


# Global WtERT Congress 2023

“Global cooperation to promote Waste-to-Energy technologies for a circular economy society”



November 7, 2023 | 8:30 am - 6:30 pm



Run Run Shaw Science Building in Zhejiang University,  
Hangzhou – P.R. China



[wtert.org/congress2023](http://wtert.org/congress2023) | [@globalwtert](https://twitter.com/globalwtert)

## Congress Report

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Global WtERT Council | WtERT®

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# Foreword

## *Welcome to the 2023 Global WtERT Congress*

Dear friends and members of the Global WtERT Council.

Welcome to the 2023 international congress and best wishes for a very successful conference.

WtERT was created at the beginning of the 21st century, is the only international academic-industry organization, and by now represents about one half of the Earth's population.

The growth of the WtE technology in this century has been phenomenal, especially in the country hosting this 2023 Congress.

By now, China's WtE power plant capacity is greater than that of Europe, America, and Japan, combined. Also, the Chinese WtE power plants, some of which you will visit this week, are truly state-of-the-art, both esthetically and functionally.

The participants to this meeting have done a lot to develop and promote the WtE technology over the globe.

The Chinese contribution and potential for developing nations have been recognized by my passing on, this year, with thanks, the

leadership of the global WtERT to Prof. Qunxing Huang of Zhejiang University.

Also, as you will see this week, Prof. Huang and his colleagues at Zhejiang University have created one of the most powerful WtE research and development centers in the world.

The WtERT organization was the first academic group to promote the application of WtE and the phasing out of landfilling in many parts of the world, such as North and South America, China, India, Abu Dhabi, Ethiopia and Serbia.

There is still more to be done to decrease landfilling and its major contribution to methane emissions and catastrophic climate change.

We, of the older generation, have done what we could do. The future is yours! Good luck!

**Prof. Nickolas J. Themelis**

Founder WtERT  
Earth Engineering Center, Columbia University



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## ***Let's work together for our next generation and for a better world!***

I am Qunxing Huang, a full professor of Zhejiang University and it's my great honor and pleasure to continue the legend of WtERT started by Prof. Themelis 20 years ago.

I was born in a typical Chinese small town and got my Ph.D from Zhejiang university located in the big Hangzhou City.

From the small town to the metropolitan city, I deeply recognize the importance of clean and efficient treatment of solid waste to the health of local people.

In the past 15 years since I became a faculty of energy engineering college, I have devoted myself to the development and implementation of Waste-to-Energy (WtE) technology which, I believe, is the only industrial solution to the global massive solid waste problem.

After we first met in 2012, Prof. Themelis and I have experienced the tremendous expansion of WtE in China. Today over 648 WtE facilities are commercially operating and 804.67kt/day of solid waste are burned with energy recovery.

The WtE story happening here could be a very successful example for many other countries. Prof. Themelis has led WtERT to contribute hundreds of technical papers and theses on sustainable waste management. His contribution has changed many people's opinion on waste incineration.

As the new President of WtERT, I will work hard with the new Board of Directors to fulfil the mission of WtERT to advance the technical and scientific knowledge about WtE, to enhance cooperation with other organizations and to support cities to establish a circular economy aiming at net-zero waste future.

I believe WtERT will become the most important global network to bring together engineers, scientists and managers from industry and academia to identify and advance the best available WtE technologies.

**Prof. Qunxing Huang**

President Global WtERT Council  
Vice-Dean, College of Energy Engineering,  
Zhejiang University



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# WtERT – Who we are?

***Recognized as one of the world's foremost research centers on thermal conversion of waste (experimental and analytical), with more than 24 years of continuous research and dissemination of knowledge.***

Founded in 1999, as a research project, then incorporated as a nonprofit association, the Global Waste-to-Energy Research and Technology Council, WtERT®, is the foremost research association on Waste-to-Energy (WtE) worldwide, founded by the Earth Engineering Center of Columbia University. It brings together engineers and scientists from industry, government and Universities from 26 countries across the globe to collaborate together to advance both the economic and environmental performance of Waste-to-Energy technologies and disseminate all research and findings to the general public.

