

Planning, Setup and Operation of an Off-Shore Platform to measure Wave Heights, Tidal Water Levels and Meteorological Data near Borkum

Client: EWE Netz GmbH, Patzold, Köbke and Partner Engineers GmbH

Location: off-shore south-east of Borkum and north-west of Greetsiel

Scope of Work: measurement of wave heights, tidal water levels, wind speed/direction and temperature (water/air)

Method: offshore-platform and pontoon with equipment and automatic communication unit

INTRODUCTION

EWE Netz GmbH needed a monitoring of tidal water levels and wave heights for a save and optimized operation of facilities during the installation of a submarine cable to Borkum (Fig. 1).

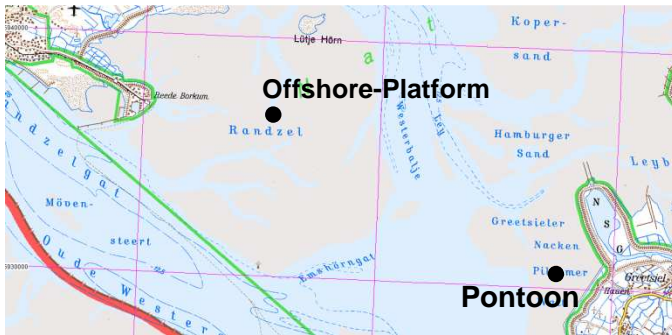


Fig. 1: Location of the Offshore-Platform (Borkum) and the Pontoon (Greetsiel)

METHODOLOGY

Thus, an Offshore-Platform was build, setup and operated for several months (Fig. 2). The platform was equiped with several sensors (wave heights, water levels and meteorological data) and a communication unit (Fig. 3) for data transfer via GPRS modem.



Fig. 2: Offshore-Platform south-east of Borkum



Fig. 3: Sensors and Communication Unit

A pressure sensor (PDCR 1830, GE Ltd.) was used with a self developed data transformer for wave measurements at 10 Hz. Data was saved on a local serial server and transferred via GPRS modem to shore.

Tidal water levels and meteorological data (wind speed, wind direction and temperature) were measured continuously and averaged to 1min-values.

RESULTS

Actual wave heights (Fig. 4) were an important information to operate machinery and equipment.

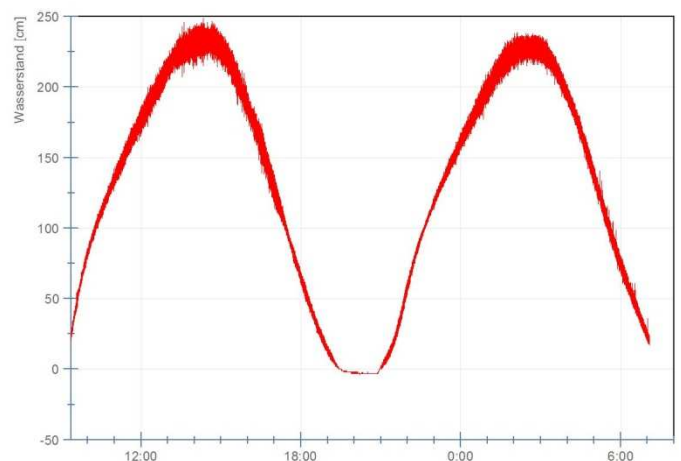


Fig. 4: Water levels to calculate Wave Heights (10Hz)

The concept of a stand-alone offshore-platform was successful. The positioning on a pile was simple.

Data acquisition was stable and easy to record on the serial server. Only data transfer to shore depends on local signal quality.

The solar modules (150 W_{Peak}) with a storage battery of 120 Ah were sufficient for all sensors, the serial server and the communication unit.

To work around the varying GPRS signal quality, communication via satellite is foreseen in this concept.