organizations like ELCA are key to providing input to the Commission on the challenges the industry faces and therefore your ideas and concerns are most welcome. We aim to publish the next part of the work program around the end on 2022.

Advanced materials are key to many European strategic sectors, where should we focus our efforts?

It is indeed true that advanced materials are key to meeting several industrial and societal needs and the European Commission is committed to the development of advanced materials for a range of applications from electronics to medical sensors or clean energy. In terms of lightweighting, transport has traditionally been the main driver for innovation, but several other applications such as civil engineering or consumer products are also becoming important, because of energy and resource efficiency are becoming increasingly important. This means that advances in polymer composite materials, metallic foams, aerogels, advanced coatings are all areas of interest. Furthermore, smart textiles with a range of functionalities is also an area where innovations in advanced materials will be sought. Efficient design is not always possible with a single material and it is inevitable that structures and components made of dissimilar materials will be used. Innovative methods of joining those either via adhesive bonding or through innovations in additive manufacturing with dissimilar materials would be areas of interest.

Where do you see the biggest opportunities for advanced materials for lightweighting in the coming years?

As mentioned earlier, transport applications will still be the major driver for use of lightweight materials. This will apply to all modes of transport, air, road, rail, marine. Electrification of transport, will demand ever increasing improvements in properties of materials. One would say pushing the envelope in terms of performance will be desirable. Novel lightweight materials with improved stiffness, fire resistance, impact resistance, crashworthiness as well as ease of repair or self-healing are still areas of interest. All this in combination with increased recyclability, cost reduction and automated production will be key to successful implementation.

One of the main obstacles for the wider use of polymer composites is the long production cycles. Therefore, the development of new fast-curing thermosetting resins to enable quick automated or semi-automated production cycles (comparable to stampable thermoplastics, such as GMTs, SMC etc.) which are also fully recyclable, would be a game changer.

How do you see the potential of European companies to become technology leaders considering the competition from Asia and the US? What does the EC expect from companies to do in order to seize that potential?

Innovation is the best way to counter competition from Asia or the US. European companies and academic institutions are not short of innovative ideas and have always led the field. However, in contrast with our major competitors, exploitation and/or successful commercialization of ideas have been lacking. There is still some conservatism in the European industry to adopting new ideas, but there are encouraging signs that this is changing. The European Commission does assist industry with innovation and product development through the Framework Programs, but also can provide assistance for development of highly innovative ideas with potential for commercial exploitation through the European Innovation Council (EIC) which aims to assist industries with low TRL research and development work.



Advanced Materials and Manufacturing Technologies United for Lightweight

AMULET is part of the last H2020-INNOSUP-01 projects. This programme had the goal to support SMEs for different sectors by creating new industrial value chains through the active participation of industrial clusters. The AMULET project is the only EU-wide H2020 initiative currently working on increasing the penetration of traditional and non-traditional lightweight materials across different strategic sectors including mobility, energy, and building. AMULET plans to do so through the active participation of SMEs across the entire lightweight value chain. This project was initiated by the ELCA network.

The AMULET project is coordinated by the ELCA partner Polymeris (FR). Nine additional ELCA partners are also part of the consortium: Bydgoszcz Industrial Cluster (PL), Cluster MAV (ES), Flanders Make (BE), Jožef Stefan Institute (SI), IMAST (IT), Technical University of Chemnitz (DE), South West Hungarian Engineering Cluster (HU) and Clust-ER MECH (IT). The 36-months project started on September 2021 and there are three main activities to be performed to ultimately reduce CO₂ emissions in the EU:

- 01 Development of Innovation projects.
- 02 Technical training support on lightweight topics.
- 03 Business-to-business coaching.

Activities 2 and 3 will not only give support for developing the R&D projects but will target all SMEs interested in lightweight topics as well.

