Layout optimisation for an installation port of an offshore wind farm (*European Journal of Operational Research*)

Authors	Chandra Irawan , Xiang Song, Dylan Jones (UOPHEC), . Negar Akbari (UHULL)

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Abstract	This paper investigates a port layout problem, where the layout of an installation port for an offshore wind farm needs to be generated in an efficient way so as to minimise the transportation cost of main components of an offshore wind turbine within the port. Two mixed integer linear programming (MILP) models are established to configure the optimal port layout, where the shapes of subareas that need to be located in the port are rectangular with several possible dimensional configurations to select from and the shape of the port area can be treated as either a convex or a concave polygon. The MILPs can be solved to optimality for small-sized problems. Matheuristic approaches based on Variable Neighbourhood Search (VNS) and an exact method (MILP) are also proposed to find solutions for medium-sized problems. The methods are assessed using randomly generated data sets. In addition, the area of a proposed Scottish port is used as a case study. The results obtained from the computational experiments validate the effectiveness of the proposed matheuristic approaches.

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