Retrofit Technology of Batch-type Pyrolysis Process for Consecutive Operations

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Pyrolysis is an attractive and prospective technology because of oil production from plastic wastes. There are a lot of great efforts for developing processes by so many developers for a long time, but growth of its industry is yet insignificant. Even though there are so many reasons, the most significant reason is a lack of good technology arousing customers’ interest. The association market requires small-capacity plants about 5 tons/day because of difficult securing stable supply of resources. The processes in domestic market are almost batch-types, capacity of 2 tons/batch and they are suffering from difficult operation and long time operation cycle. In this study, we have been monitored and reviewed the operation for ways in which improvements can be made. From reviewing operation, we have found some important problems of batch-type pyrolysis plant. Those are as follows,
1) a small charge of raw material into reactor due to its large volume
2) requirement of long reactor cooling time
3) plugging of residue outlet by solidified reactant
4) long operation time over than 24hrs for a batch
5) recognition of reactant level and completion of reaction in reactor
We are now constructing a new plant which the process is retrofitted by adding some unit processes such as melting of raw materials, addition of sludge reactor, consecutive discharging of reactant from by constant volume vessel, plugging the residue outlet with residue, cooling sludge reactor by water spray after reaction completion, etc. After construction of the new plant, we are going to conduct performance tests via commissioning. We expect that the new plant has twice of existing plant in capacity, and easy and effective operation. Moreover, it is expected that the business and the market will be promoted in our country.

Keyword: pyrolysis, plastic waste, oil production, batch-type process, retrofit