



Lowering Costs by Improving Efficiencies in Biomass Fuelled Boilers: New Materials and Coatings to Reduce Corrosion

Edition: June 2022

Dear Readers,

Every 4 months a newsletter will be shared with all stakeholders and the scientific community that are involved and or interested in the field of bioenergy, including plant developers, plant operators, and technology suppliers, as well as governmental bodies. Furthermore, members of the public who are interested in one or more of the topics related to BELENUS, such as bioenergy and materials engineering, will also gain from our quaternary newsletters.

These newsletters will cover project progress, special topics, news, relevant impacts, and information and where to meet us in person at important events. In this edition of the newsletter, you will learn about BELENUS in general and advances on the project.

The best is yet to come! Enjoy reading!

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 815147.

Special Topic: 1st Workshop on “Lowering Costs by Improving Efficiencies in Biomass Fuelled Boilers: New Materials and Coatings to Reduce Corrosion, and Young Researchers Training School, and Young Researchers Training School.

4th and 5th of October 2022, respectively.

Partners involved

[VAL](#), France
[INTA](#), Spain
[TEandM](#), Portugal
[SMT](#), Sweden
[UNIPER](#), United Kingdom
[VTT](#), Finland

[CHAL](#), Sweden
[EIFER](#), Germany
[EDF](#), France
[UCM](#), Spain
[RWE](#), Germany
[CIEMAT](#), Spain
[TUM](#), Germany

Importance of the topic

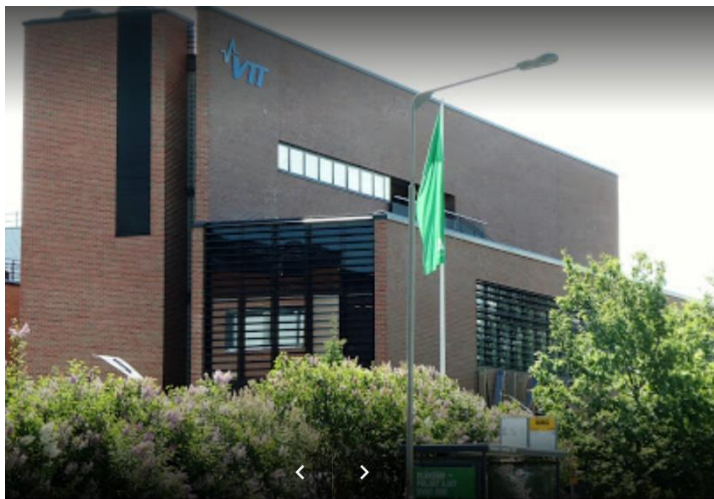
BELENUS’s partners will present the project’s results in EU events organized by EU Research Initiatives and International Trade Fairs to establish synergies and start commercializing the outputs generated within the project. Additionally, BELENUS partners will be involved in the events and workshops associated with on-going EU initiatives previously identified.

The consortium will organise 2 workshops and a Young Researchers Training School to promote the BELENUS results, in addition to local industries, leaflets distribution and posters.

The Venue

The **1st Workshop** and **Young school** will be held at **VTT, Espoo, Helsinki, Finland on the 4th and 5th of October 2022**, respectively.

The BELENUS project <https://belenus-project.eu/> was funded by the EU Horizon 2020 program and started in April 2019. BELENUS brings novel corrosion prevention approaches to achieve cost-effectiveness for biomass plants involving the whole value chain. The ambitious goal proposed by BELENUS is sustained by the achievement of 3 technological breakthroughs which



constitute the technological pillars, focused on preventing corrosion and increasing in performance and reliability of small and medium combined heat and power (CHP) biomass plants: [1] biomass highly-corrosion resistant coatings and lower base materials presently under development; [2] strategies of welding and bending for improving quality and efficiency of boiler components; [3] online corrosion monitoring.

