# PERENCANAAN INSTALASI PENGOLAHAN AIR SUNGAI UNTUK KEBUTUHAN AIR BOILER
# (STUDI KASUS DI PT. ENTEK SEPARINDO ASIA)

**Iswahyudi[1], Dr. Ninin Gusdini, ST, MT.[2], Laila Febrina, ST, MSi.[3]**
**Mahasiswa Program Studi Teknik Lingkungan, Fakultas Teknik**
**Universitas Sahid Jakarta[1]**
**Program Studi Teknik Lingkungan, Fakultas Teknik**
**Universitas Sahid Jakarta[2'3]**
Email : iswahyudi.2095@gmail.com

Abstrak

Air sungai Cileungsi memiliki tingkat kesadahan, TDS, *sillica*, *turbidity*, dan *Iron* yang melebihi persyaratan air *Boiler* PT. Entek Separindo Asia. Air Baku yang diolah melewati Instalasi Pengolahan Air Sungai ini nantinya harus mengurangi kandungan pencemar hingga dibawah baku mutu, yaitu mampu menghasilkan air bebas mineral dengan pH 6,5-7,5, *Total Hardness* < 5 ppm, TDS < 200 ppm, *Silica* < 5 ppm, Kekeruhan < 2 NTU, *Iron* < 0,3 mg/l dan kapasitas produksi 21 $m^3$/jam. Hasil penelitian bahwa alur proses pengolahan air dimulai dari pintu air, *barscreen, saluran pembawa, bak* equalisasi, koagulasi-flokulasi, sedimentasi, bak *intermediate, sand filter, zeolit filter, activated carbon filter*, bak *after filter*, *filter cartridge, reverse osmosis*, pertukaran ion, dan bak akhir. Lebar saluran pembawa dan *screen* 0,2 m, volume bak equalisasi 21 $m^3$, diameter koagulasi *static mixer* 0,15 m dan panjang 1,8 m, volume bak flokulasi *impeller radial* 21 $m^3$, volume bak sedimentasi *plate settler* 2,06 $m^3$ x 2unit, volume bak *intermediate* 21 $m^3$, volume tabung *sand filter, zeolit filter,* dan *activated carbon filter* 0,75 $m^3$, volume bak *after filter* 21 $m^3$, diameter *housing cartridge filter* 32 cm, kapasitas *RO* 42 $m^3$/jam dengan *recovery* 50%, volume tabung penukar ion 2,56 $m^3$, dan volume bak akhir 126 $m^3$.
**Kata kunci:** sungai, *boiler, reverse osmosis*, ion.

*Abstract*

*The Cileungsi river has hardness, TDS, sillica, turbidity, and Iron levels that exceed the water Boiler requirements of PT. Entek Separindo Asia. Raw water processed through this River Water Treatment Plant will have to reduce pollutant content and able to produce water with a pH of 6.5-7.5, Total Hardness <5 ppm, TDS <200 ppm, Silica <5 ppm, Turbidity <2 NTU, Iron <0.3 mg/l and production capacity of 21 $m^3$/hour. The results of the study show that the flow of the water treatment process starts from sluice, barscreen, intake channel, equalization basin, coagulation-flocculation, sedimentation, intermediate basin, sand filter, zeolite filter, activated carbon filter, after-filter basin, cartridge filter, reverse osmosis, ion exchange, and product basin. Width of intake channel and screen 0,2 m, equalization basin volume 21 $m^3$, diameter static mixer coagulation 0,15 m and 1,8 m length, flocculation basin radial impeller volume 21 $m^3$, sedimentation plate settler volume 2,06 $m^3$ x 2 units, intermediate basin volume 21 $m^3$, sand filter, zeolit filter, activated carbon filter tube volume 0,75 $m^3$, after filter basin volume 21 $m^3$, filter cartridge housing diameter 32 cm, capacity reverse osmosis 42 $m^3$/hour with recovery 50%, ion exchange tube volume 2,56 $m^3$, and product basin volume 126 $m^3$.*

***Keywords****: River, boiler, reverse osmosis, ion*.