

ADVANTAGES OF INDIRECT HEAVY LIQUOR HEATERS

Improved Operation

1. **Viscosity Control:** Many mills that change from oscillating boiler nozzles to stationary boiler nozzles find they cannot control the liquor temperature, hence viscosity, sufficiently with direct heaters. Indirect heaters provide stable temperature control.
2. **Concentrator Scaling:** Indirect heating means no dilution; therefore, if concentrator scaling is a problem, the concentrator product solids may be reduced.

Increased Energy Recovery

1. **Increased Percent Solids to Boiler:** Because the liquor solids may be higher to the boiler, the heating value of the liquor is greater, thus permitting more steam generation in the boiler.
2. **Recovery of Condensate:** Because the system is indirect, the steam condensate lost on direct heaters is recovered.
3. **At same solids feed to the boiler,** steam consumption for concentration of the liquor is reduced.
4. **Steam Pressure:** Normally use low pressure steam rather than high pressure steam.

Capacity Increase

1. **Overloaded Boilers:** The higher percent feed solids to the overloaded boiler improves its performance.
2. **Overloaded Concentrators:** The throughput of the concentrators may be increased by reducing the product solids from the concentrator to the solids concentration normally fed to the boiler when a direct heater was used. The indirect heater does not dilute the solids to the boiler.

Safety

1. **Indirect Heating:** When heating directly, the boiler feed solids concentration may be accidentally diluted to below the safe minimum. Since in a recirculated system the tube side pressure is usually above the shell side pressure, tube leaks would be towards the condensate side rather than liquor dilution.