



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



<https://belenus-project.eu/>

## 2<sup>nd</sup> Workshop on “Lowering Costs by Improving Efficiencies in Biomass Fueled Boilers: New Materials and Coatings to Reduce Corrosion”

A 1-day workshop on Tuesday, **5th of December 2023**, in Garching/Munich, Germany

We are delighted to offer you the opportunity to attend a one-day workshop and discussion session on the topic of “Lowering Costs by Improving Efficiencies in Biomass Fueled Boilers: New Materials and Coatings to Reduce Corrosion”.

The workshop will be held at the TUM University, in Garching/Munich, on the 5<sup>th</sup> of December 2023.

The BELENUS project was funded by the EU Horizon 2020 program. It started in April 2019, and it will end in February 2024.

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 the 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 CSP field. We hope that you will be able to attend and look forward to your input and views on the challenge of enhancing the lifetime of Biomass plant components.

Lunch and refreshments are included. See the attached Agenda for details.

To attend, please complete the attached registration form and send it to [gusgarci@ucm.es](mailto:gusgarci@ucm.es) and [fabian.dittrich@tum.de](mailto:fabian.dittrich@tum.de) by the 30<sup>th</sup> of November, 2023. For any questions, please contact Gustavo García Martin ([gusgarci@ucm.es](mailto:gusgarci@ucm.es), +34 91 394 52 08).