During the first weeks of the project the partners have been working quite intensively to establish the guidelines of all activities, including the organisation of challenge-based competitions for the development of R&D demonstration projects. More than 70 experts from industry and academia have been engaged to provide knowledge on fibre reinforced polymers, light metal alloys and ceramic matrix composites across targeted sectors. Challenges in these domains are currently being collected from industry players before launching the first open call for solutions, expected for April 2022. SME consortia from all EU countries will be invited to submit their solutions to challenges and have the possibility to access the AMULET support programme: grants of up to €120,000 for those solutions that reach the final selection process.



Novel advanced materials solutions for affordable lightweight to meet automotive and aerospace makers' needs

The Interreg North-West Europe (NWE) RIGHTWEIGHT project aims to apply lightweight solutions to make transport greener and to foster the exchange of knowledge and expertise between the automotive and aerospace industries. The RIGHTWEIGHT project was incubated in the European Lightweight Cluster Alliance (ELCA) which aims to strengthen the cooperation between technology users and developers in order to create new business opportunities in the field of lightweight materials. The project started in late 2020 and counts with the participation of the ELCA partner Polymers (FR), who is also leading the challenge-based competitions.

During 2021, important milestones have been successfully accomplished. This year the 1st challenge collection campaign launched in April was able to gather up to 25 challenges from 4 of the participating regions for both sectors: automotive and aerospace. Aiming to stimulate the participation in the project, a promotional campaign including a global as well as several regional workshops together with advertisement in social media was carried out.

The benefits of these efforts can be seen in the remarkable number of solutions submitted to the programme, up to 29, from where a total of 17 solutions were selected for getting support: 12 trailblazers and 5 followers. Currently, local contact partners are communicating the results to the selected companies in order to arrange the corresponding technical (fieldlabs) or business-related support which will take place during the next 12 months.

Nowadays, the 2nd call for challenges and solutions collection is open and the dissemination activities are being organized by the partners, aiming at achieving at least the same amount of positive responses as the last time. Besides the challenge-based competitions, in 2022 the RIGHTWEIGHT consortium will also launch a series of educational webinars addressed to SMEs working in automotive and aerospace. The themes will focus on lightweight topics and opportunities across the entire value chain.

PARTNER'S SPOTLIGHT



Ona Bombí (Cluster MAV). Spain

“The future of lightweight and advanced materials will be in connection with circular economy”

How relevant is lightweight for Cluster MAV?

The Advanced Materials Cluster of Catalonia (MAV Cluster) comprises an ecosystem of 70 members, including large and medium sized companies, start-ups, technological and research centres, universities, and other agents of the value chain of the advanced materials and their technologies. Our mission is to boost the competitiveness of Catalan industry by a close collaboration between companies and research partners.



MAV Cluster members are organized in four thematic working groups according to their expertise: Lightweight materials, advanced manufacturing, circular economy and nanomaterials and nanotechnologies.

More than the 30% of the MAV Cluster members work on lightweight materials, including metals, polymers, ceramics and composites and focusing on different sectors such as mobility, building and energy.

For companies working on advanced materials, what are the biggest challenges for the upcoming years? Where do you see the largest opportunities?

The main challenge for companies for the upcoming years will be for sure the lack of raw materials and the rise in energy prices and other resources, which is already an issue. Not only in the advanced materials sector but also on many others. The global climate change is another problem that industry is already facing. The EU declared to aim for a severe reduction in CO₂ and other Greenhouse Gas emissions with its Green Deal, this will require an energy transition and transformative changes in products and production processes.

At MAV Cluster we believe that the future of lightweight and advanced materials will be in connection with circular economy. Many products and materials will need to be reassessed and redesigned in order to minimize the environmental impact. This forms an opportunity to develop new materials and processes.

What value has ELCA had for you in your organisation?

Among the main objectives of the MAV Cluster are the promotion of business opportunities, providing a fertile environment for collaborative projects, bringing strategic and technological information, and innovation in materials and manufacturing processes for an industrial context.

