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AMANAC: Advanced Materials And Nanotechnology Cluster

Third Newsletter: May 2016

AMANAC NEWS AND EVENTS

Financial Opportunities Workshop

November 5th, 2015

The workshop was organized by the EC and AMANAC on November 5th, 2015 at the Covent Garden building in Brussels. During the workshop, participants were introduced to various funding opportunities for final stage or recently finished research projects. The participants acquired a detailed understanding of the options for various financing schemes and coaching for SMEs which the European Commission or the Europe Enterprise Network can offer. Presentations focused on:

- General presentation on the AMANAC-CSA and its role and impact

- Strategic Energy Technology (SET) Plan 2015, “Smart Finance for Smart Buildings Initiative” and “Project Development Assistance under H2020”
- Fast track to Innovation (FTI) and SME instrument
- InnovFin - EU Finance for Innovators
- Regional programmes - The European Structural and Investment Funds (ESIF), Smart Specialisation Strategies & Synergies with Horizon 2020
- The INCOMERA project

Over 40 people attended, with a lot of interest from SMEs from AMANAC project consortiums.

Standardisation Workshop

November 6th, 2015

The workshop was held on November 6th, 2015 at the BIP for Rent building in Brussels, Belgium. The Workshop was organized together with a workshop on European Technical Assessment (ETA) organized by the EeB CA2 in collaboration with the European Organisation for Technical Assessment (EOTA). The Standardization Workshop was focused on presentations and discussion about:

- Contribution of standardization to economic Impact (EC, Monique Levy)

- Certification and testing of construction products (TUV Italia)
- Standards and requirements for buildings in Europe (Building Research Institute, ITB)
- The influence of standardization on the innovation process (ARUP)

The second part of the event was the training organized in collaboration with EeB-CA2 and EOTA. During the training, the participants had the opportunity to gain insights into ETA and the methodology to obtain a CE-mark for new innovative construction products.





AMANAC: Advanced Materials And Nanotechnology Cluster

Third Newsletter: May 2016

AMANAC Industry Advisory Board Workshop November 6th, 2015

A workshop with the AMANAC Industry Advisory Board (IAB) was held in Brussels on November 6th, 2015. The IAB is comprised of senior representatives from various industrial partners from various thematic areas of the AMANAC cluster. The workshop started with an enlightening presentation from Dr. Monique Levy from the European Commission (EC) about "Results of a survey on burdens that hinder project results entering the market". This survey was conducted in 2014 by the EC and had more than 300 participants. One of the goals of the survey was to rank the common challenges for sustainable construction and to determine the most important obstacles including material development. This presentation served as a good starting point for the second part of the workshop - which was an interactive discussion. This section consists of discussion on seven questions related to the successful implementation of new materials and products developed during AMANAC projects.

The first part of the discussion was devoted to the regulatory and pre-normative studies for the innovative products. It was concluded that a significant barrier is the lack of standards and test methods for innovative products. An important part of the product development is also up-scaling and manufacturing. Participants stressed that attention needs to be paid on Manufacturing Readiness Level (MRL) in parallel with development of Technology Readiness Level (TRL) for commercial uptake. In order to successfully promote and implement innovative products, it is important to focus on Life Cycle Analysis and Costs because initial cost of the novel building materials can be higher than incumbent materials but life cycle costs can be lower. Thus, calculation of the return of investment and cost benefits for novel materials should reflect the whole life cycle of the product, including end-of-life scenarios, if appropriate. During the workshop it was clearly pointed that the AMANAC-CSA helps to increase the visibility of the products developed under the research projects. Moreover the horizontal actions performed by AMANAC-CSA can be very beneficial and contribute to changing the perception of innovation in construction.

Low Embodied Energy Thematic Workshop December 3rd, 2015

The Thematic Workshop entitled "Towards greener and more energy efficient buildings: novel construction materials and processes" was held at Palazzo Granafei-Nervegna in Brindisi, on 3rd December 2015. The Workshop presented the cutting-edge developments in the area of "Low Embodied Energy materials and Energy Efficient Buildings", produced by projects under the financing of EU in the frame of FP7 and Horizon 2020. About 70 people (engineers and researchers, local engineer association, companies, R&D centers, Universities, Municipalities etc.) have joined the event. The core of

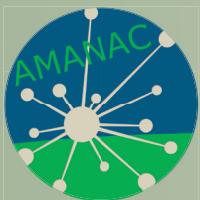
the workshop was the presentation of results and activities of the projects (LEEMA, SUS-CON, ISO-BIO and ECO-Binder) with an introductory presentation of AMANAC Cluster. Great interest was shown for the projects, not only during the Workshop but also at the exhibition area, where some prototypes from SUS-CON and LEEMA were presented, together with posters, roll-ups, flyers and videos of production processes.



