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# 2021 International Green Energy Conference

## (IGEC-XIII)

## July 15-18, 2021 | Tianjin, China

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# Invited Plenary Lecture

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| Presentation Title | Developing Trend of IC Engine Technology for Low-Carbon and Carbon-Neutrality |
| Abstract (Approximately 200 words) | Despite the rapid development of new energy technologies, especially the renewables, still uncertainties exist in the deployment of these technologies, and technology replacement is a slow and long process. Therefore, internal combustion (IC) engine is still the most widely used power device for a considerable period in the future. Reducing carbon emissions and achieving carbon neutrality are major challenges for IC engine. IC engine and its power train still have great potential for energy saving. Improving thermal efficiency is the most economical and practical technical way to achieve low-carbon IC engines. Advanced IC engine energy-saving technology, hybrid technology, and the use of low-carbon fuels (such as natural gas) are the development trend of low-carbon IC engine technology in the near and mid-term. Further, achieving carbon neutrality of IC engines is a long-term trend of IC engines. By burning biomass fuels, "green" hydrogen and renewable synthetic fuels, IC engines can be used to achieve carbon neutrality. IC engine will also play an important role in the future renewable energy storage system. Therefore, the advanced combustion technology and emission control technology for biomass fuel, hydrogen and synthetic fuel are the key technologies for IC engine to realize carbon neutrality. |
| Biographical Sketch (Approximately 200 words) | Professor Mingfa Yao received his PhD degree from Tianjin University in 1999. He is a chair professor in Tianjin University and head of the Innovation Research Group supported by the National Natural Science Foundation of China. From March 2009 to March 2021, he served as the director of the State Key Laboratory of Internal Combustion Engines (Tianjin University). In 2011, he was awarded the National Outstanding Young Scholarship supported by the National Natural Science Foundation of China. Professor Yao has been engaged in the research of engine combustion reaction kinetics, combustion theory and combustion technology, and alternative fuel combustion of IC engines. He has chaired more than 50 key cooperation projects supported by the government and industry, and is the head of the national key R&D planning project. His outstanding technical contributions and leadership are in advanced engine combustion. His significant achievements have benefited both the automotive industries and educational institutes. He won the second prize of National Science and Technology Progress Award (2017), the first prize of Tianjin Technology Invention Award (2016), the first prize of Tianjin Natural Science (2020) and the first Award of Technology Invention by the Machinery Industry Federation (2020). He published 150 papers in international journals and was cited more than 6000 times. He was awarded the "Distinguished Visiting Fellow Award" by the Royal Engineering Society and was selected as a fellow of SAE International and a fellow of Combustion Institute in 2020. In 2018, he was selected as one of the world's highly cited scholars in Clarivate Analytics, he was also selected as one of Elsevier's 2019 and 2020 China Highly Cited Scholars. |