- Ineffective for acid gas removal: Since the operation of fabric filters is based on filtration of solids, they are not effective at removing acid gases because the acid gases and some particulate matter are too small.
- Limited operation temperatures: If the temperature exceeds 550°F special refractory mineral or metallic fabrics are needed, which are expensive.
- Combustible hazard: If the dust being collected is readily oxidized, then the fabric material can burn.
- Relatively high maintenance: Fabric filters have relatively high maintenance needs because of bag replacement and cleaning method. Pulse jet filter bags require replacement more frequently than reverse gas filter bags.
- Dry environment: They do not operate in moist environments. So, they are limited to dry flue gas environments only. If the flue gas does not have sufficient reheat the bags could become wetted and likely require replacement. The proposed design includes bypass duct/dampers to avoid exposing the bags to flue gas during startup periods.
- Pressure drop: Some pressure drop is required for its functionality, around 8 to 10 in. w.c., which increases the load for the ID fan.
- High gas velocity problems: If the gas velocity is very high, then the dust can be drawn from bag to bag instead of falling into the hoppers, which causes the cake layer on the bags to become too thick. To prevent this, additional compartments are required which increases the capital cost.

3.2 DRY ELECTROSTATIC PRECIPITATOR

An ESP is an effective particulate matter control technology that uses high voltage electric fields to collect particulate matter from flue gas. This technology is a well proven technology with decades of experience in utility applications. However, the nature of the particulate matter to be collected, specifically the electrical resistivity, can impair the operation of the ESP and the application of a dry ESP downstream of a scrubber on a coal fired boiler is unusual which could introduce unforeseen challenges.

3.2.1 Process Description

A process flow diagram of a typical ESP system is provided in Figure 3-3.