

## **Technology Identification, Evaluation and Selection Methodology for Industrial Process Water and Waste Water Treatment Plant of 3x150 MWe Tufanbeyli Lignite-Fired Power Plant**

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**Abstract :** Most thermal power plants use steam as working fluid in their power cycle. Therefore, in addition to fuel, water is the other main input for thermal plants. Water and steam must be highly pure in order to protect the systems from corrosion, scaling and biofouling. Pure process water is produced in water treatment plants having many several treatment methods. Treatment plant design is selected depending on raw water source and required water quality. Although working principle of fossil-fuel fired thermal power plants are same, there is no standard design and equipment arrangement valid for all thermal power plant utility systems. Besides that, there are many other technology evaluation and selection criteria for designing the most optimal water systems meeting the requirements such as local conditions, environmental restrictions, electricity and other consumables availability and transport, process water sources and scarcity, land use constraints etc. Aim of this study is explaining the adopted methodology for technology selection for process water preparation and industrial waste water treatment plant in a thermal power plant project located in Tufanbeyli, Adana Province in Turkey. Thermal power plant is fired with indigenous lignite coal extracted from adjacent lignite reserves. This paper addresses all above-mentioned factors affecting the thermal power plant water treatment facilities (demineralization + waste water treatment) design and describes the ultimate design of Tufanbeyli Thermal Power Plant Water Treatment Plant.

**Keywords :** thermal power plant, lignite coal, pretreatment, demineralization, electrodialysis, recycling, ash dampening

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