



1 DOTI 2011, alpha ventus,

Photo: Matthias Ibeler

2 Construction of an Onshore Turbine,

Photo: Servion Press pictures

WEATHER DATA-BASED ANALYSIS AND SIMULATION FOR LOGISTIC PROJECTS

Fraunhofer IWES

Am Seedeich 45
27572 Bremerhaven/Germany

Dr. techn. Marcel Wiggert
Phone +49 471 14 290 303
marcel.wiggert@iwes.fraunhofer.de

www.windenergie.iwes.fraunhofer.de
www.coast.iwes.fraunhofer.com

Onshore and Offshore activities entail many different planning challenges – high weather risks, for example can hamper access to the construction site or prevent construction activities (e.g. craneage). Project delays due to spells of bad weather can quickly give rise to high additional costs that may put the financial viability of the project at risk. Taking the local weather and other relevant conditions into account is therefore a key factor for reliable cost, schedule and quality planning.

the day-to-day work flows is quick and easy thanks to compatibility to project planning software like MS Project or Primavera and an intuitive user interface.

Basis for planning, logistics and contract drafting

The issues and own interests associated with the management of offshore activities are many and varied for all parties involved: Planners review their project plan in advance for practical viability; logistics and installation specialists optimize the deployment of their vehicles/vessels; operators improve their maintenance tasks and component replacement strategies; investors and banks validate their financial models; insurers design customized cover concepts for weather risks or cover amounts; lawyers and economists devise sophisticated payment plans; contractual penalties and concepts for sharing the weather risks.

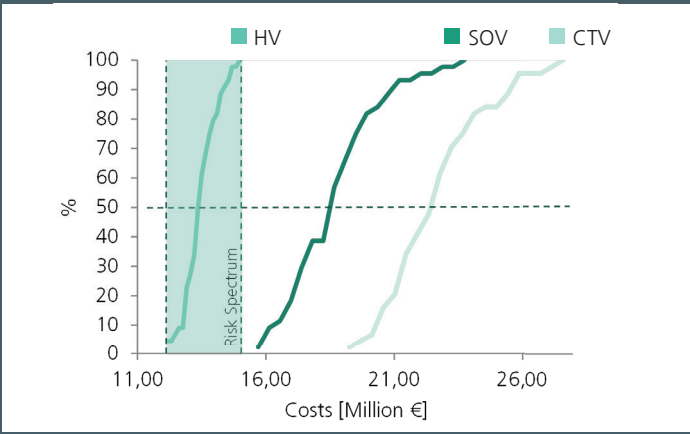
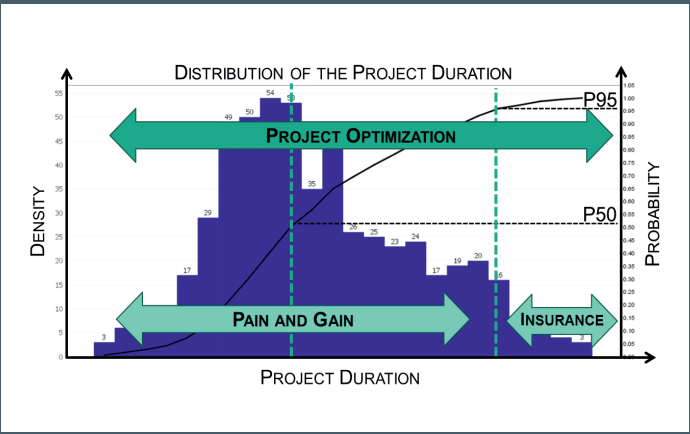
COAST – Comprehensive Offshore Analysis and Simulation Tool

To make the weather a calculable factor already during the planning phase, Fraunhofer IWES has developed a new software tool named COAST (Comprehensive Offshore Analysis and Simulation Tool), which is designed to simplify the weather databased planning, validation and assessment of offshore work processes in the installation and operation phases. Incorporation of the analyses into

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3 Distribution of the project duration and management options

4 Risk profile assessment and comparison for logistical concepts

If delays have occurred in the implementation of a project, the COAST software enables project acceleration measures to be realistically estimated. On completion of the construction phase, the influence of weather risks can be validated. This allows to validate compensation claims. Lessons learned can be implemented for future projects.