This workshop aims to disseminate project results and to bring together the main actors of the industry, plant owners and researchers related to the topic of material and component degradation in the Biomass field. The Young Researchers Training School not only aims to disseminate project results but also to show up materials and processes against corrosion for different industrial applications. We hope that you will be



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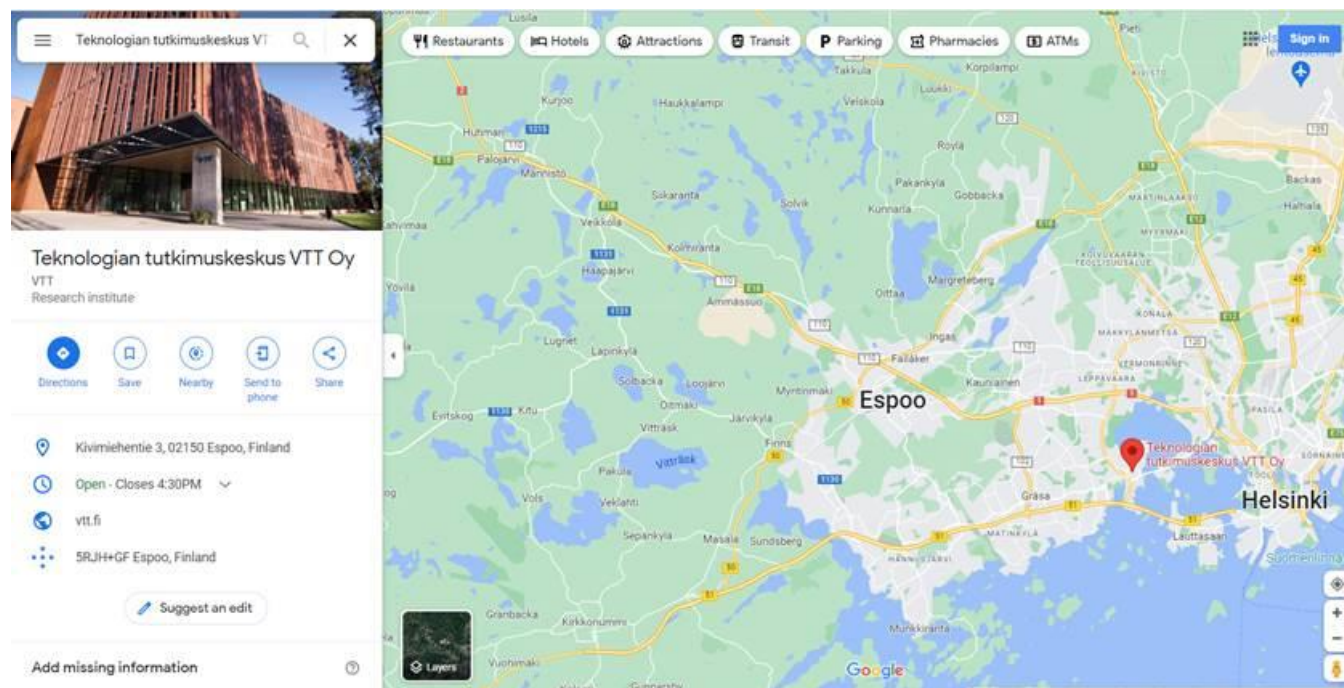
able to attend and look forward to your input and views on the challenge of enhancing the lifetime of industrial plant components.

Exact location

Teknologian Tutkimuskeskus VTT Oy,

Kivimiehentie 3, 02150 Espoo, Finland

[Teknologian tutkimuskeskus VTT Oy - Google Maps](#)



There is a suggestion for accommodation, that you will find within the online registration form.

Accommodation

We have reserved a room quota at the

Radisson Blu Hotel Espoo

Otaranta 2, 02150 Espoo

Radisson Blu Hotelli, Espoo

Our special price for a standard single room is 132 EUR/night¹. Please use our reservation code: VTT22.

Please make your reservation via email: groups.finland@radissonblu.com; or by phone: at +358 300 870 010.

¹ Please check the validity date on the [ONLINE REGISTRATION FORM](#)



