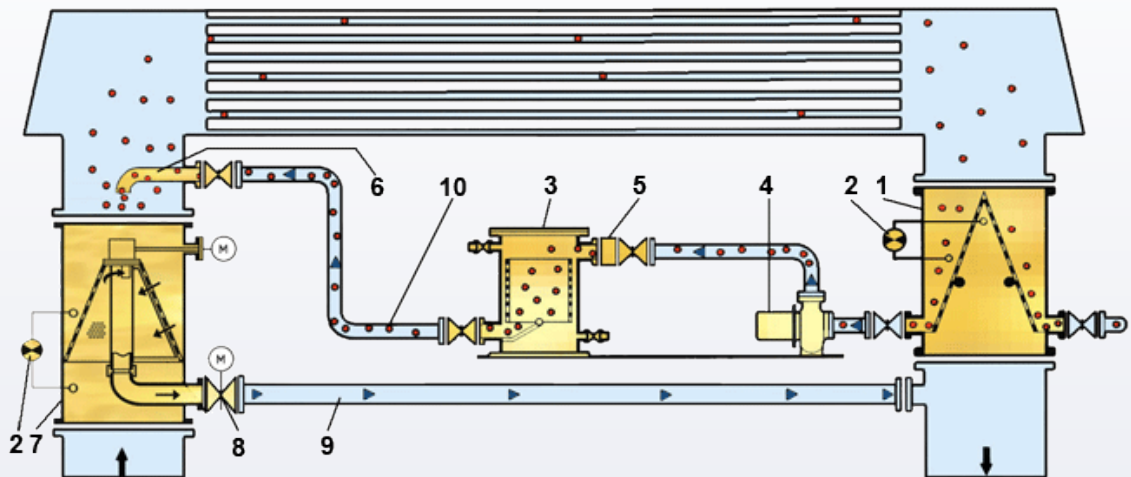


Condenser Tube Cleaning Systems



1. Strainer Section
2. Screen Monitor
3. Ball Collector
4. Ball Recirculation Pump
5. Ball circulation Monitor

6. Ball Injection nozzle
7. Debris Filter
8. Waste Water Valve
9. Waste Water Pipe
10. Ball recirculating pipe

The Klump & Koller Condenser Tube Cleaning Systems consist of a closed re-circulating loop. Sponge rubber cleaning balls are injected into the cooling water via an injection nozzle (6) on the cooling water inlet pipe. The balls pass through the cooling water tubes and are separated by a strainer section in the cooling water outlet pipe (1). They are recirculated by a centrifugal pump (4) via a ball collector (3). A sight glass cover (5) allows to monitor the cleaning ball circulation. As the sponge rubber balls have a slightly larger diameter than the condenser tubes a continuous cleaning of the condenser is ensured. Any silt and/or other contamination of the strainer section is detected via a differential pressure transmitter (2) allowing the system to be automatically cleaned.

Advantages of the Klump & Koller Strainer Section:

- Advanced design and technology: simple, robust, reliable
- Compact (short) size
- A minimum of movable parts
- No bolting through the shell
- Simple interior configuration
- Low pressure drop
- Small number of motor actuators
- Biological growth protection
- Self-cleaning of the screens in the critical screen area
- Safe Separation and removal of cleaning balls by the (patented) Klump & Koller ball removal technology
- Instead of connecting the screen bars with loose distance sleeves the screen bars are firmly fixed by applying specially-developed welding technology

Advantages of the Klump & Koller Tube Cleaning System

- Optimum heat transfer through clean condensing tubes
- Energy-saving
- No corrosion by debris
- No stop periods required for manual cleaning
- Reduction of cooling surfaces
- Less chlorination of cooling water required
- No pressure drop due to abrasive and soiled tubes
- Eco friendly cleaning method

