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Ann T W Yu, Int J Waste Resour 2017, 7:4 (Suppl)
DOI: 10.4172/2252-5211-C1-007



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## Study on the potential of onsite generation of electricity from discharged urine in high-rise residential buildings

This project explores the potential for producing electricity from discharged urine in the daily operation of high-rise residential buildings. The majority of the population in metropolitan cities lives in high-rise residential buildings. High-rise buildings consume large amounts of energy in daily operation and release considerable amounts of waste including human urine into the environment. Untreated urine contains polluting organic compounds and requires energy-consuming treatment prior to discharge into waterways. Hydrogen, which is a clean source of energy, is considered by scientists as a promising fuel for future. Hydrogen and urea are produced in electrolysis of urine. The generated hydrogen gas can be utilized to generate electricity for building operations. Ohio University in the USA has developed Ammonia GreenBox®, which can extract hydrogen gas directly from urine by electrochemical oxidation using an economical catalyst. Electricity is produced from the electrolysis of hydrogen gas in a hydrogen fuel cell. The simple and convenient hydrogen extraction process is suitable to be applied in high-rise developments. Production of electricity from urine can reduce power supply from the grid system and subsequently reduce building management cost.

### Biography

Ann T W Yu has a BSc degree in Building from University of Brighton, UK and MSc degree in Construction Management from City University of Hong Kong. She has obtained her PhD from the Department of Building and Real Estate, The Hong Kong Polytechnic University in 2007. She has started her profession as an Assistant Architect and worked for a number of different professional firms including architectural firms, quantity surveying practice as well as the Hong Kong Housing Authority. She was appointed as an Assistant Professor in Value Management and Construction Management by the Department of Building and Real Estate of The Hong Kong Polytechnic University in 2007. She has a strong track record and has published extensively on the broad theme of project management in leading construction management journals and international conference proceedings.

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