DESIGN AND ENGINEERING OF WET WASTE PROCESSING PYROLYSIS REACTOR GAS DESTILLATION SYSTEMS

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ABSTRACT

Currently, waste processing in Indonesia and even throughout the world still has obstacles. Many organic and inorganic wastes are still piled up in final disposal sites. In particular, wet waste requires a complicated processing process because it has to be sorted and it is relatively difficult to burn it. To help process wet waste, we made a wet gas distillation pyrolysis reactor to burn waste without oxygen. So the aim of this research is to design and engineer a gas distillation system in a wet waste pyrolysis reactor. The steps in this design are designing and engineering a gas distillation system in a pyrolysis reactor. The next step is to create a prototype of the gas distillation system. The results of this research produced a gas distillation system in a wet waste pyrolysis reactor which has been tested in the laboratory, namely TRL 4. To prove the use of wet waste, a wet waste pyrolysis trial was carried out by looking at the output results in the form of solid, liquid and gas objects. The gas distillation system design for the pyrolysis reactor is ready and can be applied to the pyrolysis reactor. The results of pyrolysis in the form of tar and syngas are released through the flange to the reactor. Tar and syngas have high temperatures. The tar and syngas are passed through the turbulence cone and continued into smaller pipes. These small pipes allow water circulation to circulate on the outside of the pipe. Water circulation is carried out by pumping water from the outside and returning it to the reservoir. Tar and syngas are removed through the gas valve out. Tar will fall to the bottom because it has a greater specific gravity. Meanwhile, the syngas will exit through the upper gas valve out.

Kata Kunci: *Pyrolysis reactors, gas distillation, tar, syngas, wet waste*