

THE REMOVING AND PREVENTING FOULING TECHNOLOGY OF TWISTED STRIP WITH INLET SPIRAL FLOW FOR VERTICAL WATER COOLERS

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ABSTRACT:

Fouling is the main reason why vertical water coolers generally operate with low efficiency in China. In this paper, the feasibility is analyzed to utilize the potential energy of cooling water to drive the plastic twisted strip to self-remove the fouling. But meanwhile, a problem occurs that the cleaning moment is not enough, so the authors have developed a special technique of inlet spiral flow to enhance it. The structure is that a helical of small spiral angle and a short tube of large diameter are designed on the inlet bearing. Thus, spiral flow path must be formed at the inlet because of the helical between the short tube and heat transfer pipe. Not only the flowing velocity is increased by times but also the radius of inlet flow is increased notably when cooling water flows in. The result of water pushing twisted strip directly makes the operational moment be increased by times. It is tested on an vertical experimental equipment with 2 meter long heat transfer tubes that the moment can be increased by 235% using the bearing of spiral flow (No. 2030). This technique solves the problem efficiently and increases the reliability of plastic twisted strip self-removing fouling by utilizing potential energy.

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