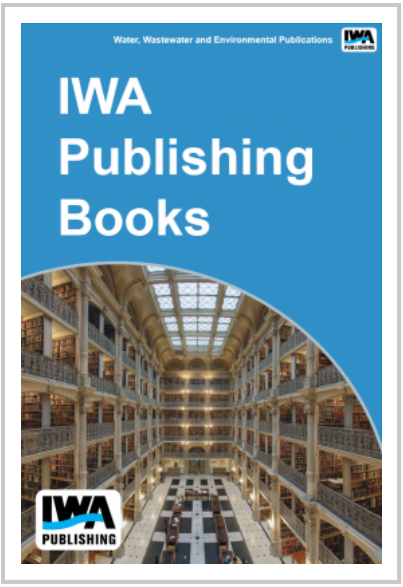
Energy Efficiency in Wastewater Treatment in North America: A Compendium of Best Practices and Case Studies of Novel Approaches



After manpower, energy is the highest operating cost item for most the wastewater utilities. Over the last decade, the implementation of new technologies to meet new effluent limits and water quality standards has considerably increased energy consumption by the sector. The price of energy has also substantially increased in the same period. In North America and Europe, some utilities have reported significant increases in energy costs in recent years, and with oil prices continuing to fluctuate, further substantial increases in operating costs could be expected. Those increases will be compounded by the need to meet additional new regulations that will require energy-intensive treatment processes to achieve tight standards. High energy consumption will affect the wastewater industry worldwide and is inextricably linked to the issue of Climate Change.

Through its Optimization Challenge program, the Water Environment Research Foundation (WERF) is currently participating in the Global Water Research Coalition's (GWRC) project titled Energy Efficiency in the Water Industry: A Compendium of Best Practices and Case Studies. The objective of the GWRC project is to develop a Compendium of best practice (worldwide) in the energy-efficient design and operation of water industry assets. For this project, WERF is serving the role of North America wastewater practice coordinator. Through this assignment, WERF intends to define specific recommendations regarding:

- Incremental improvements in energy efficiency through optimization of existing assets and operations
- More substantial improvements in energy efficiency from the adoption of novel (but proven at full scale) technologies

As part of the GWRC project, WERF has developed this report summarizing existing information on well-established energy optimization/energy recovery best practices, as well as documenting a series of case studies of novel (yet full-scale proven) technologies/practices in wastewater treatment in primarily North America.

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