Indoor Air Quality Thematic Stakeholder Workshop February 18th, 2016

The Indoor Air Quality Workshop was held successfully in Munich on February 18th, 2016 at the premises of Fraunhofer.

The event brought together over 40 stakeholders from the research and industry sectors to discuss the achievements of projects from the Indoor Air Quality Thematic, which included the ECO-SEE, BRIMEE, HHOUSE and OSIRYS projects. The workshop presented the various eco-innovative materials developed by the projects and addressed upscaling, prototyp-



AMANAC: Advanced Materials And Nanotechnology Cluster

Third Newsletter: May 2016

ping and LCA topics. Participants were particularly interested in the impact of novel building materials on human health and on their scalability potential, and showed great interest in receiving more details from the projects in the future. Jurgen Frick from Material Testing Institute at the University

of Stuttgart also spoke about H2020 funding opportunities for research on Indoor Environment Quality. This event was the third of a series of regional stakeholder workshops organised by ECO-SEE. The next and last workshop will take place in early 2017.

AMANAC at the Smart Façade Materials Conference at WSED 2016 February 24th, 2016

AMANAC was one of key organizers of the Smart Façade Materials Conference held on February 24th, 2016 in Wels, Austria as part of World Sustainable Energy Days (WSED), a key event in Europe. The conference was divided into two main parts:

Plenary Session with presentation and discussion on innovative construction materials and new concepts for adaptive envelopes

Parallel workshops on the topics of: New research results on building facades, Smart windows, Active & energy harvesting facades, Novel insulation materials

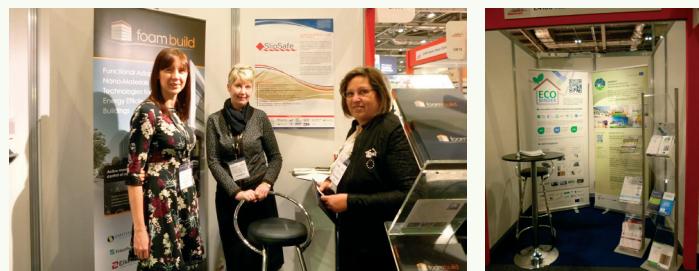
With more than 15 presentations given by speakers from AMANAC projects, the conference allowed a great forum for discussion of AMANAC project results with the key stakeholders in the building and construction industry. In addition, the conference also allowed for some exhibition space to showcase samples and prototypes and disseminate newsletters about these novel technologies.

With over 100 experts from 35 countries attending, the conference was a good forum for the discussion about research and market uptake possibilities for new innovative and sustainable building facades.



AMANAC at Ecobuild 2016 March 8-10th, 2016

The AMANAC CSA and the cluster projects ELISSA, FOAM-BUILD, ECO-SEE, HOMESKIN and SUS-CON participated at ECOBUILD 2016 organised on March 8-10th, 2016, the leading UK exhibition and conference for the construction



and energy market. More than 500 visitors to the booths had the opportunity to be informed about the activities of the cluster, received publicity material about the AMANAC thematic areas and outcomes of the individual projects. Visitors discussed developments of their projects with the exhibitors and also were able to see exhibits from the projects, including not only samples and small prototypes but also systems made with innovative materials and components developed in AMANAC projects.

Participation in ECOBUILD 2016 increased the visibility of all AMANAC projects to targeted audience and hopefully will lead the way for future collaborations and market uptake in the future.



AMANAC LCA workshop

May 19th, 2016

The AMANAC LCA Workshop (for all thematic areas) will take place in Athens (Greece), on May 19th, 2016. It will be a one-day workshop, presenting the results of the LCA work done in AMANAC-CSA projects but more importantly will involve a round-table discussion, allowing the opportunity to address some of the most recognised ‘problems’ in LCA, as identified by the projects’ LCA Experts.

