Gasification System: Gasifier Reactor

Associated Procedures

- Gasification System
- Feeding System
- Gas Flow System
- Gasifier Control Unit
- Gasifier Process Flow

Description

The multi-stage gasifier reactor is connected with the drying bucket and decomposes biomass and produces syn-gas through pyrolysis, combustion, and reduction processes. At the side of the reactor, there is an ignition port and an air inlet. When negative pressure is formed inside the system, the required air for the combustion process is introduced from this inlet. An exhaust is attached to another side of the reactor. The reduction bell located inside the lower reactor chamber is the heart of the gasifier and here is where most of the critical oxidation and reduction reactions take place as shown in Figure 1.

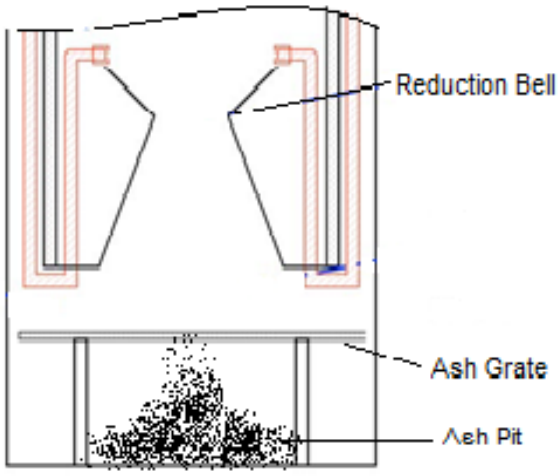

Figure 1: Schematic of Lower Part Reactor

Below the bell there is an ash grate that can hold charcoal and filter fine ash. Outside the reactor at the lower part, a grate shaker is connected with the ash grate through a stainless steel bar. It is periodically triggered during gasification. In addition, an ash auger inside the channel between the ash container and the bottom of the reactor chamber can rotate clock/counter-clock wise to drag the remaining ash out from the reactor.