

Horizon 2020 Research and Innovation Action – InDeWaG Project

Project Activities

Events and Communication

In order to disseminate the InDeWaG project to the target audience, the members of the Consortium participated in various events which took place not only in Europe but also in South America and Asia. The InDeWaG results were presented in a wide range of conferences from industrial to research, workshops, exhibitions and international trade fairs.

InDeWaG project is registered by the Coordinator Partner University of Bayreuth (UBT) in ECTP (European Construction Technology Platform). Regular updates about InDeWaG are available on the project's website www.indewag.eu. This issue of InDeWaG newsletter presents the latest InDeWaG public activities.

6th October, 2016, XXX Research Conference and XII Regional Meeting SI+ Configurations, Actions and Accounts, Buenos Aires, Argentina

UPM-ETSAM team presented a paper "*Water flow glazing active glass façades: their contribution to zero energy buildings*" that makes reference to InDeWaG project and its objective.

10-11 October 2016, Advanced Building Skins Conference, Bern, Switzerland



ETEM and ARCH elaborated a common paper to be published in the conference proceedings. Architectonika prepared a poster and Arch. Dimitar Paskalev (ARCH) and Dipl. Eng. Veneta Novakova (ETEM) gave a joint presentation under topic D6 "Glass in Advance Building Envelopes" on the 11th of October.



7 - 8 November 2016, Training and consultation event, Sofia, Bulgaria

Dipl. Eng. Veneta Novakova (ETEM) presented the EU funded project InDeWaG. The event was organized as part of the European project Step-2-Sport – renovation of private and public buildings aiming to achieve nearly zero energy consumption.

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7-8 November, 2016, Bulgarian-Indian Scientific Workshop: "Solar energy: strategies, research and applications", Sofia, Bulgaria

Assoc. Prof. Dr. Maya Stoyanova from CL SENES-BAS presented the concept of the project InDeWaG in a Bulgarian-Indian scientific workshop. The lecture entitled "Industrial development of innovative façade technology for nearly zero energy buildings" gave an overview of the project objective for Industrial development of innovative façade technology for nearly zero energy buildings. The event was organized by CL SENES with the support of the Ministry of Education and Science of the Republic of Bulgaria. The workshop gathered scientists, working on renewable energy sources and energy efficiency topics, as well as stakeholders and broader audience.

6-8 December, 2016, 5th International Conference on Electronic Devices, Systems and Applications (ICEDSA), American University of Ras Al Khaimah, Dubai, UAE

UPM–ETSIAE participated with a presentation for the wireless control device for the modular unit (InDeWaG).

16-21 January, 2017, BAU - World's Leading Trade Fair for Architecture, Materials and Systems, Munich, Germany



InDeWaG project was presented at ETEM exhibition booth with a real InDeWaG prototype and at EU projects exhibition booth of UBT with a functional 1:10 model of the Bulgarian demonstrator. Recent developments and state-of-the-art technologies were shown to stakeholders from architecture and civil engineering to raise the awareness about Fluid Flow Glazing in general and the InDeWaG project in particular. The innovative concept of a façade system and partition walls

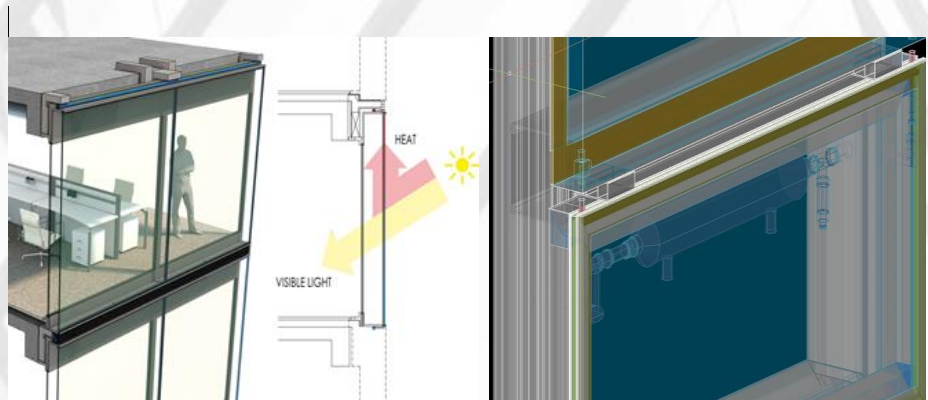
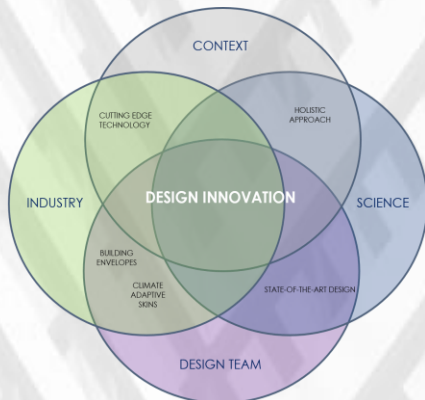
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with circulating fluid inside the glazing attracted great interest during the presentation of the fully functional model of the planned demonstrator building with temperature-controlled fluid flow glazing facades. Visitors were able to watch a video showing the principles of operation, as well as the flow and temperature distribution within the demonstrator. Many new contacts were established during the project exhibition. Promotional materials for visitors were prepared by CL SENES - rollup, leaflets, pens, writing pads.



