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Front Cover Story (see: Tingwei Gao, Kang Xiao, Jiao Zhang, Wenchao Xue, Chunhai Wei, Xiaoping Zhang, Shuai Liang, Xiaomao Wang, Xia Huang, 2022, 16(4): 49)

Membrane bioreactor (MBR) is a rapidly developing technology for wastewater treatment and there is always controversy about the pros and cons of MBR when compared with the conventional activated sludge (CAS) process. It is of vital importance to conduct a thorough assessment of MBR versus CAS both economically and environmentally. This study compares the techno-economy of 20 large-scale wastewater treatment plants before and after retrofitting from CAS to MBR. By quantifying the operating cost and environmental benefit via cost-benefit analysis, it is demonstrated that the average net profit increased remarkably from 19.4 to 24.4 yuan/m3 after the retrofitting. Data envelopment analysis shows that the average cost efficiency improved from 0.70 to 0.73 after the retrofitting. Extended modeling reveals close dependence of techno-economy on effluent standard. MBR has greater techno-economic advantages than CAS in cases of strict effluent standards and pollutant-sensitive destinations.

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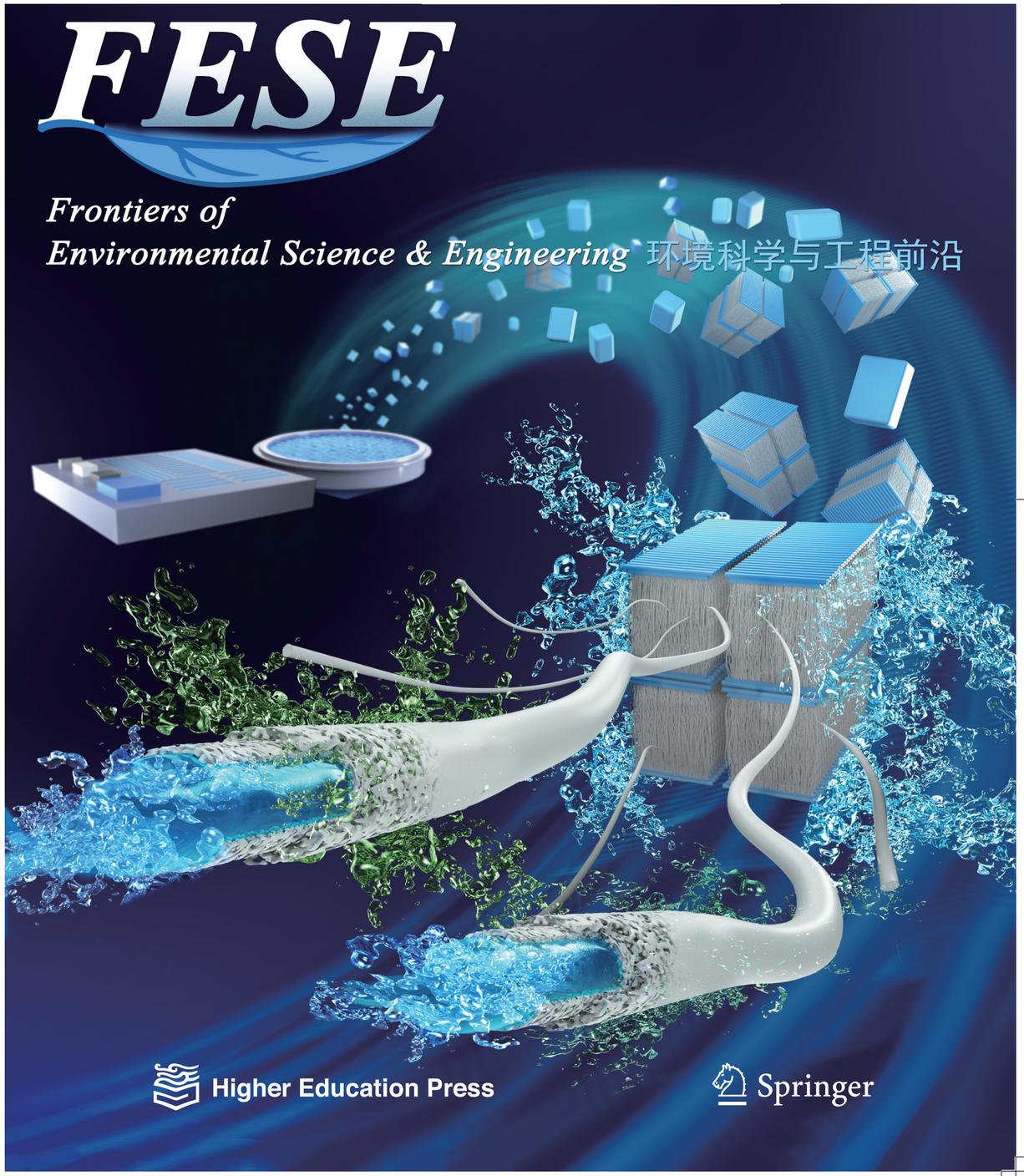

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