

## Manfredonia - Italy

# OFF-SHORE EOLIC POWER PLANT

## Concept design of foundations

Client: Icaria S.r.L.

2008

PREFACE

SERVICES

ORGANIZATION

CLIENTS

MAIN PROJECTS

ALL PROJECTS

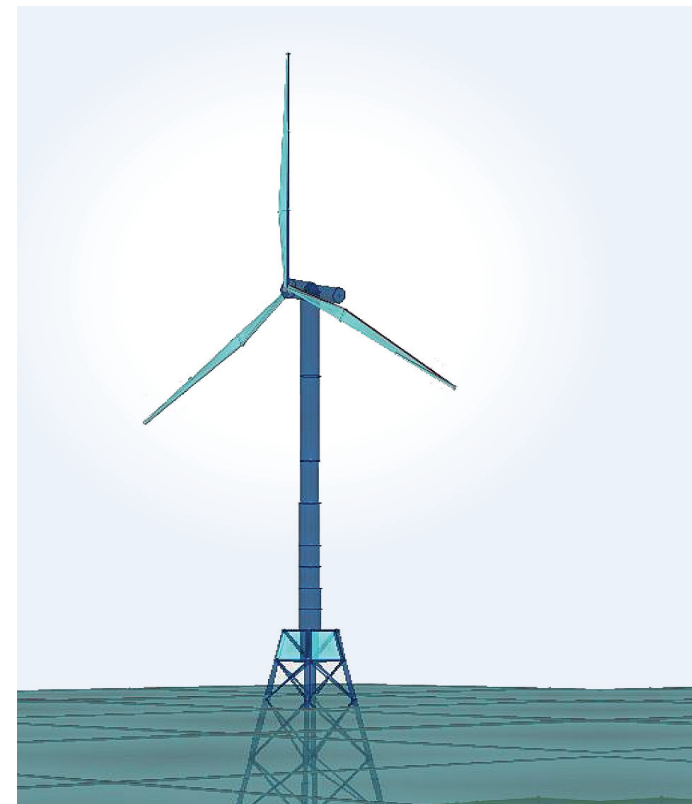
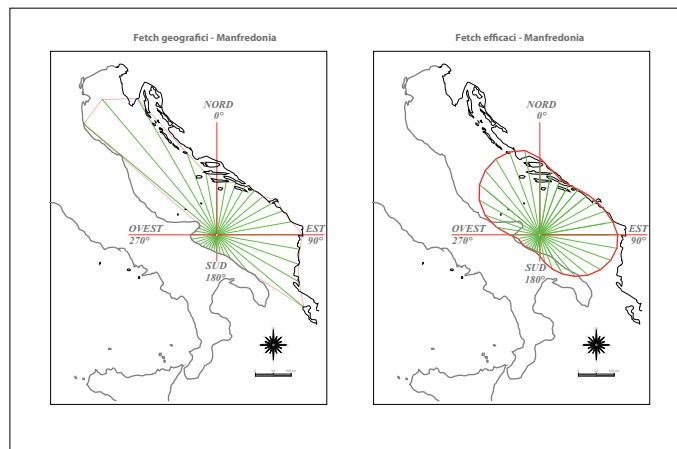
PUBLICATIONS

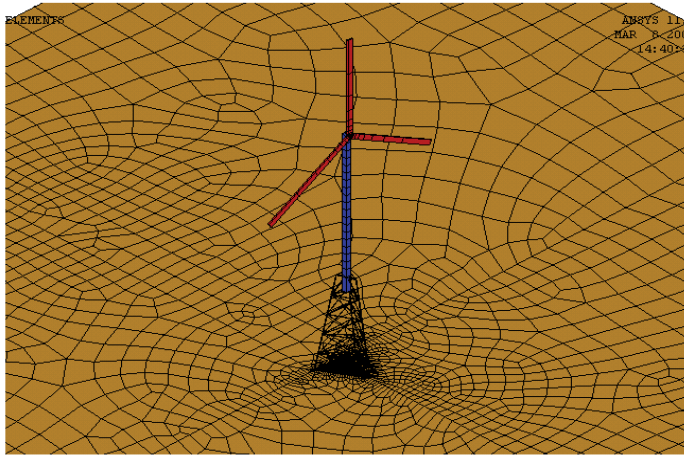
CONTACTS

The project concerns the preliminary design of an off-shore wind farm to be constructed in the Manfredonia Gulf (Adriatic sea, South Italy). The farm will comprise 105 wind towers, 100 m in height, for a total installed power of 315 Megawatts. It will be located about 10 km away from earth coast and will occupy a 70 km<sup>2</sup> area. Seabed depth is about 30 meters.

Geology of the area indicates the presence of Olocenic deposits, mainly clayey soils, up to 20-40 m of depth and Plio-pleistocenic deposits, mainly clayey soils with frequent sandy layers, with thickness of 300-500m, underneath.

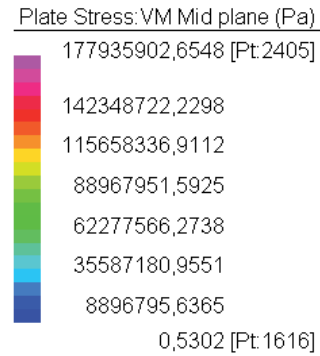
Figure 2.1 shows the results of the marine-weather study, reporting the effective fetches in the area along each directions.





The analysis of the structural response of the wind towers required the definition of different combinations of actions, taking account operational conditions under normal or extreme external conditions, thus defining a number of different design scenarios.

Numerical analyses, mainly devoted to the study of the structural behaviour of jackets and wind tower, were carried out with a full three-dimensional (3D) finite element code. Different numerical models, including soil, foundations, jackets and wind tower, were constructed in order to perform static as well dynamic analyses.



Tower thickness transition

Jacket - Tower connection

