

Combined Heat and Power Plant Installation at Oil and Gas Fields: Is It Cost-Effective?

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Abstract

The paper presents an economic feasibility analysis which is applied to assess the cost effectiveness of implementing a combined heat and power system at oil and gas fields. The applicability of the proposed approach is illustrated in a real case study of the Serbian energy system, i.e., at one of the oil/gas fields operated by Petroleum Industry of Serbia. The purpose of this paper is to present a generic methodological framework so as to investigate the economic benefit and to calculate the payback period at the plant's installed capacity. The findings of the analysis demonstrate that the mode of operation with sale of electricity at feed-in tariff and supply of excess heat to third parties is the most cost-effective because of its shortest payback period of 2.81 years. This method helps rationalize energy consumption and mitigate environmental impact in terms of CO₂ emissions on the grounds that it uses a resource, i.e., fossil fuel originating from oil production (associated-dissolved gas), which has not been utilized so far. The paper demonstrates that the methodological framework can provide important insights into the strategic long-term and challenging decisions to be made by investors and/or policy designers at a national and/or regional level, highlighting potential risks and providing the roadmap and appropriate price signals on critical energy projects under real market operating conditions..

Biography:

Zorana Božić is a PhD candidate in Engineering management, Faculty of Technical Sciences, University of Novi Sad, Serbia. Zorana has been working in NIS j.s.c. Gazprom Neft which is petroleum industry of Serbia, for more than 8 years. With more than 6 years of working in Power trading department, Zorana gained knowledge to elaborate analysis of power trading prices and their volatility across Europe.

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