WtERT® is a registered 501(c)(3) nonprofit association (EIN: 45-3842166) that prides itself on being a unique Industry-academia consortium to advance Waste-to-Energy technologies.

## Our Mission and Value

### **Our mission:**

The mission of WtERT is to identify and advance the best available waste-to-energy technologies for the recovery of energy or fuels from municipal solid waste and other industrial, agricultural, and forestry residues.

### **Our commitment:**

To conduct extensive scientific research on all aspects of solid waste management technologies and to disseminate this information through its publications, the WtERT Web, and annual meetings.

### **Our objective:**

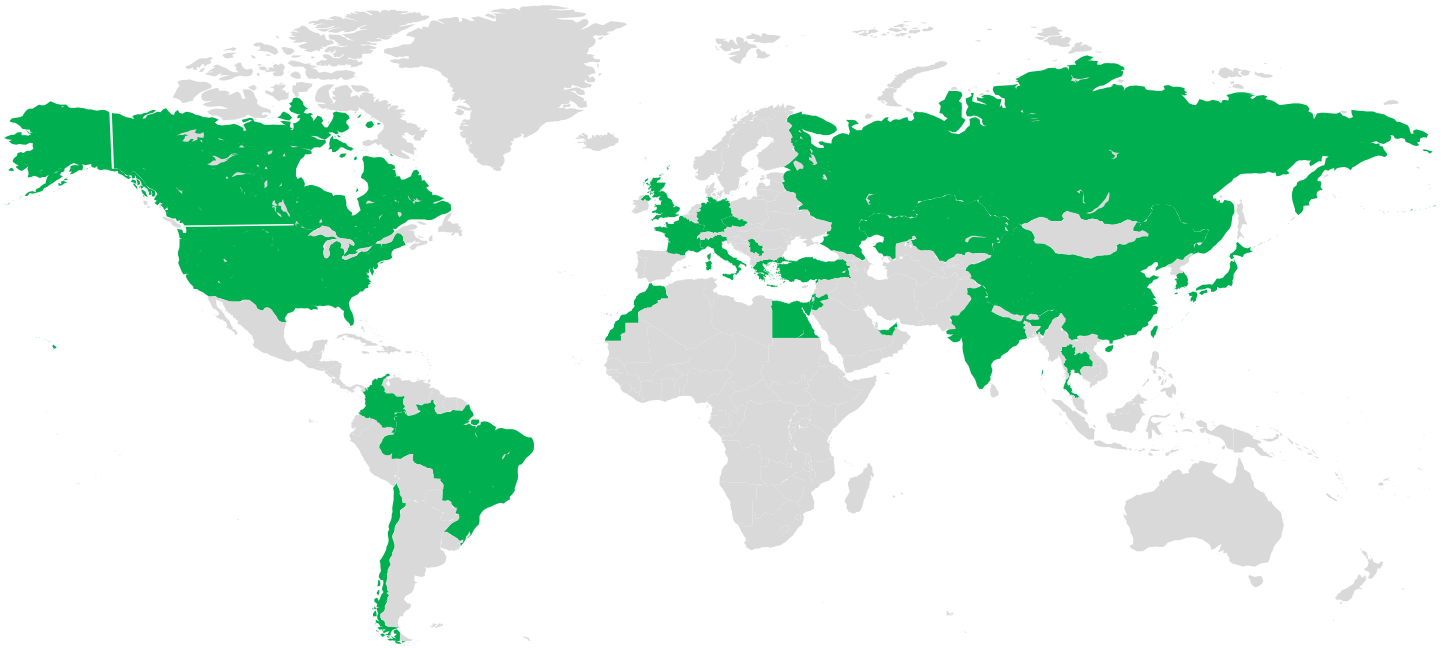
The goal of WtERT member organizations is to increase resource recovery from used products and minimize the environmental impact of waste disposal worldwide.

### **Our principles:**

WtERT's guiding principle is that sustainable waste management must be based on science and best available technology, not on what may seem inexpensive today but may be very costly in the near future.