More information about the workshop can be found here:
<http://amanac.eu/achievements/lca-lcc-approach/>

Seminar on Advanced materials and solutions for low carbon energy and more sustainable buildings in Europe at EUSEW, Brussels

June 16th, 2016

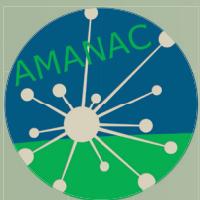
AMANAC and EMIRI will jointly organise a 90 min Seminar in the frame of EU Sustainability Energy Week (<http://eusew.eu>) on “Success Stories - Advanced materials and solutions for low carbon energy and more sustainable buildings in Europe”. The meeting will take place in Salle Polak at the Résidence Palace, International Press Center, Rue de la Loi 155, Brussels, June 16th, 2016 - Time: 09.00 - 10.30 am. The scope of the meeting is to:

- Highlight the key role of the Advanced Materials Industry in tackling the EU energy challenges
- Present success stories of new Advanced Materials and solutions for more sustainable buildings in Europe
- Discuss policies / regulations needed to ensure Industrial Leadership of the European Industry of Advanced Materials for low carbon energy technologies
- Discuss policies / regulations and Innovation in the Building & Construction Industry

Registration:

You can register for the event at:
http://eusew.eu/usr_account/register

For further information please visit
<http://eusew.eu/success-stories-advanced-materials-and-solutions-low-carbon-energy-and-more-sustainable-buildings>
and/or
www.amanac.eu.



AMANAC: Advanced Materials And Nanotechnology Cluster

Third Newsletter: May 2016

ELISSA - Energy Efficient Lightweight-Sustainable-Safe-Steel Constructions

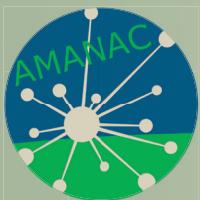
September 2013 - August 2016

Coordinator: National Technical University of Athens; www.elissaproject.eu



Key Results:

Exploitable Results (ER)	Key Partner	Key Performance Criteria
Thermal Bridges: A technical reference guide for evaluating the thermal bridges in lightweight drywall systems incorporating super insulation materials	NTUA, ZAE	The innovation content of the result is the development of a methodology for calculating 1-D, 2-D and 3-D thermal bridges in lightweight construction combining highly conducting steel structures with extremely low conducting insulation materials.
VIP CombiPlate Element	VA-Q-TEC	Vacuum Insulation Panel embedded into thin polyurethane foam. It will be further improved after the end of the project.
Intumescent paint for internal use	FARBE	Formulations that improve applicability of intumescent paints on steel structures for internal use. The new paint is able to protect a product from destructive heat (e.g. during a fire) according to the norm EN 13381-4. The thickness of paint to be applied depends on the required fire resistance, the massiveness and the stresses applied to the structures. Could enter the market after the end of the project.
Anti-seismic active vibration reduction system	WBI	This result consist in the development of a demonstrator of anti-seismic active vibration reduction system, which enables to mitigate damages in lightweight steel buildings subjected to moderate earthquakes (which are related to the damage limit state of buildings). The system will be further developed to a product after the end of the project.
Characterization of the local and global behaviour of identified seismic resistant subsystems	UNINA, WBI	This result includes the experimental and theoretical optimization of the seismic performance of the lightweight systems and its main components.
Modular lightweight wall/floor/ceiling elements with excellent thermal-fire-seismic behavior	COCOON, KNAUFKG, KNAUFIT	Design and thermal-fire-seismic testing of innovative composite, modular wall/floor/ceiling systems with lightweight steel frames, ready to be used in prefabricated modular construction (new buildings and renovation). Design, construction and testing of representative building modules (the ELISSA house) implementing the new systems. Proof of more than 50% reduction in energy reduction, improved fire and seismic safety. Mass production of ELISSA systems should be investigated before entering the market.



