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DADICC: Intelligent system for anomaly detection in a combined cycle gas turbine plant

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Abstract-

DADICC is the abbreviated name for an intelligent system able to detect on-line and diagnose anomalies as soon as possible in the dynamic evolution of the behaviour of a power plant based on a combined cycle gas turbine. In order to reach this objective, a modelling process is required for the characterization of the normal performance when any symptom of a possible fault is present. This will be the reference for early detection of possible anomalies. If a deviation in respect to the normal behaviour predicted is observed, an analysis of its causes is performed in order to diagnose the potential problem, and, if possible, its prevention. A multi-agent system supports the different roles required in DADICC. The detection of anomalies is based on agents that use models elaborated using mainly neural networks techniques. The diagnosis of the anomalies is prepared by agents based on an expert-system structure. This paper describes the main characteristics of DADICC and its operation.

Index Terms- Anomaly detection; Normal behaviour; Diagnosis; Multi-agent system; Neural network; Expert system

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