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# Our Global Reach



## Our members

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## Our Partners



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# Global WtERT Congress Recap

**Date:** November 6-8, 2023

**Location:** Zhejiang University, Hangzhou City, P.R. China

## **Introduction:**

The Global WtERT Congress 2023, held on November 6-8, 2023, at Zhejiang University in Hangzhou City, China, brought together industry professionals, researchers, and experts to discuss the latest advances and challenges in the field of Waste-to-Energy (WtE) technologies worldwide. The congress provided a platform for knowledge exchange and networking opportunities for WtERT members to witness the research and technology advancement of WtE in China, including an educational tour of a state-of-the-art WtE facility and the Qingshanhu Energy Research Center, a key industrial scale platform owned by Zhejiang University.

## **Attendees:**

The Congress was attended by representatives of 16 WtERT chapters from around the world representing the USA, Canada, Brazil, Colombia, Morocco, Egypt, Germany, Italy, Türkiye, Jordan, Russia, India, Thailand, Singapore, Korea and Japan. Attendees represented a variety of organizations, including industry representatives, academic institutions, researchers and professionals from many countries.

## **Keynote speakers and presentations:**

The Global WtERT Congress, was chaired by Mr. Reda Kabbaj, Vice President, International Relations and opened by Prof. Nickolas Themelis, the founder of the WtERT.



He highlighted the history of WtERT, the only international academic-industrial organization focusing on the recovery of energy and

materials from residual non-recyclable waste and promoting the application of WtE technologies for phasing out landfills. He wished all participants a great and fruitful meeting and warmly congratulated Prof. Huang of Zhejiang University who as of 2023 has taken over the leadership of the Global WtERT Council.



After Prof. Themelis remarks, Prof. Qunxing Huang took over the speaker podium to welcome participants and present the recent research developments at Zhejiang University on the efficient treatment of solid waste from municipal, industrial and hazardous wastes, using the technologies developed at Zhejiang University including the pyrolysis for used rubber and plastics and the application of artificial intelligence to maximize the performance of these technologies.

