

EUR24_09 - Turbine Replacement with Electrical Drivers - Evaluating Options

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Abstract:

The transition of steam and gas turbine to electric motor drivers provides viable options to address existing and future regulations on CO₂ emission savings as well as providing lower operating expenses. The replacement of the turbines can take place in existing (so-called "brownfield" replacements) inland as well as offshore based facilities. With the existing plant layout of a brownfield installation, all possible electrical driver configurations may not be possible, such as geared solutions.

This paper will give an overview of the today's existing technical solutions for electrical drivers and especially focusing on the challenging topics to be considered with a turbine replacement. Since application requirements are different from case to case, the optimum solutions will vary based on technical and economical criteria, including the specific location details of the application. The paper will provide help to plan the scope of work on the compressor or pump train, the selection of the best solution based on technological criteria plus the impact of each train solution option on different areas such as Capital Expense, Operating Expense, Environment / Health & Safety, Reliability and Serviceability. Furthermore, interface-handling is described, like rotor-dynamic topics and foundation interaction.

Finally, an important consideration is the required planning/preparation time for a brownfield turbine replacement. The time slot for the regular plant shut down is fixed based on five to eight year schedules, it is important to start the preparation in time to be able to meet the envisaged turnaround schedule with the best solution.