Being a member of ELCA means for us that we are part of a collective of reference in lightweight, it allows us access to relevant contacts at European level, it also brings business opportunities for our members, and it helps to be aware of the latest progresses and trends in the field of light weighting.

How has ELCA broadened your network of individuals within the field of innovation and lightweight technologies?

ELCA has brought to MAV Cluster new connections and partners forming consortia in two awarded European projects: AMULET (INNOSUP-01-2018-2020) with 13 partners aiming to contribute to CO₂ emissions reduction in the EU by boosting the role of SMEs, in which their innovations are expected to be facilitated & supported by clusters; and ELCA Internationalization (COS-CLUSINT-2019-3-01) with 5 partners seeking to foster the use of European lightweight products, technologies and services in mobility and to develop a joint marketing strategy for cluster internationalization.

We are already preparing a new project proposal for Horizon Europe, with 12 partners aiming to support SMEs facing the new industrial revolution by increasing their sustainable competitiveness, resilience, and adoption of advanced technologies.

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

The ELCA network fosters innovation of lightweighting through the promotion of cooperation and collaboration between all ELCA members and other relevant organisations in the field of lightweight materials and technologies.

Marc Gascons (Compoxi - Cluster MAV). Spain

What is Compoxi's core business? What makes Compoxi unique?

Compoxi is an engineering firm with in-house production means, that is capable to offer the complete development of a composite material product from initial sketching up to serial production. Compoxi is active in challenging markets such as aerospace, aviation, medical or industry.

What makes Compoxi unique is the particular expertise that we have in key areas in the lifecycle of a product, such as design, analysis, prototyping, qualification or process engineering. The in-house production capability allows us to have a very practical mindset on how the product will be manufactured. Therefore we are efficient and resolute in our engineering concepts.

How relevant is lightweight for Compoxi?

Very relevant! Although we also work with other benefits of the use of composite materials (radio transparency, heat management, ultra-stiffness, thermal stability....) lightweighting still remains the main reason why our clients reach out to us for a solution.

For companies working on composites and their manufacturing processes, what are the biggest challenges for the upcoming years? Where do you see the largest opportunities?

We now have a general trend on sustainability, so mastering design and manufacturing of composite materials that are recyclable and that have a fair use of resources is a clear challenge. We are working on that by mastering Out-of-Autoclave techniques as well as thermoplastic materials, using them in applications that have not been used before.

On the opportunities, the development of the electrical mobility is a great source of opportunities. Weight is clearly something to take into consideration when you are running on batteries, no matter if we are talking about skates, a bike, a plane or a rocket, so lightweighting, again, is very important.



“What makes Compoxi unique is the particular expertise that we have in key areas in the lifecycle of a product”

What type of organizations would you like to connect with?

We are normally connected with OEMs, Tier1s and research institutions that can support further development of the technologies that we have in-house or challenge us with new application cases to improve; being connected to all of them is important.

What added value would you like that ELCA brings to your company?

Knowledge is not local, but widely spread around Europe, and ELCA brings the opportunity to connect with organizations that can partner with us into developing new products across Europe.

Thank you to our Partners for their contributions to this Newsletter!

Stay tuned for more partner updates on our social media channels.

Working Group1

MATERIALS SUPPLY & DEVELOPMENT

“Working group 1 lays the foundation for the whole range of lightweight materials and related technologies”



Working Group 1, led by Dr. Thomas Hipke (Fraunhofer IWU) and Pedro Mimoso PIEP, covers the first stages in the value chain and coordinates the research outcomes from researchers studying the different kinds of materials that can be used for lightweighting, including raw materials, their refining/post-treatment steps and further development towards final or semi-final use.

Since the advancement of the circular economy will lead to more recycled materials being available in the future, WG 1 will shape the future of advanced materials by exploiting new value chains and integrating new functions into materials. Hence, WG 1 members contribute enormously to enhancing material properties which will lead to a reduction in future manufacturing costs while reducing the

material usage which diminishes greenhouse gas emissions in the production process.

