CONDENSATE RECOVERY UNIT. CRU

Energy efficiency optimization of steam systems on corrugators demands condensate recovery at pressure with direct reinjection of condensates to the boiler, maintaining their high temperature.

Since condensates of all rolls and steam chests in a corrugator are purged with very high temperature and pressure, pressurized recovery of these condensates, avoiding their depressurization and its associated cooling down (with flash steam production), is the best way to avoid energy losses, maximizing energy efficiency and, therefore, reducing fuel consumption.

Baviera condensate recovery system's design is the result of more than 25 years of experience within this field. It is a system that achieves energy profit optimization and, at the same time, heat transfer optimization, since several control systems make compatible both features.

Moreover, because of the long experience with this kind of systems, all components that make up the condensate recovery unit are robust and practically exempt from any kind of maintenance.

The Baviera condensate recovery unit is placed in the boiler house. It has a vertical tank, sealed at 18 bar, where condensates are recovered with pressure, around 8 bar, so that condensates are fed to the boiler at a temperature that rounds 175ºC.

The KSB pump feeds the boiler from the lower side of the CRU. Although the pump works with high temperature condensates, its natural air cooled mechanical seal, placed far away from the hydraulic, works around 50ºC so that the working conditions of the mechanical seal are excellent resulting, in fact, a maintenance free pump with a long lifespan.

The system has the following controls

- Level control: 4-20 mA level control acting on the automatic M valve, that is placed in the pump impulsion. M valve is controlled by condensate level in the CRU and, eventually, also by the boiler level, when the signal is availiable. The KSB pump works continuously while the M valve regulates the boiler feeding flow.

- Differential pressure control: There is an electronic and digital differential pressure control, where you can check and control the differential pressure of the installation (main steam supply pressure – condensate recovery pressure).

  The differential pressure control acts on the automatic L valve, guaranteeing that, in any situation, the differential pressure of the installation is always higher than the set point, normally set at 4 bar. This is the condition that guarantees compatibility between optimal energy saving and optimal heat transfer.

- Condensate temperature control: Condensate temperature control acts on automatic valve L. It is important during machine start ups and shut downs. By opening the automatic L valve, during start ups, quick degasification and cold condensate removal occurs through the Hot Well, enabling a quicker heating up of the corrugator. During shut downs, condensate temperature control enables quick depressurization, allowing a quicker drying of the system.

- Low pressure steam recycling: If there are low pressure steam services (showers, air heating, etc.), the T automatic valve of the CRU supplies steam coming from the upper side of the CRU for these services.