

DELIMARA POWER STATION

CURRENT AND WAVE STUDY LNG FACILITIES DELIMARA POWER STATION, MALTA

For the development of LNG facilities at Delimara Power Station a study of currents and penetration of waves in Marsaxlokk Bay is performed, both for the design of facilities and for impact of the proposed development on the surroundings (such as Marsaxlokk fishing port).

An offshore wave climate has been set up by applying 20 years of modelled hourly wind data (NCEP) in a custom made SWAN model of the Mediterranean Sea. SWAN model results are validated with known wave measurements at Hurd Bank.

From the SWAN results the wave climate just outside Marsaxlokk Bay is obtained, including an analysis of extreme wave conditions.

Hourly wave data established with SWAN is now transferred into Marsaxlokk Bay with the numerical wave model HARES. To do so, a large number of HARES simulations has been carried out to construct a 3-dimensional transfer matrix for all combinations of wave directions, wave periods and wave heights.

With these 3D-matrices the hourly offshore wave data are translated by interpolation to Marsaxlokk Bay (directional spreading is included). The resulting statistics are used to determine yearly and extreme conditions at various locations and to estimate expected exceedance of certain thresholds of the LNG facilities. The present situation is also modelled to assess the impact of the jetties in the bay as a whole.

Finally a FINEL2D current study is performed to assess the effect of planned LNG facilities on flow circulation and stagnation in Marsaxlokk Bay.

CLIENT

Enemalta plc

LOCATION

Marsaxlokk Bay, Malta

DATE

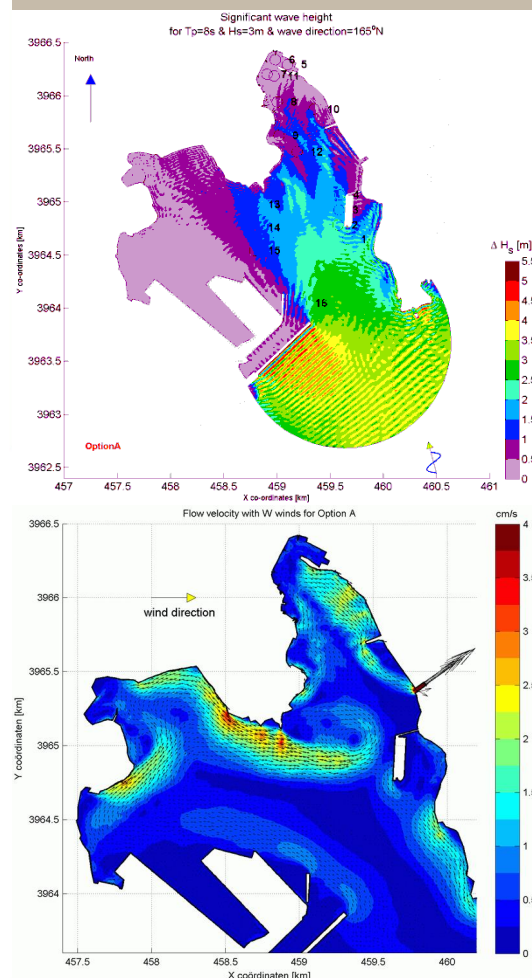
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SERVICES

SWAN modelling to establish offshore wave climate

HARES wave penetration modelling

FINEL2D current modelling



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