WaTSS – Weather Time Series Scheduling method

The WaTSS method is designed to simulate the work flows with all their weather restrictions. The system uses weather time series going back many years in order to realistically take account of weather-related delays. Subsequently, the simulation results are statistically evaluated. The processes are defined through project schedules in XML

format and can therefore be drafted using planning tools such as Asta Powerproject, Primavera and MS Project.

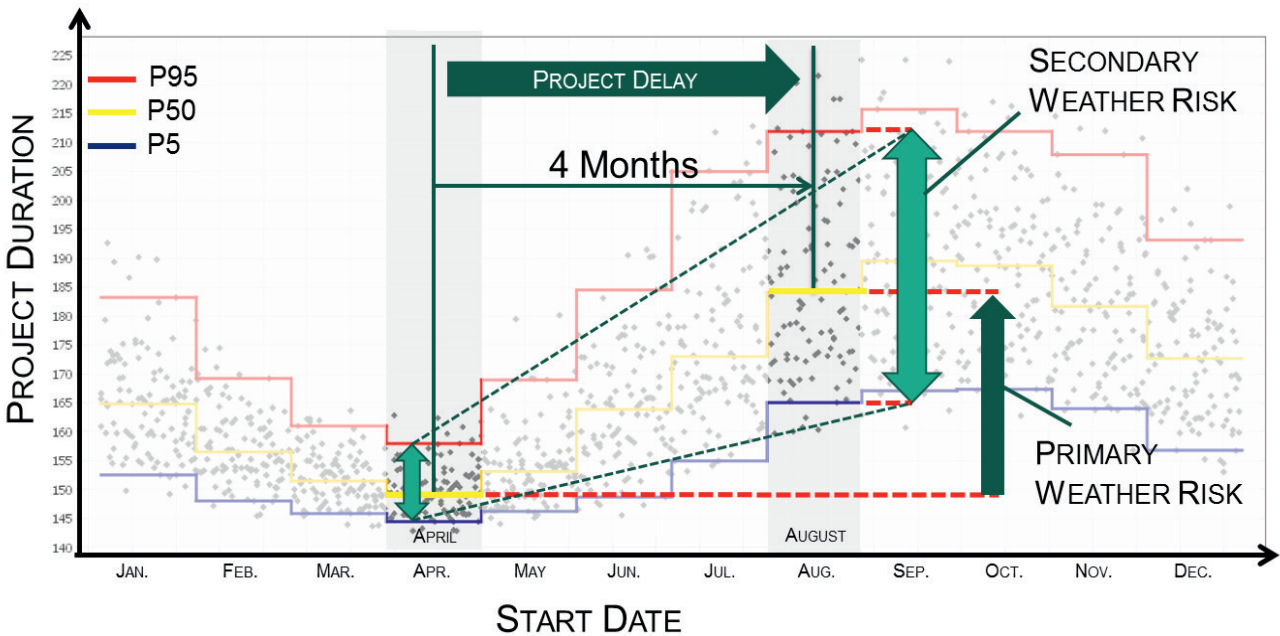
The local conditions and weather boundaries, on the other hand, are described using time series that may cover up to 50 years. As a result, not only measured or model data time series such as wind, wave heights or wave periods can be taken into account in the analysis, but also any other time restrictions, e.g. day/night, lock opening times, tidal windows or water levels.

User-friendly and ideal in everyday application

To identify project durations and their distribution, simulation results are statistically evaluated. All results and the distribution

of the project durations can be exported to MS Excel or CSV format. The individual simulations can be graphically displayed and exported as a plan. Weather data can also be read from MS Excel.

The COAST software makes it possible to compare between different work flow planning concepts and variants in terms of the weather risks. Project plans can be optimized using sensitivity and scenario analyses. The results render weaknesses and bottlenecks in specific phases/activities clearly visible. The WaTSS method offers more indepth analysis of the weather and other related conditions than the frequently used weather window statistics.



5 Assessment of the primary and secondary weather risk