AN INTEGRATED APPROACH TO MONITOR AND CONTROL OF EMISSION AND EFFLUENT AT A MALAYSIAN THERMAL POWER PLANT

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Abstract - Coastal thermal power plants are significant anthropogenic point sources, requiring robust systems to mitigate their impact on urban and marine environments. This study presents a comprehensive performance assessment of thecriticalpollutioncontrol infrastructuresatone of the Malaysia thermalpower plant.Weevaluatetheintegratedeffectivenessofthe(1)ElectrostaticPrecipitator(ESP)foratmosphericparticulatematter(PM)abatement,(2)AshPondsys- tem for containing and treating solid waste leachate, (3) Industrial Wastewater Treatment Plant (IWWTP) for processing complex industrial effluents, and (4) OilyWaterSeparators(OWS)forpreventinghydrocarboncontamination.Byan- alyzing operational data, monitoring reports, and effluent quality, this research quantifies the removal efficienciesof keypollutants, includingPM, heavy metals, suspendedsolids,andoils/greases.Thefindingsdemonstratehowthismulti-bar- rierapproachis essentialfor minimizingthetransfer ofpollutants fromthe plant's operationstothesurroundingairandsensitivecoastalwaters of theKlangestuary.Thisintegratedapproachensurescomplianceandsustainableenvironmental management within the energy sector.

Keywords – Urban Runoff Monitoring, Industrial Waste water Treatment, Ash, Air Pollution, Electrostatic Precipitator (ESP), Emission.