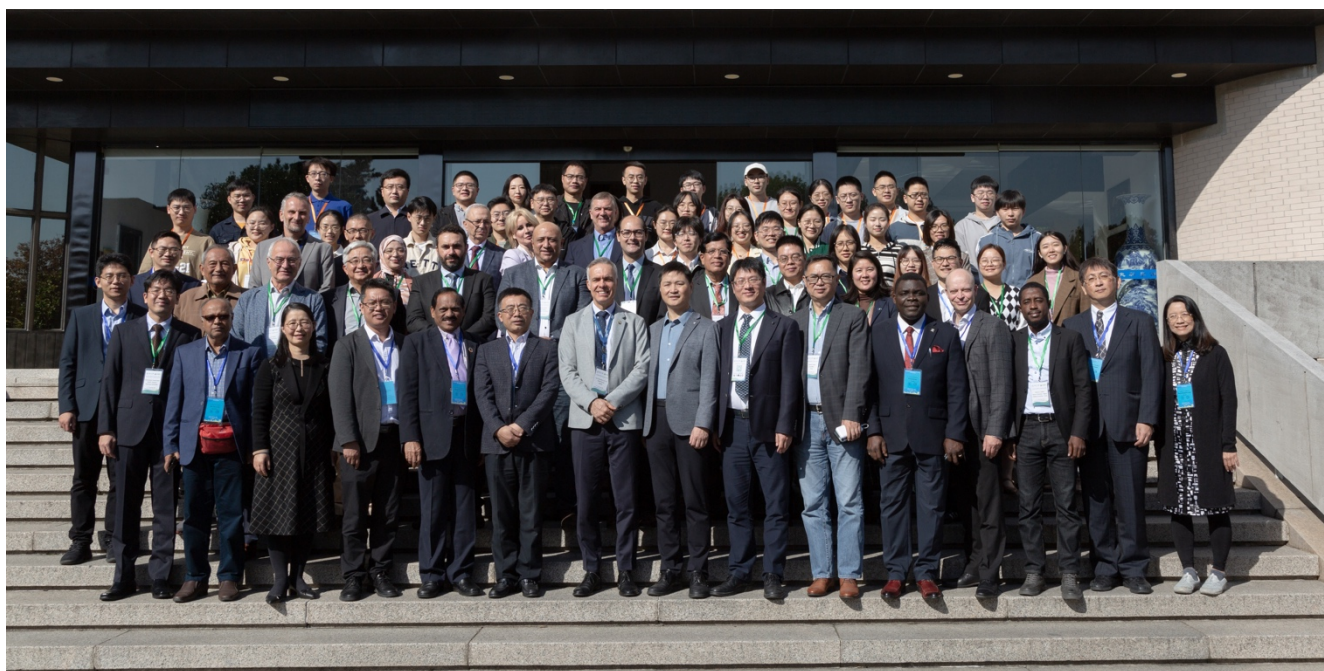


Mrs. Ruilin Zhu, International Coordinator, College of Energy Engineering, Zhejiang University, introduced the College of Energy Engineering, home of WtERT China, with its research institutes and platforms including the international partnership with several institutions and universities, such as Columbia University.





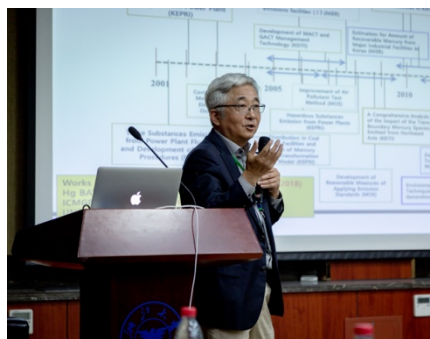
After the introductions, and group photo with all the attendees, prominent keynote speakers from the WtERT network delivered insightful presentations on their research findings on various aspects of Waste-to-Energy, including combustion, gasification technologies advancements, policy framework for a circular economy and the current status and development of WtE plants in several countries with insight from industry experts, who shared the best practice with case studies of development of WtE plant in India. Also, Mrs. Ella Stengler, our guest speaker and director of CEWEP, the Confederation of European Waste to Energy Plants, presented the status of WTE in Europe including new trends in climate policies.



[Global WtERT Congress group photo](#)



[Yuri Schmitke A.B. Tisi – WtERT Brasil, ABREN](#)



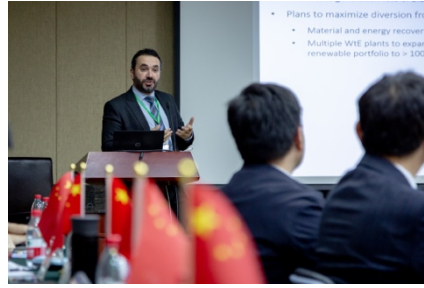
[Yong-Chil Seo – WtERT Korea, Yonsei University](#)



[Werner Bauer – WtERT Germany](#)



**Anna Kurbatova – WtERT Russia, RUDN University**



**Mohamed Abdallah – WtERT Emirates, Sharjah University**



**Arun Sawant – WtERT India**



**Daniel Sindjic – WtERT Brasil, LARA Group**



**Hani Abu Qdais – WtERT Jordan, JUST University**



**Tamer Ismail – WtERT Egypt, Canal Suez University, Egypt**



**Saida Tayibi – WtERT Morocco, UM6P**



**Chinnathan Areepasert – WtERT Thailand, Kasetsart University**



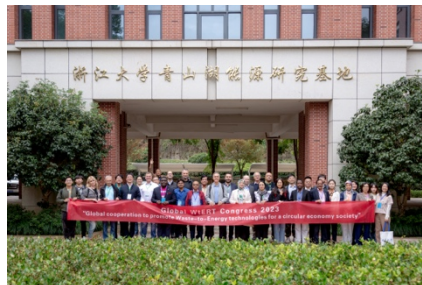
**Masaki Takaoka – WtERT Japan, Kyoto University**

All presentations of all speakers and the detailed agenda program will be found at: [wtert.org/congress2023](http://wtert.org/congress2023)

### **Networking Opportunities:**

The Congress provided ample opportunities for participants to network and collaborate. Social events, such as a welcome reception at the famous Lou Wai Lou restaurant on the historic and scenic West Lake, networking breaks, and educational tours allowed participants to interact with industry peers, exchange ideas, and make valuable connections.





