

Use of Fault Tree Analysis for Technical Assessment of Waste-to-Energy Plants

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Abstract : Waste to energy (WTE) technology is becoming increasingly important throughout the world. There are 24 WTE plants in operation in Taiwan that might be ranked the top in density (number of MSW incinerators/area) in the world. Many problems exist in WTE plants, such as low-quality construction, leakage of pipelines, irregular feedings, and lack of maintenance. These problems should be identified and analyzed for effective implementation and efficient operation of WTE plants. This research applies a fault tree analysis (FTA) to identify failures and evaluate their effects on the operation of WTE plants from a technical point of view. Five subsystems of a WTE plant were defined, including loading system, incineration system, effluent disposal system, structural components, and control system. This research results proved that FTA is suitable for WTE evaluation and is an effective analysis tool for technical evaluation in the field of WTE technology.

Keywords : delphi method, fault tree approach, municipal solid waste, waste to energy, WTE

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020