

IRCON System Solutions – Pulp & Paper

Black Liquor Recovery Boiler

Customer
Paper Mills

SIC code
2621

Features/Benefits to address
Product

- Javelin (8-14 μ) or Mirage OR
- Air purge for dusty environment around the boiler

Application

- Prevent starving or blackout
- Prevent complete failure of the boiler
- Assures enough heat to provide steam for the rest of the process

Customer Needs

To make pulp, wood chips are placed in a digester with a caustic chemical. The chemical breaks down the chips into fibers and a by-product called black liquor. The black liquor consists of the caustic material and lignin, the bonding material that holds wood together. The black liquor is sprayed into a special boiler and burned. The remainder after the burning is a material called "Green Liquor" which is reused in the digester.

As the black liquor is sprayed into the boiler it is spread over the entire bed and burns at about 1900°F (1037°C). Two problems can occur. If the Black Liquor is too moist it will put out the flames. This is called a "blackout". If there is not enough black liquor to burn, again the flame goes out. This is called "starving". In both cases, operators must add additional fuel by turning on burners to keep the bed burning. If the bed goes completely out the corrosive black liquor will run out of the boiler and "eat" everything. The destruction can be very expensive. The boiler also produces steam used throughout the plant. This is steam is also lost when the boiler goes out.

The solution is to install 4 two-color instruments looking at the bed of the boiler from each corner. A two color is ideal because the opening into the boiler often gets restricted. This will not affect the two-color instrument. If the opening gets totally closed the invalid alarm says there is no signal and they know they have to clean the port. If the bed temperature goes too low then the alarms tell them it is low temperature and they have to turn on the extra burners.

An additional application is the need to measure the gas temperature in the flue. Use the Javelin 8-14 micron for this application. As many as 6 instruments may be used to measure various locations in the flue.

Who is involved

1. Instrument techs at the plant
2. Engineering in charge of the recovery boiler

Product?

1. Mirage or Javelin demo kit and related literature

Application



Black liquor recovery boiler (in colder climates it may be enclosed)

Names of customer

Look for paper mills that still produce their own pulp instead of buying from overseas. Often the recovery boiler is a big issue for plants as new environmental laws have forced tighter control of the boiler to reduce emissions.