Kind Regards,

The BELENUS Project Team

## Agenda

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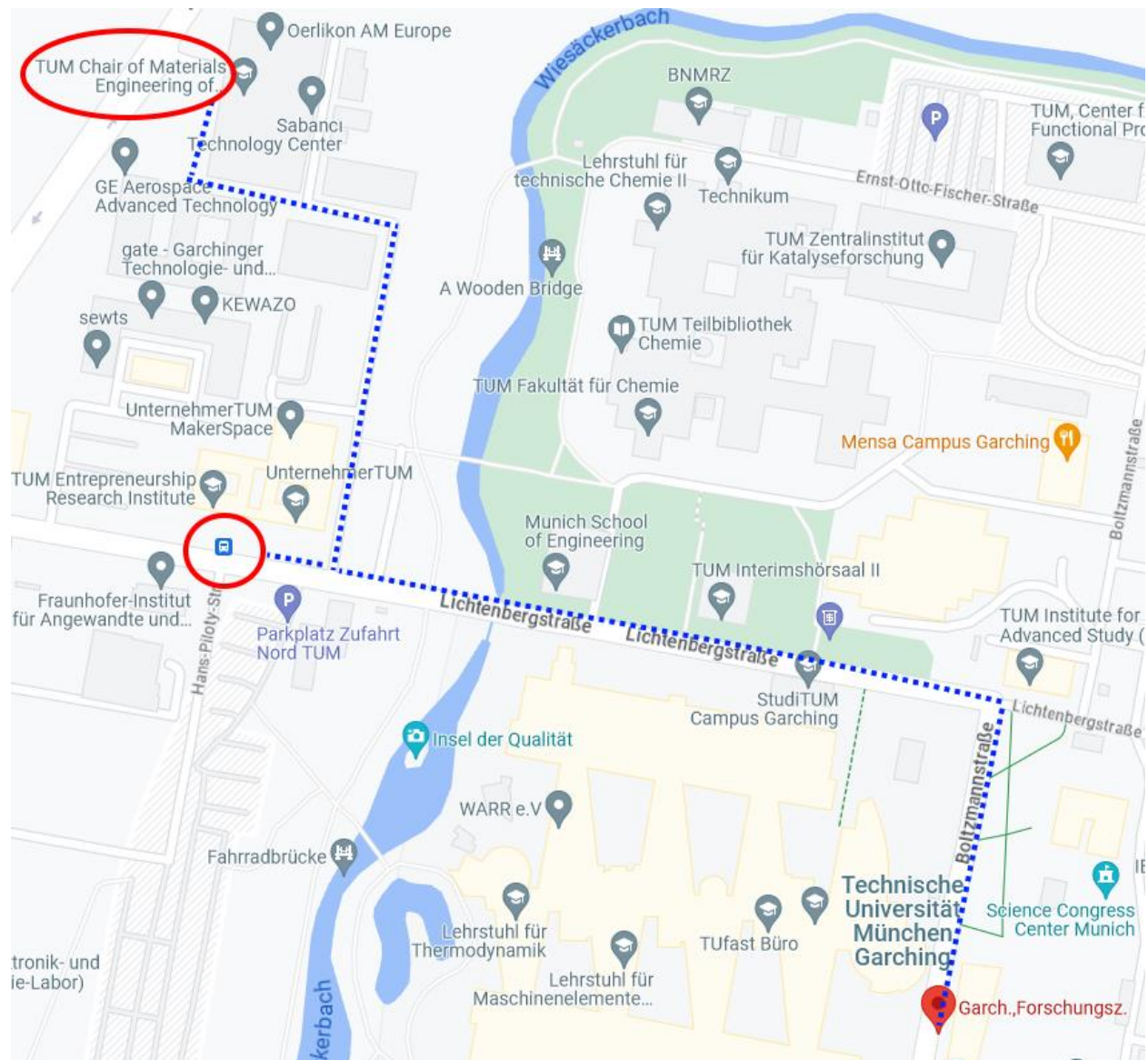
9:00	<b>Greetings from Prof. Peter Mayr, Department head “Materials Engineering” of TUM</b>
9:10	<b>BELENUS project overview Dr. F. Javier Pérez Trujillo, UCM</b>
09:25	<b>Slot 1</b> <ul style="list-style-type: none"><li>• <i>Sustainable Biomass Opportunities in Europe and Challenges for Energy Utilisation (Dr.Karol Witkowski, EIFER ) (9.25)</i></li><li>• <i>Fireside Corrosion Probes and Trial Coated Tube Exposures in Biomass Fired Power Plant Boilers, Dr. Scott Lockyer, UNIPER, United Kingdom). (9.45)</i></li><li>• <i>Applying lab-scale experimental data to (probabilistic) component-scale lifetime estimation – case study based on the Belenus results (Dr. Rami Pohja, VTT) (10.05)</i></li><li>• <i>"High-temperature corrosion in harsh environments: beyond breakaway corrosion" (Dr. Torbjörn Jonsson, Chalmers University (10.25)</i></li></ul>
10:45	Coffee break
11:00	<b>Slot 2</b> <ul style="list-style-type: none"><li>• <i>Power Plant Performance Enhancements - Process and Combustion Engineering, Corrosion Challenges (Mr. Kristian Enste, Onyx Power Zolling (11.00)</i></li><li>• <i>Long-term corrosion behaviour of coatings under biomass atmosphere at 600°C (Dr. Alina Agüero, INTA, Spain) (11.30)</i></li><li>• <i>Protective coatings and technologies: improving components lifetime (Dr. Eduardo Silva, TEandM, Portugal) (11.50)</i></li><li>• <i>Investigation of the erosive wear of boiler tube materials: Experimental design and operational experience (Dr. Jonas Meitz, RWE, Germany) (12.10)</i></li></ul>
12:30	Lunch
13:30	<b>Slot 3</b> <ul style="list-style-type: none"><li>• <i>Mechanical Properties Investigation of Coated and Uncoated 12%Cr Steel (Dipl.-Ing. Fabian Dittrich, Technical University of Munich, Germany) (13.30)</i></li><li>• <i>Thermal Simulation and Bending Investigation of Coated and Uncoated 12%Cr Steel (Prof. Dr. Peter Mayr, Technical University of Munich, Germany) (13.50)</i></li><li>• <i>Welding Investigation of Coated and Uncoated Power Plant Steels (Dipl.-Ing. Fabian Dittrich, Technical University of Munich, Germany) (14.10)</i></li></ul>
14.30	<b>Coffee break</b>
15.00	<b>Slot 4 (On-line)</b> <ul style="list-style-type: none"><li>• <i>Ash forming matter in solid biomass fuels: Behaviour prediction and characterization in FBC during Belenus experiments (Dr. María Luisa Contreras, CIEMAT, Spain) (15.00)</i></li><li>• <i>Insights of FTIR for biomass characterisation: Belenus biomass examples (Dr. Manolo Benito, CIEMAT) (15.20)</i></li><li>• <i>Social dimension of bioenergy, (Dr. Izaskun de Allende, Zabala, Spain) (15.40)</i></li><li>• <i>Electrochemical sensors for corrosion control in biomass plants (Francisco Javier Pérez Trujillo, UCM (16.00)</i></li></ul>
16:30	<b>Closure of the workshop</b>

