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AN ECONOMIC AND ENVIRONMENTAL ANALYSIS OF TWO DIFFERENT FUEL OPTIONS AT SHAZAND THERMAL POWER PLANT (STPP)

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Abstract

The engineering economy is replete with mathematical techniques used to assess designs and projects. Benefit/cost method (B/C) is one of these techniques. An advantage of this technique compared to other techniques is that it provides a reasonable profitability ratio to the decision makers. Using the B/C method, two fuel options at Shazand Thermal Plant were compared. The fuel options were natural gas and mazut, which are incompatible and it is not possible to use both of them simultaneously in a power plant. In fact, the present study tries to justify replacing mazut fuel with natural fuel. Based on the results of data analyses using the data provided by the power plant, it was found that the B/C ratio for mazut was equal to 2, while this figure for natural gas was equal to 3. Therefore, replacing mazut with natural gas as a fuel is a quite economic decision to make. In addition, environmental pollution caused by natural gas is not comparable to that of mazut. Therefore, natural gas is a superior option compared to mazut both from economic and environmental viewpoints. All the analyses in this research were performed in Matlab software.

Key words: benefit/cost method, engineering economy, environment, pollution, Shazand thermal power plant

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