### **Key findings and recommendations:**

Several key takeaways and recommendations emerged throughout the congress. Participants stressed the importance of a holistic approach to waste management, combining environmental, economic, and social aspects. Collaboration among academia, industry, government and community engagement was identified as crucial for successful waste-to-energy projects. Access to funding and policy support were recognized as key drivers for accelerating the transition to a sustainable waste management ecosystem. Attendees also acknowledged the potential of technology innovation and research collaboration among WtERT members for enhancing waste conversion processes as well using strong IT tools for data collection.

### **Closing Ceremony of 7<sup>th</sup> International training workshop on Waste to Energy:**



7th International Training Workshop on Waste to Energy (WtE) concluded with great success. During the 15-day training period (Oct. 25<sup>th</sup> to Nov. 08<sup>th</sup> 2023), 35 participants from 20 developing nations, harvested a wealth of experience. The training courses included incineration technology and equipment, operation management, business model, avoidance of NIMBY issues, policies and regulations related to waste treatment and disposal, etc. Furthermore, innovative teaching modes were organized, such as the "Virtual Tour" of waste incineration plants.

### **Conclusion:**

The Global WtERT Congress proved to be a successful platform for knowledge sharing, networking, and exploring opportunities in the field of Waste-to-Energy technologies and education. Participants left the Congress with new insights, connections, and actionable recommendations to drive global collaboration to advance Waste-to-Energy research and technologies to mitigate methane emissions by diverting waste from landfills and recovering valuable materials and energy.

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# Acknowledgements

The Global WtERT Council would like to express its gratitude to all who helped make this 2023 Global WtERT Congress a success. We have much pleasure in thanking several organizations, in particular: Zhejiang University and all its faculty members, International Consultant Committee of Waste to Energy (ICCWtE) and its Chair Pro. Xiaodong Li, Everbright Environment, SUS Environment and especially Dr. Hanwei Zhang who took part to the Congress accompanied with 8 Engineers from GrandBlue.

The organizers are particularly grateful to all the students from the College of Energy Engineering who contributed to extraordinary enjoyment, assistance and logistic support of all participants during the three days of the congress: Quanchen Dai, Gefei Liu, Fangfang Lou, Jiahui Lei, Yibin Dong, Jingyu Wang, Chenxi Zhu, Youqi Zhu, Jiaying Song, Xudong Du, Yikai Min, Jingyuan Sima, Yu Pan, Zixin Deng, Chenyu Chen, Di Zhang, Zhuojun Liu, Jianlong Jin, Yuwei Mao and Guodong Qian.

We also wish to thank Dr. Yafei Wang and Shoukang Wang who helped with the technical assistance and IT organization of the congress. Many thanks and gratitude to the efficient assistance of Miss Yu Pan before and during the congress, who helped with the organization and administrative process that essentially contributed to the excellent level of the congress.

We further wish to extend a big thank you to our excellent photographers, Fangfang Lou and Jingyuan.

We are very grateful to the staff of the Hotel and the Run Run Shaw Conference, for creating hospitable atmosphere during the whole congress and very good services.

Our very special thanks go to: Mrs. Ella Stangler, Managing Director of CEWEP, who so graciously accepted our invitation to participate at the Congress.

Last, but not least, we would like to thank all participants, speakers and members of WtERT who travels from all around the world to come to Hangzhou and also who manage to join us online to participate to the congress: Mr. Walter Ospina, Mr. Henrique Posada, Mr. Yuri Schmitke A.B. Tisi, Prof. (AC) Thanos Bourtsalas, Prof. Yong-Chil Seo, Mr. Werner Bauer, Dr. Anna Kurbatova, Prof. Gregors Lisak, Prof. Mohamed Abdallah, Dr. Arun Sawant, Mr. Daniel Sindicic, Prof. Hani Abu Qdais, Prof. Tamer Ismail, Prof. Saida Tayibi, Prof. Stefano Consonni, Prof. Samet Oturk, Prof. Chinnathan Areeprasert, and Prof. Masaki Takaoka. In particular Prof. Qunxing Huang and Mr. Reda Kabbaj, without their tireless efforts for the organization the congress would not have been possible.



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