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# A NEW NON-INVASIVE AIR-COOLED CONDENSER MONITORING METHODOLOGY TO INCREASE PERFORMANCE

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## Abstract

Air-Cooled Condenser performance can significantly affect WTE plants bottom-line. Most of the possible ACC performance improvement solutions require some important capital costs (fin tubes replacement, fans blades or motor upgrade, additional ACC cells, addition of preventive air re-circulation panels, etc...).
A new low cost tool and methodology is now allowing to gain a very detailed understanding of ACC behaviours and to optimize ACC operations and cleaning schedules. This article is illustrated by the case-study of a WTE located in the south of France (equipped with a 5.5 MW GE condensing turbine), where the facility performance was strongly limited by its ACC, and where additional turbine generator output of more than 1 MW were achieved.

## 1. Introduction

The reference plant is equipped with a 35 t/h, 5.5 MW GE condensing turbine. In 2003, the average production of the unit was 2.58 MW (while the unit was on-line). This is less than 50% of the design capacity. The maximum hourly production achieved in the course of the year was 4.1 MW (fig. 1). One of the main limiting factor for increasing power generation was the 17 year old Air-Cooled Condenser unit, that was designed for a 0.45 b.a. pressure at 25°C outside temperature. The air cooled condenser is equipped with four fans that constantly operate at high blades pitch conditions.

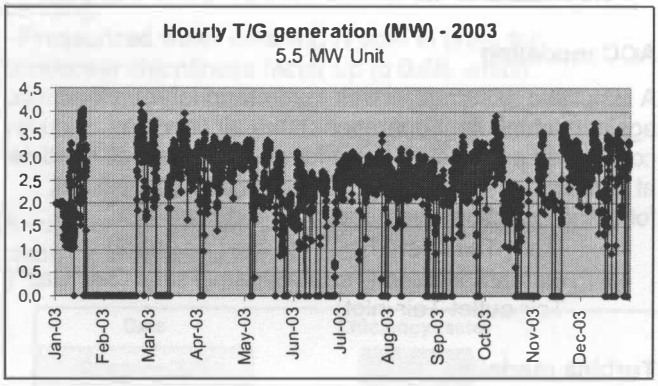


Fig. 1 2003 Power Generation from the 5.5 MW unit

The plant operating procedures called for limiting the load on the turbine before the vacuum reached the high level alarm. In 2003, the average vacuum level when the turbine was on-line was 0.34 b (fig.2). The plant also experienced 3 vacuum spikes above 1 b.a. and blew the ACC rupture disk during one of these spikes.