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Agendas

Workshop Agenda: 4th of October of 2022

9:00	Greetings from VTT, Dr Tarja Laitinen, Research Area Vice President, Knowledge Driven Design, Sustainable Products and Materials.
9:10	BELENUS project overview Dr. F. Javier Pérez Trujillo, UCM
09:25	Biomass fuels <ul style="list-style-type: none">• <i>Material related challenges in biomass combustion (Dr Hanna Kinnunen, Valmet Technologies Oy) (9.25)</i>• <i>Materials selection for a new biomass fired boiler; Owner's point of view(Dr Katri Ekholm, Helen Ltd (9.45)</i>• <i>Biomass characterization of fuels used in Belenus Project (Dr. Manuel Benito González, CIEMAT, Spain) (10.05)</i>
10:25	Coffee break
11:00	Biomass corrosion-resistant coatings <ul style="list-style-type: none">• <i>Advances in Anti-Corrosion Coatings and their medium-term corrosion behavior in biomass atmosphere (Dr Pauline Audigie, INTA, Spain) (11.00)</i>• <i>Coating processes for improvement of corrosion resistance (Dr Francisco Gonçalves, TEandM, Portugal) (11.20)</i>• <i>New FeCrAl materials for boiler environments (Dr Johanna Nockert, Kanthal, Sweden) (11.40)</i>• <i>Laboratory investigation of bulk/coatings in simulated biomass environment (Dr. Vincent, Chalmers University of Technology, Germany) (12.00)</i>
12:20	Modelling materials, new welding and bending strategies. <ul style="list-style-type: none">• <i>Predicting oxide phases and oxidation kinetics observed in the laboratory investigation (Dr Torbjörn Jonsson, Chalmers University of Technology, Sweden) (12.20)</i>• <i>Tensile Properties Investigation of Coated and Uncoated 12%Cr Steel Using a Thermophysical Simulation System (Dr Fabian Dittrich, Technical University of Munich, Germany) (12.40)</i>• <i>HAZ Simulation, Melting and Bending Investigation of Coated and Uncoated 12%Cr Steel" (Dr Peter Mayr, Technical University of Munich, Germany) (13.00)</i>• <i>Lifetime prediction approach applying experimental and modelling data from the Belenus project (Dr. Janne Pakarine, VTT (13.20)</i>
13:40	Lunch
14:40	Visit VTT facilities
15:40	Pre-validation (pilot scale) and testing at real plant conditions <ul style="list-style-type: none">• <i>Fireside Corrosion Probes and Trial Coated Tube Exposures in Biomass Fired Power Plant Boilers, Dr Colin Davis, UNIPER, United Kingdom). (15.40)</i>• <i>Preventive Maintenance: On-line Corrosion Monitoring System (Dr Francisco Javier Pérez Trujillo, UCM (16.00)</i>• <i>Biomass Pilot Plant testing: Fluidized bubbling bed conditions influence (Dr Alberto Bahillo, CIEMAT) (16.20)</i>• <i>Investigating the erosive wear of boiler tubes from an operator's view (Dr Simon Heckmann, RWE, Germany) (16.40)</i>
17:00	Coffee break
17:15	Discussion session: new perspectives in biomass technology <p><i>Set of central questions which are discussed by the group.</i></p>
18:00	Closure of the workshop

Young Researchers Training School Agenda- 5th of October of 2022



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Topic	Speaker	Institution	When
• <i>Side effects of biomass combustion- from fuel preparation till the ash management</i>	<i>Karol Witkowski</i>	<i>EIFER</i>	<i>9:00</i>
• <i>Boiler Fireside Corrosion Practical Considerations</i>	<i>Colin Davis</i>	<i>UNIPER</i>	<i>9:30</i>
• <i>Protective coatings for steel high-temperature corrosion resistance</i>	<i>Pauline Audigie</i>	<i>INTA</i>	<i>10.00</i>
Coffee break			10.30
• <i>Coatings processes for high-temperature corrosion resistance</i>	<i>Francisco Gonçalves</i>	<i>TEandM</i>	<i>11:00</i>
• <i>Analytical strategies in high-temperature corrosion research.</i>	<i>Torbjörn Jonsson</i>	<i>CHALMERS UNIVERSITY</i>	<i>11:30</i>
• <i>Pilot Plant Testing in hydrogen production by fuel reforming, and biomass combustion</i>	<i>Manuel Benito</i>	<i>CIEMAT</i>	<i>12:00</i>
Lunch			12.30
• <i>Materials for a fossil-free future – the importance of high-temperature corrosion</i>	<i>Johanna Nockert</i>	<i>KANTHAL</i>	<i>14.00</i>
• <i>Furnace modelling for corrosion risk assessment</i>	<i>J. Kapanen</i>	<i>VTT</i>	<i>14.30</i>
Coffee break			15.30
• <i>Social dimension of bioenergy</i>	<i>Leire Martiarena</i>	<i>ZABALA</i>	<i>16.30</i>
• <i>Practical Cases</i>	<i>Francisco J. Pérez</i>	<i>UNIVERSIDAD COMPLUTENSE DE MADRID</i>	<i>17.00</i>