AMANAC: Advanced Materials And Nanotechnology Cluster

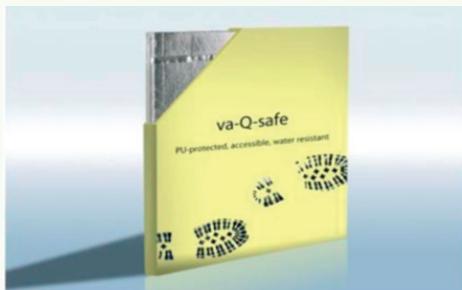
Third Newsletter: May 2016

Exploitable Results (ER)	Key Partner	Key Performance Criteria
Market extension for lightweight steel construction	COCOON	Market extension for lightweight steel construction through optimized Cocoon concept for modular buildings. The ELISSA house targets planners, engineers, architects, private and public investors and construction companies interested in future-oriented ways to construct buildings. The users of the ELISSA house enjoy faster building times, customized solutions, light & slim constructions, process & quality improvements through prefabrication and high performance in seismic, fire & thermal behavior of the buildings. The concept opens opportunities to extend the market for lightweight steel constructions into markets with high temperature sensitive requirements, high standards for fire resistance and areas with high risks of earthquakes.

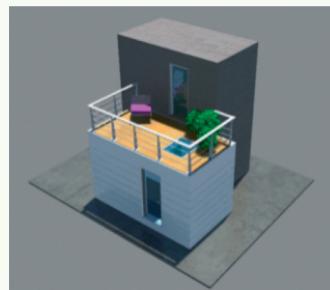
Summary:

The main goal of the ELISSA project is the development and demonstration of nano-enhanced prefabricated lightweight steel skeleton/dry wall systems with improved thermal, vibration/seismic and fire performance, resulting from the inherent thermal, damping and fire spread prevention properties of carefully preselected inorganic nano-materials (aerogels and VIPs) and MEMS as well as the development of industrially friendly methods for their application. The design and construction practices of the elements and ELISSA modules, as well as the new encapsulated VIPs (CombiPlate), the two new intumescent paints, the Active Damping Device and its power supply can be independently applied to various segments of the construction market. The new developments will improve the contribution of lightweight dry-wall steel skeleton modular buildings to energy savings and citizen safety (fire and earthquake) and will increase the international market share of this type of construction.

Project Pictures:



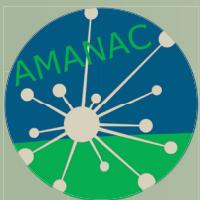
VIP based “CombiPlate” - VIP foamed into slim polyurethane (PU) layer (“Va-q-safe” received the innovation product for architecture and building praxis award, Munich building fair, BAU 2015)



Engineering design concept for lightweight ELISSA house



Elissa Modules: Prefabricated lightweight steel skeleton / drywall /VIP/ intumescent paint modules that are fast and easily constructed and can be adjusted for specific uses.



AMANAC: Advanced Materials And Nanotechnology Cluster

Third Newsletter: May 2016

NANOCOOL - An Energy Efficient Air Conditioning system with Temperature and Humidity independent controls based on the combination of a Liquid Desiccant Cycle with an adapted conventional air cooling system.



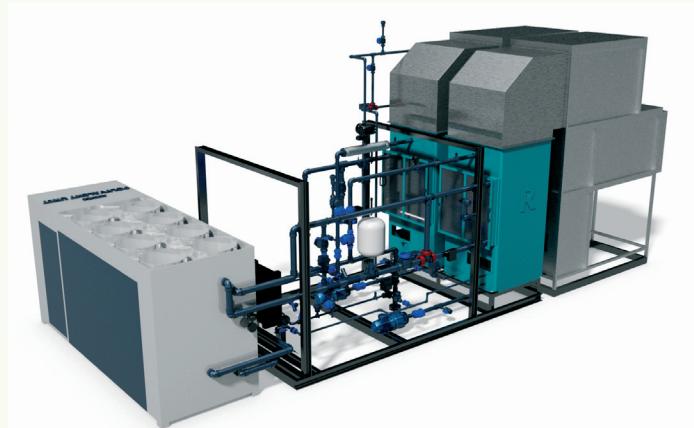
September 2012 - February 2016

Coordinator: TECNALIA; www.nanocoolproject.eu

Key Results:

