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Condensate Receivers & Feed Systems

Similar to a deaerator in that they include a receiving tank on a stand with one or more feed pumps, feed systems are used to contain returning condensate and any make-up necessary to maintain the proper operating level in the boiler. Sometimes equipped with an internal preheat tube, these systems can maintain feedwater temperatures in the 210°F range allowing substantial amounts of O₂ and CO₂ to be released before entering the boiler. This tempering of the make-up water also minimizes thermal shocking of the boiler.

Deaerators

Used in many process situations especially when make-up exceeds 25%. The two basic functions of a deaerator are to preheat boiler feedwater and remove corrosive gases (oxygen and carbon dioxide). Available in various designs (spray type, packed column, or tray) these devices will remove oxygen in the feedwater to a level of .005 cc/liter under a broad range of operating conditions and loads. For this high level of deaeration to take place, the feedwater must be elevated to a temperature of approximately 240°F.

Blowdown Systems

Used for purging destructive solids from the boiler while controlling cycles of concentration. The heat recovery feature allows the capture of up to 90% of the heat which would otherwise be wasted. The recovered heat is transferred to the feedwater before entering the boiler system.

Economizers/Feedwater Heaters

Mounted in the stack at the outlet of the boiler, these devices use the hot combustion gases to preheat feedwater before entering the boiler. Normally associated with high pressure units above 100 horsepower, the economizer has been known to reduce boiler related fuel bills by as much as 10% per year.

Chemical Feed Systems

These are available as automatic injectors of chemicals into the boiler's feed supply system, or they may be a manual 'shot feed' type which inject chemicals into closed loop or low make-up water systems. In the case of the automatic system, they are used to treat feedwater where an extra measure of protection against corrosion and scaling is required. Also, they are sometimes used to condition blowdown sludge before entering the sewer system and are normally equipped with either a piston or diaphragm pump which automatically meters the correct amount of chemical agent even when flows vary because of varying load conditions.