



Two (2) APCO (Applied Engineering Company) Orangeburg, SC is fixed bed updraft gasifier, each gasifier has 25 MMBtu/hr. rating. These gasifiers along with boiler 70 to 75% efficiency and burn green tree chips with 50% moisture content.

Description of system

Fuel Handling

Gasifier wood chips arrive by truck to site, truck tripper with 30 hp hydraulic power rack delivered to live bottom hopper with each hopper driven by 2 hp VFD. The silo has 20,000 ft³. A walking auger system is installed in the bottom of silo. The silo discharge system has two 5 hp motors. The silo discharges into a 14" screw conveyor that delivers fuel to a toothed, rubber-belt conveyor which delivers fuel to top of gasifier feed system.

Gasifier

The reactor is an air-blown, fixed-bed, updraft type the fuel bed is supported on a rocking grate through which air is admitted. The lower part of the reactor shell provides for a water jacket. A belt conveyor, which reclaims fuel from the silo, discharges into vertical chute mounted above rotary feeder. The feeder admits fuel to a vessel mounted above the top head of the gasifier. A short horizontal Auger feeds out this vessel and discharges onto the circular feed in to center of the gasifier to head. Combustion air is carried to this vessel by a pipe connecting it to the air distribution manifold. A vertical shaft that passes through the circular feed in top head drives a paddle stirrer in the top of reactor. A hydraulic drive connected to the shaft where it exits the feed port rotates the shaft and paddles. The motor rating 3 hp star feeder, horizontal screw 15 hp, hydraulic power pack 5 hp. Combustion air for the gasifier is provided by a 50 hp, 1800 cfm fan.

Ash falls through the rocking grate to bottom of the reactor. The lower reactor changes from cylindrical vessel to two horizontal troughs with a horizontal auger in each trough. The augers discharge ash through valves ports in the reactor base to sealed drums.

Each can handle 80 tons feeds stock/day . 8' inside diameter with refractory in place, 13.58' bottom to top, includes 20 yard stainless steel double feed bin system, 22000 lbs batch feed vessel 9' x 22.5', (2) New York blowers, Phelps dodge stainless steel fan. Approximate total weight 34 tons

Built 1980 , equipment purchased 2003 dismantled shipped and stored present site Frankfort, KY.

