

**"Enel experiences in advanced diagnostics for power plants "**

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In today's deregulated and competitive power generation markets, the power companies are forced to rethink how they manage their power plants and faster decision-making processes are needed to operate their plants more efficiently and cost-effectively; crucial are prompt evaluation of evolution of performances and health condition of main components and , as consequence, decisions to be taken.

The main targets are to minimize the cost of electric production, in order to stay competitive; this means increased attention to the traditional maintenance and operating costs, as well as searching ways to increase plant availability.

The experiences of ENEL, particularly on European markets, is that power generation plants have new roles into market due to renewable energy increase and, therefore, the fossil fuel power plants are no longer operating at constant load around the clock but are subject to loading - unloading and frequent start-ups.

Forced outages that may occur when the market prices are high are obviously very costly.

Each unit of the power plants must be treated as single asset essential for competition and therefore O&M must be focused on optimizing specific performances to improve the power capacity portfolio.

Strategies operating and maintaining power plants must be therefore coordinates to ensure continuity of revenues limiting the lost of market opportunity; the strategy of maintenance become hence influenced by conditions of other units and is therefore required a sweeping assessment of existing processes, technologies, and a special workforce skill levels.

On-line information about turbo-machinery, components and process performances require easy and reliable monitoring systems conjugated to advanced diagnostic tools to obtain prompt health condition evaluations which are crucial in order to make decisions on operational issues that may affect line profitability.

There is hence less time available for analyses and inspections which requiring long procedures ; therefore, since 1999 ,ENEL , is progressively developing advanced monitoring and diagnostic tools for providing readily accessible information for day-to-day suitable to inform the long term planning.

To paper presents the experiences matured by ENEL using , since January 2001 when the first on-line diagnostic system was installed on class F technology GTCC in La Spezia and then the diagnostic systems were applied with advantages for plant operators .