

Waste to Energy: Production of Automobile Fuels (Diesel and Petrol) from Waste Plastic Pyrolysis Oil

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Abstract

Mixed plastic waste constitutes a large portion of landfill solid waste. Waste plastics can be converted to produce crude plastic oil, but its qualities are critical to industry refining processes. Thermo-chemical conversion using Pyrolysis reactor can be used to thermally decompose plastic waste to produce crude plastic oil, which then can be processed through vacuum distillation and hydrotreatment to produce automobile diesel. This talk will present the findings of a project on “Australian standard diesel from mixed plastic waste: Maximizing recovery” funded by the Australian Government and Industry Partner. The work was carried out using a pilot-scale fixed bed pyrolysis reactor and industrial scale distillation and hydrotreatment set-up to produce Australian standard diesel from mixed plastic waste. The challenges that were overcome to produce Australian standard diesel from mixed plastic waste will also be presented.

Bibliography



MOHAMMAD RASUL obtained his PhD in Clean Energy from The University of Queensland (Australia). Currently, he is a Professor of Mechanical Engineering at the School of Engineering and Technology, Central Queensland University (CQUniversity). He is the recipient of Vice-Chancellor's awards for research higher degree supervision, good practice in learning and teaching, and several students' voice awards. He has published about 500 research articles/papers in journals, refereed conferences, books, and book chapters. His notable edited book is on "Clean Energy for Sustainable Development: Comparisons and Contrast of New Approaches", published by Elsevier. He is the recipient of 10th anniversary best paper award for highest citation in Energies journal. Professor Rasul is listed within the top 1% researchers in the world as per 2020 survey by Stanford University (USA). His publications have created strong impact to the scientific and professional communities and attracted about 12000 citations with h-index of 51 as of today.

He has supervised 32 Higher Degree by Research (HDR) students to completion and currently supervising 14. His grant funding has totaled about \$5.7 million. He is the founder of Clean Energy Academy of CQUniversity and leader of Fuel and Energy Research Group at CQUniversity. He is recognised, both nationally and internationally, through his varied roles and activities, for example, he is an editor of the Australian Journal of Mechanical Engineering (Taylor and Francis), section editor of Encyclopedia of Renewable Energy, Sustainability and The Environment (Elsevier), editorial board member of 5 journals, technical and scientific committee member of about 14 conferences, and grant assessor for Australia (ARC) and two overseas countries. He frequently creates attention of media and community engagement through expert opinion and interview by different media, such as ABC 7 TV, ABC 7 News, ABC Tropical North, ABC Capricornia FM, Morning Bulletin and News Mail.