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## The venue: Lecture Hall of Newton Building (Freisinger Landstraße 52)

Metro station: „Garching Forschungszentrum“

Bus lines: from metro station bus line “230 Haar” to stop “Lichtenbergstraße” (one stop)



From the metro, it is a 10 to 15-minute walk to the venue (see map). You can hop onto bus line “230 – Haar” at the metro station and get off at the next stop, “Lichtenbergstraße.” From there, it is a short walk to the institute.

*Lunch at the venue in front of the lecture hall.*

## **Online participation is possible via Zoom:**

Zoom log-in details:

**Topic: Workshop**

Tim: **5.Dec. 2023 09:00 AM** Amsterdam, Berlin, Rome, Stockholm, Vienna

Join Zoom Workshop

<https://tum-conf.zoom-x.de/j/69152165592?pwd=WjNEN0hIWkY4YkloamdIZHFrSEFJQT09>

Meeting-ID: 691 5216 5592

ID-code: 710122

Quick mobile dialling

+496938980596,,69152165592#,,,,\*710122# Deutschland

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Dialling by current location

- +49 69 389 805 96 Germany
- +358 942 454 879 Finland
- +33 184 131 635 France
- +46 844 688 179 Sweden
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ID-code: 710122

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Join via SIP

- [69152165592@lej.zmeu.us](mailto:69152165592@lej.zmeu.us)

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Join via H.323

- 64.224.35.50 (Germany)

Meeting-ID: 691 5216 5592

ID-code: 710122

## LIST OF HOTELS (close to **the workshop location**)

<b>Hotel</b>	<b>Address</b>	<b>Info</b>
<b>Hotel Hoyacker Hof</b>	Freisinger Landstraße 9a 85748 Garching bei München	<a href="http://www.hoyackerhof.de">www.hoyackerhof.de</a>
<b>Courtyard by Marriott Munich Garching</b>	Walther-von-Dyck-Str. 12 85748 Garching bei München	<a href="http://www.marriott.de">www.marriott.de</a> Directly at TUM Campus, shortest commute.
<b>Hotel König Ludwig II.</b>	Bürgerplatz 3 85748 Garching bei München	<a href="http://hkl.de">hkl.de</a>
<b>Soulmade</b>	Mühlfeldweg 46 85748 Garching bei München	<a href="http://www.soulmade.de">www.soulmade.de</a> Pay only via credit card. 8 Minute walk to subway station.
<b>Gasthof Neuwirt</b>	Münchner Str. 10 85748 Garching bei München	<a href="http://www.gasthof-neuwirt.org">www.gasthof-neuwirt.org</a>
<b>Hotel Marias Inn Bed &amp; Breakfast</b>	Neufahrner Straße 5 85748 Garching bei München	<a href="http://www.marias-inn.com/de">www.marias-inn.com/de</a> You will get a reduced rate if you put "Participant at a TUM conference." into the comment field.
<b>B&amp;B Hotel München Garching</b>	Daimlerstraße 5 85748 Garching bei München	
<b>ibis München Garching</b>	Daimlerstraße 3 85748 Garching bei München	

Please also check Google Maps for other accommodation options.



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## Registration Form

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Please fill in this form and send it to Gustavo García (gusgarci@ucm.es)

**Name and Surname:**

**Passport No. / ID card No.:**

**Institution / Company:**

**Address:**

**Telephone:**

**E-mail address:**

Please let us know the key questions you would have liked to be answered during the workshop:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

#### **Buffet-style lunch:**

- potato soup with truffle oil and pumpkin seed (vegan)
- finger foods:
  - mini tramezzini with bacon and cheese
  - mini quiche with goat cheese and figs
  - polenta canapés with olive tapenade and cherry tomatoes (vegan)
  - wrap with hummus and rocket salad (vegan)
  - pasta salad with chickpeas and roasted cauliflower wrapped in polenta
  - greek salad with feta and olives, served with chicken skewers

- dessert: cheesecake in a glass with mandarin and speculoos or vegan cake bites