Registration

Please find attached the **ONLINE REGISTRATION FORM** (<https://www.lyyti.in/BELENUS>) to attend the **1st Workshop and/or Young Researchers Training School**



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Sectorial Breaking News

<i>Date</i>	<i>Headline</i>	<i>Source</i>
1 st March 2022	<u>Solvay to co-fire soda ash plant boiler with biomass</u>	Bioenergy-news
18 th March 2022	<u>Vattenfall inaugurates biomass heat plant in Sweden</u>	Bioenergy-news
4 th April 2022	<u>BECCS project included in €1.1bn EU grants</u>	Bioenergy-news
8 th April 2022	<u>Solariant to sell majority stake in another 50-MW Japanese biomass project</u>	Renewables now
12 th April 2022	<u>Germany awards 1.08 GW of solar, 68 MW of biomass in March auction</u>	Renewables now
2 nd May 2022	<u>Greencoat buys 42-MW biomass plant in UK from Glennmont</u>	Renewables now
13 th May 2022	<u>Biomass Secure Power signs joint venture agreement</u>	Bioenergy-news
31 st May 2022	<u>Brazil's Suzano secures contract for 50 MWa of biomass power supply</u>	Renewables now

Remarkable Upcoming Events.

1. Global Conference on Biofuels and Bioenergy

- 21-22 October 2022
- Corfu, Greece

The central theme of the congress is “Biofuels and Bioenergy: New Era Technologies Striving for Sustainability” and will present novel and fundamental advances in the field.

Bioenergy is defined as energy obtained from any biomass-based fuel. Many countries have been interested in using biomass as a fuel source amidst the energy crisis of the 1970s. High greenhouse gas emissions, lethal air pollution, fluctuating fossil-fuel costs, and strong increase in worldwide transportation fuel demand have fuelled extensive bioenergy research. Biofuels offer many benefits, including energy security, environmental cleanliness, and sustainable development, and are therefore considered a relevant technology. However, biofuels have not been able to completely replace fossil fuels, owing to economic and technological constraints.

This conference is designed to cover current advancements and trends in biofuel and bioenergy production technologies, as well as to keep researchers, academics, and industry up to date on the latest advancements in the field.

This global consortium assembles sustainability researchers, scientists, academicians, biotechnologists, chemical engineers and professionals from all around the globe with the intent of fostering collaboration and disseminating the most cutting-edge concepts, research techniques, and findings throughout the spectrum.



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2. 13th Edition of International conference on Biofuels and Bioenergy

- 28-29 October 2022
- Vancouver, Canada



Biofuels 2022 with the theme " Biofuels has a role to play against Covid-19" aims at sharing new ideas and new technologies amongst the professionals, industrialists and students from research areas of Biofuels, Bioenergy, Chemical Engineering, Chemistry and Physics to share their recent innovations and applications in various fields and indulge in interactive discussions and technical sessions at the event. Biofuels and Bioenergy involve the tracks like Biomass, Biogas, Bioenergy, Biorefineries, Bioethanol, Biodiesel, Aviation biofuels, Algae biofuels and Bioeconomy. **Biofuels and Bioenergy-2022** is a stage to accumulate visionaries through the examination talks and presentations and set forward numerous interesting techniques of creation and scale up of renewable Energy and making the congress a flawless stage to share capability.

The Conference will also have a space for companies and/or institutions to present their services, products, innovations and research results.

3. European Biomass Conference and Exhibition (EUBCE)

- 5-8 June 2023
- Bologna, Italy





EUBCE is the largest biomass conference and exhibition in the world. Each year, EUBCE brings together the greatest minds and latest advancements in biomass, with the aim of accelerating research and market uptake across the globe. During the conference, over 2,000 experts from both academia and industry share and discuss ground-breaking ideas, technologies, applications, and solutions for the sourcing, production, and utility of biomass.

The scientific programme is coordinated by the Joint Research Centre of the European Commission.

Stay in contact with us. Visit our website.

BELENUS website www.BELENUS-project.eu is available since the early beginning of the project. It is the relevant source to show the scope and objectives of the project up and outstanding results. Find out more interesting information about the project and the impact of the results achieved, including all dissemination activities carried out.

If you have any questions feel free to drop us a line at contact@BELENUS-project.eu and remember you can follow us on *LinkedIn*  and *Twitter* 



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