Maintenance and Inspection Plan

Optimum park performance at minimised costs

Maintenance departments face huge complexity in defining the optimum inspection and maintenance tasks to be fulfilled, and be able to prioritise tasks with available budgets. During each project phase an opportunity exists to optimise the performance of the wind park by means of maintenance.

To make sure that the right prioritisation can be made, the maintenance and inspection plan must already be available during the development phase. This plan evolves over time, during the construction and operations phase and has to be closely linked to the operations strategy and the operations plan. In each of these three phases during the development of this plan challenges are to be experienced:

Challenges in development phase
No finalised supplier selection procedure and therefore no objective presentation of the real performance of assemblies and components. Sometimes it comes with unavailability of maintenance documentation from OEM’s and no historical information on failures due to the innovative character of components or missing OEM’s failure data.

Challenges in construction phase
Design changes are to be maintained in the wind park configuration registry. Unfortunately commissioning extends often into the operations phase and late design changes lead to a gap between ‘as-built’ and ‘available documentation’. These change processes do not affect the configuration or are not adopted in the maintenance and inspection plan.

Challenges in operations phase
A clear reference designation system is not implemented or still under construction, and component failures cannot be reported in full. The process that performs risk analyses and transfers failure reports towards maintenance and inspection improvement cannot be performed. Maintenance cannot be planned efficiently as information is missing on which maintenance activities need to take place when and where.

All these challenges result in the fact that reactive maintenance dominates the offshore tasks and that performance improvement and cost reduction potential is lost.
OutSmart can assist by delivering the following services:

**During development phase:**

**Maintenance and Inspection Concept**
- Deliver market references and estimates with regard to maintenance requirements, maintenance processes and maintenance budgeting.
- Challenge maintenance related assumptions of OEM’s and component suppliers.
- Setup of a designation system (regarding WTG, Transformer Station and/or Balance of Plant).
- Develop project specific maintenance concepts.
- Define mandatory inspection requirements.

**During construction phase:**

**Maintenance and Inspection Plan**
- Define component specific maintenance tasks.
- Documentation control.
- Specify spare parts lists and supply chain.
- Secure the relation between commissioning and the maintenance and inspection plan.
- Challenge supplier specified maintenance and inspection tasks and adopt these in the overall maintenance and inspection plan.
- Specify maintenance strategy and maintenance tasks.
- Develop maintenance and inspection plans, using OEMs documentation as one of the inputs.

**During operations phase:**

**Maintenance and Inspection Improvement Plan**
- Deliver experience in definition of maintenance improvement and inspection improvement.
- Facilitate risk assessments.
- Develop and maintain maintenance database.
- Specify and update spare parts lists and supply chain optimisation.
- Optimise maintenance and inspection schedules.

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