Exploitable Results (ER)	Key Partner	Key Performance Criteria
A hybrid liquid desiccant based technology for HVAC applications with cooling/heating capability	Joint Ownership	The system has been working from November 2015, continuously from 01/01/2016. 27% electrical energy savings over traditional VC systems. 28% electrical energy savings yearly based (extrapolated). Good comfort and no bad smells according to users. H,T independent control achieved. No carry over (<1,25g/h) and corrosion (until January 2016).
A liquid desiccant based unit for DESICCANT applications	Joint Ownership	See above.
Falling film on internally cooled /heated heat exchanger for heat and mass transfer comprising:1) A process fiber glass tower ("TOWER")2) A non-atomizing sprinkler ("DISTRIBUTOR")3) A "BUNDLE" of plasma treated plastic tubes carrying cooled or heated water4) An advanced anticarryover filtering solution ("DEMISTER")	Technion, URV, Tecnalia, Polito, Decsa, Ridan	Heat transfer coefficient using plastic anticorrosion materials was in the same range than titanium based apparatus.

Summary: The humidity treatment part of air conditioning is crucial in order to achieve a satisfactory internal air quality. Traditional HVAC solutions are not efficient or economically viable for applications with a low sensible heat ratio because of the wasted energy used to reheat the air after dehumidifying it. The Nanocool project presents an innovative solution based on a Liquid Desiccant System (LDS) combined with conventional HVAC systems, in which the absorber and regenerator are internally cooled and heated. The main advantages of the system are cost-effective operation in strongly humid conditions, compatibility with renewable heat or cold sources, design flexibility, cost. After preliminary tests carried out at Technion facilities, a rigorous testing of the whole Nanocool system has been carried out at the URV facilities in Tarragona, prior to sending the



Nanocool system to the Demo site placed in TBTC Taiwan in July 2015. NanoCOOL prototype is fully operational from November 2015. Energy consumption has been reduced 27%



AMANAC: Advanced Materials And Nanotechnology Cluster

Third Newsletter: May 2016

in monitored period against conventional air vapor compressor units. Yearly energy savings are estimated at 28% (electric power savings), thermal energy savings are 55%, cost saving range from 2 - 5 000 EUR.

Project Pictures:



WINSMART - Smart, lightweight, cost-effective and energy efficient windows based on novel material combinations

September 2012 - September 2016

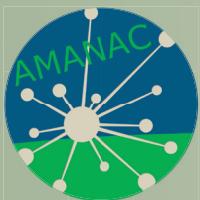
Coordinator: Danish Technological Institute (DK); winsmart.eu



Key Results:

Exploitable Results (ER)	Key Partner	Key Performance Criteria
Improved VIG sealing solution	EMPA	Flexible edge seal with laser-welded metallic ribbons soldered onto the glass, rather than with fixed seal with glass solder. Flexible seal allows for large vacuum glazing.
Photochromic device	University of Ljubljana	Device optimized to reach colouring and bleaching with switching times below 20min. The visual transmittance reduced from 62 % to 17% by solar irradiation.
Electrochromic device with redox	FhG-ISE	Device optimized to reach a fast colouring and bleaching with switching times below 15min, where the visual transmittance can be reduced from 74% down to 2% and a nearly neutral colour in bleached state can be achieved.
Test method for qualification and life-time prediction of VIG edge seals	FhG-IWM	Accelerated, yet accurate estimation of long-term performance under realistic load conditions.

Summary: WINSMART is an inter-European research and development project aiming at creating the windows of the future - low U-value, fully sustainable, lightweight, smart Windows - by combining vacuum insulation glazing (VIG) with suitable optical transmission control schemes and super-insulating sash and frame. The project takes a three-way approach to developing the window of the future by targeting significant technological advancements within both glazing production technology, frame manufacturing, and optical control mechanisms.



AMANAC: Advanced Materials And Nanotechnology Cluster

Third Newsletter: May 2016

The WINSMART project is still ongoing with developments focusing on achievement of the final goal of the WINSMART project i.e. to produce a prototype window incorporating the developments of the project. Targets for the development are to end up with a window with the following characteristics: slim, lightweight (down to 50% weight reduction), low u-value (down to 0.3 W/m²K), sustainable (low embodied energy), and cost effective.



Electrochromic device prepared by sputtering with redox electrolyte in bleached (left, Tvis=74%) and coloured state (right, Tvis=2%, applied potential 1V)



Photochromic device prepared by solgel in bleached state (left, low intensity of irradiation, Tvis=62%) and coloured state (right, intensity of irradiation corresponds to sunlight, Tvis=17%)

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DISCOVER AMANAC



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PARTNERS