23-24 March 2017, 2nd Annual Innovative Glazing Global Summit, Prague, Czech Republic

Dipl. Eng. Veneta Novakova from ETEM gave an inside about InDeWaG project in a presentation titled *“Developing a commercial façade system using water flow glazing, which is able to actively control the thermal stability in the interior spaces, and, in the same time absorb solar energy, in order to get use of it.”* V. Novakova introduced to the audience of professionals the main objectives of the InDeWaG approach, the advantages of FFG façades, previous patents – proof of concept, technical knowledge for FFG, innovation steps and challenges of the project.



12-16 June, 2017, World Multidisciplinary Civil Engineering-Architecture-Urban Planning Symposium, Prague, Czech Republic

Fernando del Ama Gonzalo, Associate Professor, American University of Ras Al Khaimah, Belen Moreno, fellow researcher – UPM, Spain and Juan A. Hernandez Ramos, Associate Professor from UPM, disseminated InDeWaG project at WMCAUS. An important event that contributes to multidisciplinary studies related with Civil Engineering, Architecture, City and Urban Planning which provide opportunity for interactions between experts in these fields. The joint presentation marked important topics from the project concept: Water Flow Glazing Technology, Description of the Spanish Prototype - Monitoring and Actuating System, Energy Management System, Simulations and Conclusions.

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28 July 2017, Conference “The Light Façade and Its Sustainability”, Santa Fe, Argentina

Two researchers from UPM-ETSAM team, Prof. Dr. Arch. Benito Lauret and Dr. Arch. Graciela Ovando, gave a presentation titled “Sustainability in architecture and light facades” in Rosario's Architects Association headquarters. Some part of this presentation was dedicated to InDeWaG H2020 project, and its goal to develop “water flow glazing” as a way to improve buildings sustainability, by means of enhanced energy efficiency of glazed facades. This fact strongly drew the attention of attendant professionals who in fact are already very concerned with sustainability issues.

12 October 2017, Open House Conference Staticus, Vilnius, Lithuania

Prof. Dr. Eng. Daniel Pfanner (Bollinger+Grohmann) held a presentation on a business Conference in Vilnius on a topic about building envelope. In his talk he also introduced the InDeWaG innovation concept to the target audience. Daniel Pfanner presented InDeWaG objectives, previous patents, water flow design (Computational Fluid Dynamic Simulations), thermal design, validation and technical design of the facade system. He received important feedback by professionals – comments, appreciations and important questions to be considered further during the project development in near future.

21 October 2017, IV International Conference for Façade Engineering, Sofia, Bulgaria

The International ETEM Conference for façade engineering is a global forum for the latest façade technologies designed for creative architecture. It takes place every two years with the objective to present state-of-the-art developments in architecture and construction technologies. The R&D Director of ETEM – Dipl. Eng. Veneta Novakova presented the philosophies and approaches, key to creating an innovative and sustainable product.



Her presentation “Contemporary Building Envelopes – Impact on Inhabitants Comfort and Wellbeing” was the perfect opening for this inspiring event, as the 700+ participants, witnessed innovation in the making. InDeWaG was exhibited at the forum with a supported by ETEM and CL SENES project corner. A full HD presentation about InDeWaG technical innovation, water

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flow and thermal design, proof of simulations and demonstrators was introduced as a slide show to the visitors. Promotional materials printed for the event were also distributed.

6-7 November 2017, Share International Architecture and Engineering Forum, Bucharest, Romania

The event is an effective platform for networking, business, inspiration and exchange of ideas and transfer of know-how. During the forum, where more than 500 participants attended as both presenters, speakers and guests, Hristo Nichev, on behalf of ETEM, presented the InDeWaG project under a presentation, titled "Advanced Building Envelopes". Hristo Nichev, explained to the audience one of the best pros of the InDeWaG project – the radiant heating/cooling.

