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Reducing The Frequency of Flooding Accompanied by Low pH Wastewater In 100/200 Unit of Phosphate Fertilizer 1 Plant by Implementing The 3R Program (Reduce, Reuse and Recycle)

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Abstract : In 2020, PT Petrokimia Gresik implemented a program to increase the ROP (Run Of Pile) production rate at the Phosphate Fertilizer 1 plant, causing an increase in scrubbing water consumption in the 100/200 area unit. This increase in water consumption causes a higher discharge of wastewater, which can further cause local flooding, especially during the rainy season. The 100/200 area of the Phosphate Fertilizer 1 plant is close to the warehouse and is often a passing area for trucks transporting raw materials. This causes the pH in the wastewater to become acidic (the worst point is up to pH 1). The problem of flooding and exposure to acidic wastewater in the 100/200 area of Phosphate Fertilizer Plant 1 was then resolved by PT Petrokimia Gresik through wastewater optimization steps called the 3R program (Reduce, Reuse, and Recycle). The 3R (Reduce, reuse, and recycle) program consists of an air consumption reduction program by considering the liquid/gas ratio in scrubbing unit of 100/200 Phosphate Fertilizer 1 plant, creating a wastewater interconnection line so that wastewater from unit 100/200 can be used as scrubbing water in the Phonska 1, Phonska 2, Phonska 3 and unit 300 Phosphate Fertilizer 1 plant and increasing scrubbing effectiveness through scrubbing effectiveness simulations. Through a series of wastewater optimization programs, PT Petrokimia Gresik has succeeded in reducing NaOH consumption for neutralization up to 2,880 kg/day or equivalent in saving up to 314,359.76 dollars/year and reducing process water consumption up to 600 m3/day or equivalent in saving up to 63,739.62 dollars/year.

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