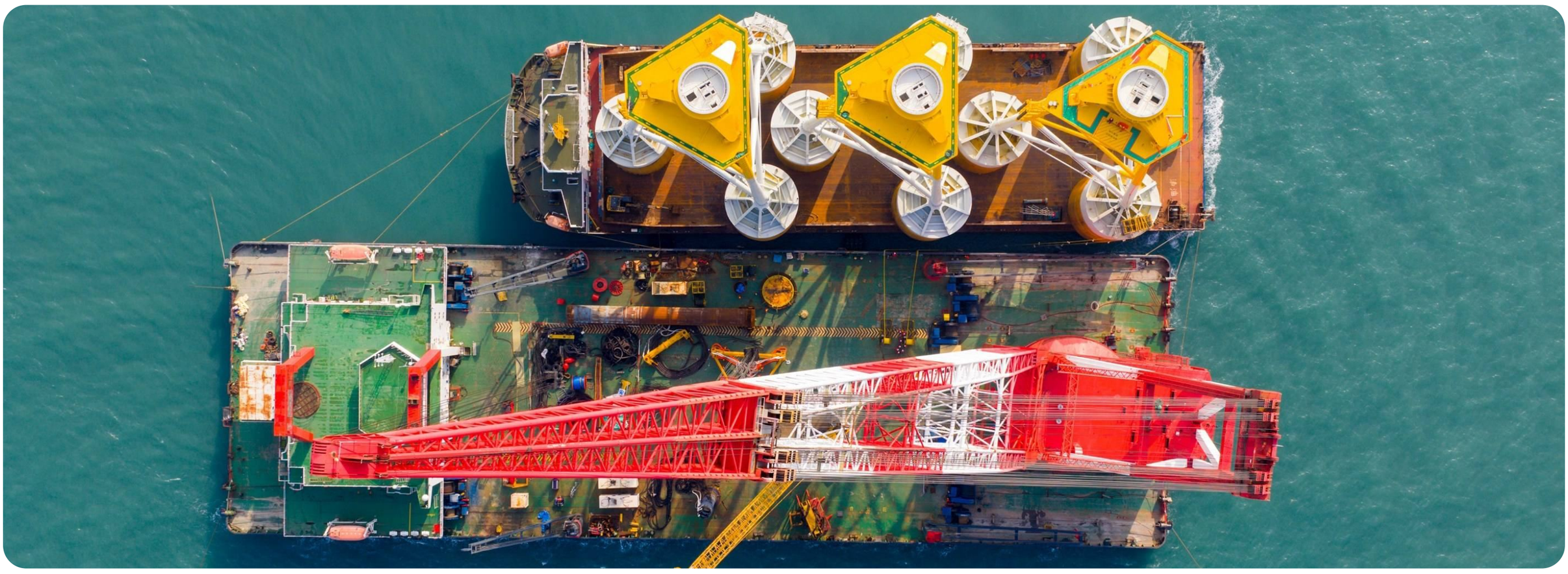


Founders' Honors 2026

Automatic modeling and optimization software for offshore jacket structures

Project summary

Organization:
POWERCHINA Fujian Electric Power Survey and Design Institute Co., Ltd.

Solution:
Energy production

Location:
Putian, Fujian, China

Project phase:
Completed and operational

Expected completion date:
November 2025

Key results

- **28 jacket foundations designed with the workflow.**
- **85% to 89% less modeling time.**
- **88% to 92% less optimization time.**
- **About 380 metric tons of steel saved across four foundations.**

Project

As the core design unit for the Putian Pinghai Bay Offshore Wind Farm project, POWERCHINA Fujian Electric Power Survey and Design Institute was responsible for designing 28 jacket foundations. Repetitive engineering tasks slowed modeling and optimization across static, pile-soil, lifting, transportation, load-out, seismic, and fatigue cases, so the team developed its own automatic optimization software to accelerate iteration while maintaining structural strength.

Results

Built around SACS™ command streams and text-file interfaces, the third-generation software batched multicase iterations and ran overnight without supervision. Average modeling time fell 85% to 89%, optimization time fell 88% to 92%, and static calculations converged in more than 95% of cases. In an internal comparison with five engineers, automated results required about 380 metric tons less steel across four foundations while meeting structural strength requirements.

Bentley software

- SACS



The workflow designed all 28 jacket foundations for the offshore wind project.

> **SACS is a crucial cornerstone of our institute's offshore wind power business and an indispensable key in the offshore wind power field.**
>
> *— Jiayu Chen, Offshore Structural Engineer, POWERCHINA Fujian Electric Power Survey and Design Institute Co., Ltd.*



Automated results required about 380 metric tons less steel across four foundations.

Solution

SACS command streams powered automatic multicase jacket modeling and optimization.

- The team built optimization software around SACS command streams.
- Text-file interfaces enabled automatic multicase batch iteration.
- The workflow ran overnight without supervision across offshore calculation cases.
- The final optimized results met structural strength requirements.

Facts

- POWERCHINA Fujian Electric Power Survey and Design Institute designed 28 jacket foundations.
- Average modeling time fell by 85% to 89% and optimization time by 88% to 92%.
- Static calculations converged in more than 95% of cases.
- An internal comparison found about 380 metric tons less steel across four foundations.

Find out more at Bentley.com
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