



Young Energy Researchers Conference 28 February 2023

Best Young Energy Researchers Conference and Awards: Energy Efficiency and Biomass 2023 Winners

Energy Transition = Energy security! This was the motto of the World Sustainable Energy Days 2023 (WSED). The price crisis, multiplying signs of climate change, and threats to energy security urge us to act like never before. REPowerEU reflects this urgency and provides new momentum for the energy transition. In 2023, the WSED showed the critical role of the energy transition in securing our clean energy future and concrete policies, technologies and markets to get us there.

The WSED took place from 28 February – 3 March 2023 in Wels/Austria. Over 650 experts, from the public and business sectors and research community, from 60 countries participated in the event.

Organised by the OÖ Energiesparverband, the regional energy agency of Upper Austria, the WSED are a leading conference on the energy transition and climate neutrality. An important event of the WSED 2023 was the **Young Energy Researchers Conference** on 28 February. With two tracks, Energy Efficiency and Biomass, the conference offers young researchers from universities, research institutions and companies the opportunity to present their work to experts. For many young researchers, it is a first-time opportunity to address an international audience.

For the 2023 edition, 90 papers from over 40 countries were submitted. These were reviewed and evaluated by an international scientific committee consisting of around 50 high-level experts from academic institutions, professional associations, companies, and other institutions in the field of sustainable energy. Selected papers were invited for oral or poster presentation.

Every year, a highlight of the event is the presentation of the 2 "Best Young Energy Researcher Awards" to very deserving young researchers and hearing about their innovative work. It was an honour to present this year's awards to:



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Best Young Energy Efficiency Researcher

Seyedsina Motamedi, École de technologie supérieure, Canada

Paper "Mycelium as building material: status-quo and future perspectives"

Seyedsina Motamedi is a PhD candidate at the École de Technologie Supérieure in Canada. He holds a Master's of Science in Mechanical Engineering from Khaje Nasir Toosi University of Technology in Iran.

Bio-based materials as the alternatives to the current energy-intensive building materials represent a new trend in the construction industry, to replace concrete or insulation sections. In this context, mycelium (root-like structure of a fungus) was recently introduced as the base material of novel net-zero-energy insulation composites, which reduce embodied and operational energy of buildings.

The paper presents and discusses the current development status of mycelium composites and envisions the prospective roadmap of its evolution in the building industry. Outcomes of the paper indicate that mycelium's environmental footprints and embodied energy is significantly lower than traditional building materials and some of its bio-based peers. Furthermore, due to its great insulation capacity, it offers a reliable capacity to be the alternative for traditional carbon emissive insulation materials, especially in severe climates, in which case insulation is indispensable.





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Best Young Biomass Researcher

Ogemdi Chinwendu Anika, De Montfort University, UK

Paper "Low or zero carbon renewable fuels for achieving 1.5°C net zero emissions by 2050"

Ogemdi Chinwendu Anika is a doctoral researcher in energy and sustainable development at De Montfort University Leicester in the UK. She holds a Master's of Science in Industrial Microbiology from University of Abuja in Nigeria.

The Paris Climate Agreement seeks to keep global temperature increases under 2 degrees Celsius, ideally 1.5 degrees Celsius. This goal necessitates significant emission reductions. The review paper explores a number of low and zero-carbon (LZC) renewable fuels, including bio-based resources.

The results show renewables will need to account for approximately 90% of total electricity generation by 2050 and approximately 25% of non-electric energy usage in buildings and industry. Significant new commitments to efficient low-carbon alternatives will be necessary to achieve this. Particularly, biogas (biomethane), green ammonia, green methanol, and green hydrogen collectively have the potential of contributing approximately 20% towards net zero emission targets by 2050.

