



Online Tube Cleaning Systems

Condenser Tube Cleaning Systems and Debris Filters

The continuous cleaning of condensers and heat exchangers maintains the efficiency of heat transfer without mechanical or chemical cleaning of the tubes and without increasing the number of outages. Condenser tube cleaning is necessary as raw water induces different types of fouling which affects the inside of condenser tubes. Settling of suspended materials like silt, mud, slime, biological fouling due to the presence of bacteria/marine organisms in water, crystallization of soluble elements and formation of seashell colonies leads to fouling of Condenser Tubes.

Macmet offers Condenser Tube Cleaning Systems (CTCS) and Debris Filters in technical association with TECHNOS, France. TECHNOS is one of the leading suppliers of CTCS and Debris Filters for Power Utilities, Refineries and Process Industries with worldwide supply reference of more than 1000 installations, capacities of the units ranging from 2 MW to 1300 MW.

Cleaning of internal tube surface is done by continuous circulation of sponge rubber balls with sizes slightly larger than the tube diameter. These sponge rubber balls are injected into the cooling water inlet header. The water flow carries these balls into the inlet water boxes, then through the tubes and finally into the ball strainer located at the cooling water outlet header.

The efficiency of heat transfer in the condensers of steam turbines has a direct effect on the power generation. Experience has shown that a reduction of 1 mbar in the condenser vacuum of a 900 MW power unit leads to a final loss of about 1 MW of power output. An uncleaned condenser can easily lose over 10 mbar vacuum. In such a case the use of a CTCS will increase the power output by more than 10 MW. Hence, it is extremely important to maintain the tubes of the condenser as clean as possible using highly efficient and reliable equipment.

Ball Monitor

A condenser tube cleaning system is efficient only when it circulates a sufficient number of cleaning balls having an adequate diameter. The ball monitor continuously checks the condition of circulating balls, sorts the balls into usable and worn out groups and counts the number of balls in circulation.

Automatic Ball Feeder

An automatic ball feeder, controlled by a PLC, receives information from each ball monitor. The feeder tops up the required balls in each of the system automatically.

Cleaning Balls

MACMET also supplies cleaning balls of TECHNOS make along with the CTCS. TECHNOS ball quality assures improved cleaning efficiency and integrity of protective tube film. Balls having different hardness and sizes are provided depending on the specific application.

Debris Filters

Macmet supplies debris filters for protecting the heat transfer equipment against small to medium size wastes that may have passed through upstream screens. Debris filters are installed directly on the pipeline between pumps and downstream equipment. Typical filter opening is 3 mm to 10 mm.