

Activation of Raw Water Pre-Treatment Facility in PLTU Ombilin

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Abstrak

In a power supply (PLTU) located in West Sumatera Barat, water is massively utilized for boiler feed, chiller fire fighters, service water, and drinking water. This need is supplied by a river nearby as the only source. This raw water is subject to a pre-treatment unit to remove the contaminants.

This research was aimed to design a raw water pre treatment unit for utility in the power supply and to compare with the existing and operating treatment unit. The feed flow rate is 1,160 m³/hour. The design objective was to remove TSS pathogenic bacteria, and turbidity using coagulation, flocculation, sedimentation, disinfectant, and ultra filtration membrane. Static mixer was used with pipe diameter 16 in. Flocculator has tubular size of (2x2) m³ with 100 m length. Clarifier was a horizontal flow type with surface of (40x20) m² and depth 5,8 m. This clarifier has surface loading flow rate of 35 m³/m² .d weir loading 250 m³/m.a' with weir length of 111,4 m. Ultra-filtration membrane treats only 30% of feed water (50 l/h flux) and need surface area of 13,290 m². From the comparison we found that we do not the screening. Furthermore, we should modify the flocculator and clarifier, and replace the sand filtration unit with ultrafiltration membrane.