



Preface to the special issue on low carbon and environmental protection

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With growing economic and social development, carbon emissions caused by energy consumption surge, leading to an exacerbated greenhouse effect, rising average temperatures, melting glaciers, and an unstable global climate, which may all result in more destructive natural disasters.

Due to this pressing issue, countries and regions around the world have reached a consensus on curbing carbon emissions. As a major contributor to carbon emissions, China has made a commitment to achieving carbon peak in 2030 and carbon neutrality in 2060. Academic organizations, universities, enterprises, and scientific research institutes across China are actively utilizing their expertise to explore the path of green and low-carbon development. Their efforts in promoting comprehensive green socio-economic transformation through industry-university-research integration have achieved remarkable results.

The internal combustion engine industry is an important basic industry in China, and China is also the largest market for internal combustion engines in the world. For over a hundred years, the internal combustion engine, the primary driver of transportation, engineering and machinery, has been fostering societal progress and improving people's living standards. However, it is also a major contributor to carbon emissions.

Internal combustion engines are undergoing huge pressure due to the acceleration of the electrification of power systems, the intellectualization of products and the greenization of energy emission. Transferring this pressure into a drive to improve the efficiency of internal combustion engines is the most practical means for saving energy and reducing carbon emissions. The technological progress of internal combustion engines will play a leading role in energy-saving and low-carbon development of the energy, traffic and transportation industries in China.

The special issue of the Journal of Central

South University on low carbon and environmental protection is highly illustrative of the active exploration on carbon reduction and green development within the Chinese academic circle to contribute to the realization of “Carbon Peak and Carbon Neutrality”. It also shows the determination and confidence of the Chinese society in achieving the “Carbon Peak and Carbon Neutrality” strategy from one side.



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Guest editors:

SHUAI Shi-jin, professor, and PhD supervisor in the State Key Laboratory of Automotive Safety and Energy, Tsinghua University, a vice president of AeroEngine Research Institute of Tsinghua University, the Director of Tsinghua University-Shell Joint Research Center for Clean Mobility. He is a fellow of the China Society of Automotive Engineering (SAE-China), an executive director of Chinese Society of Internal Combustion Engine (CSICE), a director of Fuel and Lubricants Committee of CSICEs, a vice director of After-Treatment Technology Committee and Internal Combustion Power Intelligent Technology Committee. He is also one of the editorial board members of International Journal of Engine Research, Journal of Automotive Innovation, Combustion Science and Technology and Journal of Automotive Safety and Energy. His research

interests include engine spray combustion and emission control, hybrid engine, fuel cell engine.

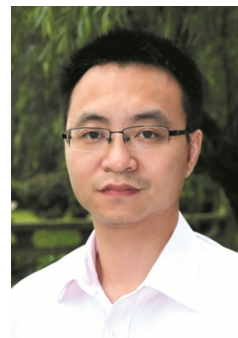


PEI Yi-qiang, professor at Tianjin University of State Key Laboratory of Engines. He is the deputy secretary general of Chinese Society for Internal Combustion Engine, secretary general of Clean Combustion and Energy Saving Branch of Chinese Society for Internal Combustion Engine. His research is mainly engaged in internal combustion engine combustion control, alternative fuel clean combustion, low/zero carbon fuel high-efficient combustion, engine emission detection and health management based on big data. He has published more than 80 papers and obtained 13 national invention patents. He has won one national technical invention 2nd Prize (ranked 2nd), two provincial and ministerial first prizes, and two provincial and ministerial second prizes. In 2011, he won Shi Shaoxi Talent Award. In 2019, he won the national commemorative medallion celebrating the 70th anniversary of the founding of the People's Republic of China. He is the SAE member, special reviewer of SCI journals, Fuel, Energy, Energy Conversion and Management, International Journal of Hydrogen Energy.



LIU Wei-wei, professor and doctoral supervisor in the School of Architecture and Art at Central South University, China. He was invited as a guest researcher at the International Center for Indoor Environment and Energy (ICIEE), Technical University of Denmark (DTU) during 2013–2014. In 2022, he serves as the Board of Directors of the International Society for Indoor Air Quality and Climate (ISIAQ). His research focuses on the basic theory and evaluation methods of “building thermal environment comfort and safety” and obtained a

series of influence original academic findings. Besides, he received the 2nd PRIZE for “Natural Sciences Award of Hunan province” (as the 1st completed). He was the recipient of “the Science and Technology Award for Youth”, awarded by the Chinese Society of Environmental Sciences (CSES). He supervised a team to win the FIRST PRIZE in “the 11th National University Student Social Practice and Science Contest on Energy Saving & Emission Reduction of China”.



LIAN Zhi-wei, deputy dean, professor and doctoral supervisor in the School of Design, Shanghai Jiao Tong University, China. He is also a distinguished professor in Henan Province and a chair professor of “Pearl River Scholar” in Guangdong Province. His research focuses on indoor environment and energy, and published about 200 SCI/EI papers and monographs, and be selected as a highly cited scholars in China for eight consecutive years. He presided over twelve projects including key programs of the National Natural Science Foundation of China, and general program, and the 13th Five-Year Plan Key R&D Program Topics. He served as a member of the academic committee and branch chairman of the international academic conferences for more than 30 times. He was invited to give special lectures at domestic and foreign conferences for many times. He serves as the director of several societies such as the Indoor Environment Branch of the Chinese Environmental Society and the Architectural Physics Branch of the Architectural Society of China, and the editorial board of Journals such as Building and Environment and other international TOP journals in the field of indoor environment.

