



1 DOTI 2011, alpha ventus,

Photo: Matthias Ibeler

2 Photo: Wolfhard Scheer

WEATHER DATA-BASED ANALYSIS AND SIMULATION FOR OFFSHORE PROJECTS

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Offshore activities entail many different planning challenges – high weather risks, for example can hamper access to the construction site or prevent it altogether. 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.

operation phases. Incorporation of the analyses into the day-to-day work flows is quick and easy thanks to compatibility with MS-Project and an intuitive user interface.

Basis for planning, logistics and contract drafting

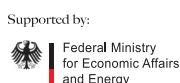
The issues and own-interests associated with the management of offshore activities are many and varied for all parties involved: Planners review their timetables in advance for practical viability. Logistics and installation specialists optimize the deployment of their vehicles/vessels. Operators improve 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 spreading 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 data-based planning, validation and assessment of offshore work processes in the installation and

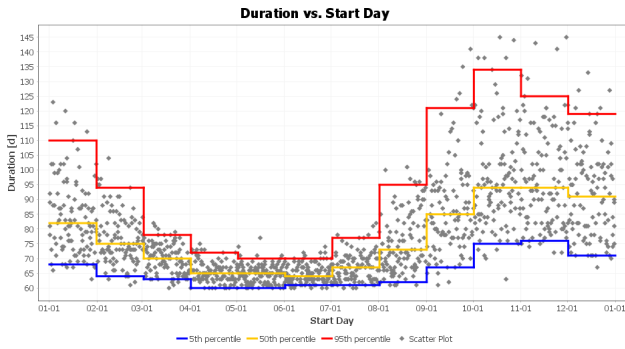


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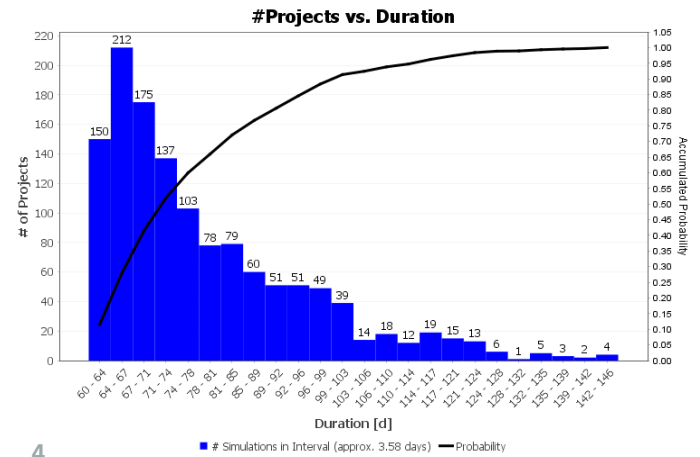


on the basis of a decision by the German Bundestag





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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, compensation claims asserted or rejected, and lessons learned for the future.

WatSS – Weather Time Series Scheduling method

The WatSS method is designed to simulate the work flows involved in offshore activities with all their weather restrictions. The system uses weather time series going back many years in order to realistically take account of weather-induced delays. Subsequently, the simulation results are statistically evaluated. The processes are defined through timetables in MS-Project 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 over 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.

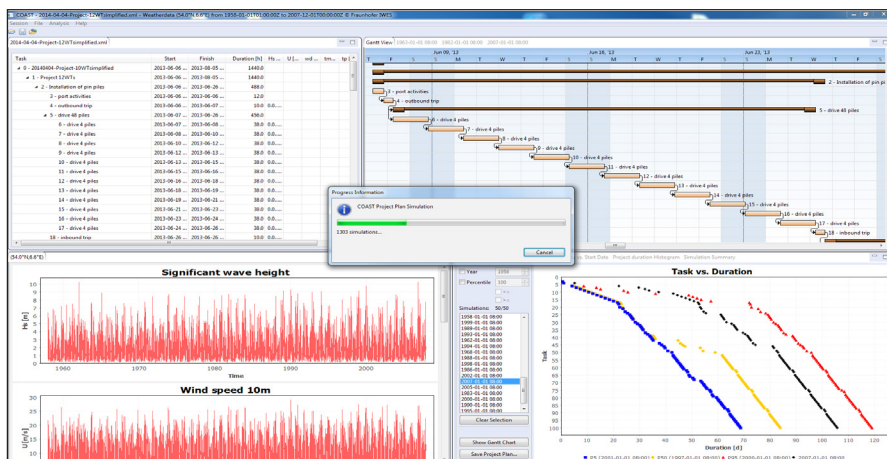
User-friendly and ideal in everyday application

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. Incorporation of the “DNV-OS-H101 Marine Operations” (2012) guideline in the analyses is another possibility.

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 in-depth analysis of the weather and other related conditions than the frequently used weather window statistics.

Find more information on our website: www.coast.ives.fraunhofer.de



5 User interface of the COAST software

3 Primary and secondary weather risks during project realization

4 Distribution of project durations depending on weather data