Starting this year, the aim will be to spread lightweight solutions to other sectors like maritime, energy or building to further strengthen the market position of lightweight solution in Europe. First, several events will be organized with other networks and associations, in particular collaborations with companies in the maritime sector will be explored. Second, we will further explore markets outside of Europe, starting with the second Mission to India online B2B- event in March. The aim of this event is to explore lightweighting opportunities with Indian stakeholders and further strengthen the intercontinental collaboration of ELCA with Indian partners.

“We are committed to advancing the state of the art of advanced materials that can be used for lightweighting”

NEWS FROM OUR ELCA PARTNERS



JOŽEF STEFAN INSTITUTE

Renovation is on its way in the Advanced Materials Department! One of the first changes happened in the laboratory for X-ray analysis. Two analytic tools, one used mainly for general quantitative phase analysis (BRUKER D4 ENDEAVOR) and the other used mainly for detailed structural characterization (EMYPREAN), are now placed together in a recently renovated room.

For more information visit the Jožef Stefan Institute: <https://www.ijs.si/ijsw/IJS>

PIEP

The I&DPIIMIO project is developing new solutions for sustainable automotive lightweight components with interactive interfaces and capacitive sensing structures. The project uses MuCell®, Overmolding, and in-Mould Electronics (IME) in an integrated one-step process which will allow to reduce cycle times, promote energetic and material savings. The project consortium is composed by GLN Plast, the promoting company, PIEP - Innovation in Polymer Engineering, CeNTI - Centre for Nanotechnology and Smart Materials and University of Minho.

For more information visit PIEP: <https://www.piep.pt/idpiimio/>

LIGHTer

Register for LIGHTer International Conference!



Welcome to an inspiring event with state-of-the-art presentations on lightweight technologies and innovation! LIGHTer's main mission is to create sustainable lightweight innovation through cooperation across industry and discipline borders. At LIGHTer International Conference, we invite speakers and participants from industry, academies, institutes and government agencies to network and exchange on sustainable lightweight solutions together.



NEWS FROM OUR ELCA PARTNERS



Bydgoszcz Industrial Cluster

INNOFORM International Cooperative Trade Fair of Tools and Processing Industry

The only fair in Poland gathering bidders and decision-makers who are responsible for the development of the tool and processing industry in Poland will be held this year from September 27-29th in Bydgoszcz. The INNOFORM trade fair will once again make the city a key point on the industrial map of Poland.

Almost 1,000 entities are involved in the production of special tools and the processing of plastics. In Bydgoszcz there are 200 of these entities and 30 tool shops. After a two-year break, specialists from the tool and processing industry will meet at the only dedicated fair in Poland.

The wide range of exhibitors offered at the stands is, as always, the greatest asset of INNOFORM. This year's Tools and Processing Conference will address the subject of industry 4.0. in the industry of special tools and processing and the problem of shortening global value chains as an opportunity for industry enterprises.

The implementation of the assumptions of Industry 4.0 is one of the key challenges for the tool and processing industry. Solutions such as digitization, automatization or robotization create great opportunities for dynamic development of enterprises, but also require appropriate financial and human resources in companies. The speakers on the panel will be both specialists in the field of robotization and automatization of industry, as well as entrepreneurs who will discuss the successful implementations of 4.0 solutions in their factories.

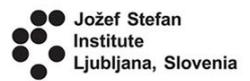
Another issue important for the industry are global value chains topics. Panelists will present how to find oneself in the new reality, how to transfer production from China. Shortening global value chains is a great opportunity for the development of industry companies. Moving production to Europe closer to final recipients may create an opportunity for new projects and larger orders. The challenges faced by companies willing to take up this challenge will also be discussed.

Also taking place will be a Cooperative Exchange, which this year will have a hybrid formula. The talks will be held in the form of traditional meetings during the fair, or on a dedicated online platform. The offer will be complemented by the Career Zone, where you can find both a new job and a valuable employee among the offers.

For more details and free tickets please visit <http://www.innoform.pl>

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