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The long road from data collection to maintenance optimization of industrial equipment

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In the coming years, with the development of intermittent renewable energy sources and the gradual phasing out of coal-fired power plants, combined cycle gas turbines (CCGT) will play an essential role in regulating electricity production. This need for flexibility will increase the demands on the equipment of these CCGT and the issue of optimizing their maintenance will become increasingly important. To this end, the use of statistical tools to enhance the value of data from the operation and maintenance of these plants' equipment is a possible approach to provide decision support elements.

It is in this industrial context that an important collection of data was carried out for several conventional repairable equipment (turbines, pumps…) of three EDF CCGT. The second step consisted in a pre-processing / cleaning of these raw data with the support of field experts, an essential requirement for the statistical modeling stage. A wide range of imperfect maintenance models implemented in the free R VAM (for Virtual Age Models) package (https://rpackages.imag.fr/VAM#) was tested to evaluate the ability of these models, on the one hand to reproduce the field reality, on the other hand to bring useful insights to help the development of equipment maintenance plans.

The communication will present this work, illustrating it on a piece of equipment and insisting on its industrial application dimension.

Primary author: REMY, Emmanuel (EDF R&D)

Co-author: LE BRIS, Yves (EDF DTEAM –CIST INGEUM)

Presenter: REMY, Emmanuel (EDF R&D)

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