

**THE HIGH EFFICIENT TECHNOLOGY OF INTERNAL CYCLE
FLUIDIZED-BED IN TUBE SIDE FOR VERTICAL COOLERS IN
REGISTRATION UNITS**

S. Jiang, X. M. Yu, X. Zhi, T. Yu
Mechanical Clean Institute, Zhuzhou Institute of Technology,
Zhuzhou, Hunan Province, P.R China, 412008
Email: shuaike_zz@hotmail.com
Tel: ++86-733-2622115 (O); Fax: ++86-733-8100052

ABSTRACT:

The number of vertical water coolers in registration is the largest in China. But the operation efficiency is generally rather low. The fundamental reason is that there is much fouling as water quality is not good. So, the authors have developed a high efficient technology of internal cycle fluidized-bed in tube side successfully. The fluidization chamber with bubble-caps is at the bottom. Each heat transfer pipe extends into the fluidization layer of the chamber. 1%~4% pipes extends deeper as special pipes to return back particles, named back pipes. Because of the difference of flowing resistance, particles of about 2% volume density in heat transfer pipes will automatically form the moving upwards fluidized-bed during operation. Dense particles get through the back pipes slowly into the fluidization chamber. By experiments on the vertical water coolers of internal cycle fluidization, it is proved that not only the self-cleaning ability is great, but also the overall heat transfer coefficient can be increased by 33%~61%. This technology has been used in dozens of large water coolers in registration. The operation efficiency is increased by over 100%.

Corresponding author: Tianlan Yu (T.L Yu)

Email: shuaike_zz@hotmail.com