Despite the short preview, the project was of great interest for the attendees, as its innovative idea and near-finalized realization is a working proof of the concept, the whole consortium is working on.

7 November 2017, The ne-xt facades conference, TUM Department of Architecture, Munich, Germany

The ne-xt facades conference gathers outstanding experts from all over Europe. In the forum where science meets practice have been discussed new developments and technologies for the design and manufacturing of high-performance adaptive building envelopes. In Session 4 – The Architectural Challenge, Prof. Dr.- Eng. Daniel Pfanner from Bollinger + Grohmann presented InDeWaG in his lecture titled "The Dream of Daylight – Water Flow Glazing". He shared knowledge about InDeWaG innovation in the context of "a passive radiant surface technology, adoptable to the building envelope". The contribution gave an overview of the current state of the project and the future potential of the innovative façade technology.

Scientific Publications

- Luis J. Claros-Marfil, J. Francisco Padial, Benito Lauret - article in journal Renewable Energy, No 92, p. 450-461, ISSN 0960-1481, "A New and Inexpensive Open Source Data Acquisition and Controller for Solar Research: Application to a Water-Flow Glazing".
- Del Ama Gonzalo, F., Hernandez, J.A., Moreno, B., 2016. *Wireless low cost temperature and humidity sensors with PV microcells. Determination of design parameters by means of experimental measurements.* Publisher: IEEE. DOI: 10.1109/ICEDSA.2016.7818532. Electronic ISSN: 2159-2055
- Fernando del Ama Gonzalo, Belen Moreno, Juan A. Hernandez Ramos. 2017. *Designing a wireless sensor with ultra-capacitor and PV microcell for Smart Building Energy Management.* Accepted for publication in: International Journal of Embedded Systems. Indexed in SJR <http://www.scimagojr.com/journalsearch.php?q=12100157172&tip=sid>
- Xabier Romero, Juan A. Hernández "Spectral Problem for Water Flow Glazings", published article in Energy and Buildings ENB_2016_141_R

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- Pablo Sierra, Juan A. Hernández, "Solar heat gain coefficient of water flow glazings", published article in Energy and Buildings, volume 139, (2017), pages 133–145
- Fernando del Ama Gonzalo, Belen Moreno, Juan A.Hernandez Ramos. 2017. *Thermal simulation of a Zero Energy glazed pavilion in Sofia, Bulgaria. New strategies for energy management by means of Water flow Glazing.*
Published in Open Access
<http://iopscience.iop.org/article/10.1088/1757-899X/245/4/042011>

Forthcoming Events

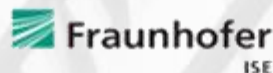
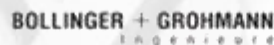
- ❖ **6.12.2017 Conference: Women4Energy, Stuttgart, Germany**
<https://www.b2match.eu/women4energy> Lecture: *The dream of light and energy efficiency through water flow glass facades* (Teodora Vatahska, HTCO GmbH)
- ❖ **6.12.2017 Workshop-Series Success Factor Energy Efficiency, Part 8** at Chamber of Industry and Commerce South Oberrhein, Germany, Lecture: *Energy concepts, ventilation and air conditioning in modern buildings* (Dr. Axel Müller, HTCO GmbH)
- ❖ **22.02.2018 Architects and Planner Congress: FASSADE 2018 – smart green dynamic , at the Fair BAUTEC** in Berlin, Germany <https://fassade2018.heinze.de/>
Two independent lectures by Daniel Pfanner from Bollinger+Grohmann and Teodora Vatahska and Dr. Axel Müller from HTCO GmbH
- ❖ **14 - 15 May, 2018, Conference: Alternative Energy Sources, Materials and Technologies (AESMT'18)** Plovdiv, Bulgaria. *The project will be presented with two lectures by researchers from CL SENES – BAS.*
- ❖ **18 June, 2017, SEES'18 International Conference on Sustainable Energy and Environment Sensing**, Cambridge, UK. *UPM-ETSIAE will participate with a presentation titled "The use of Water Flow Glazing with variable g value in Net Zero Energy office buildings"*
- ❖ **26 – 30 August 2018, 10th Jubilee Conference of Balkan Physical Union - BPU-10**, Sofia, Bulgaria. *CL SENES - BAS team will present the InDeWaG project public results.*

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PROJECT INFORMATION

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