DATA TOWER

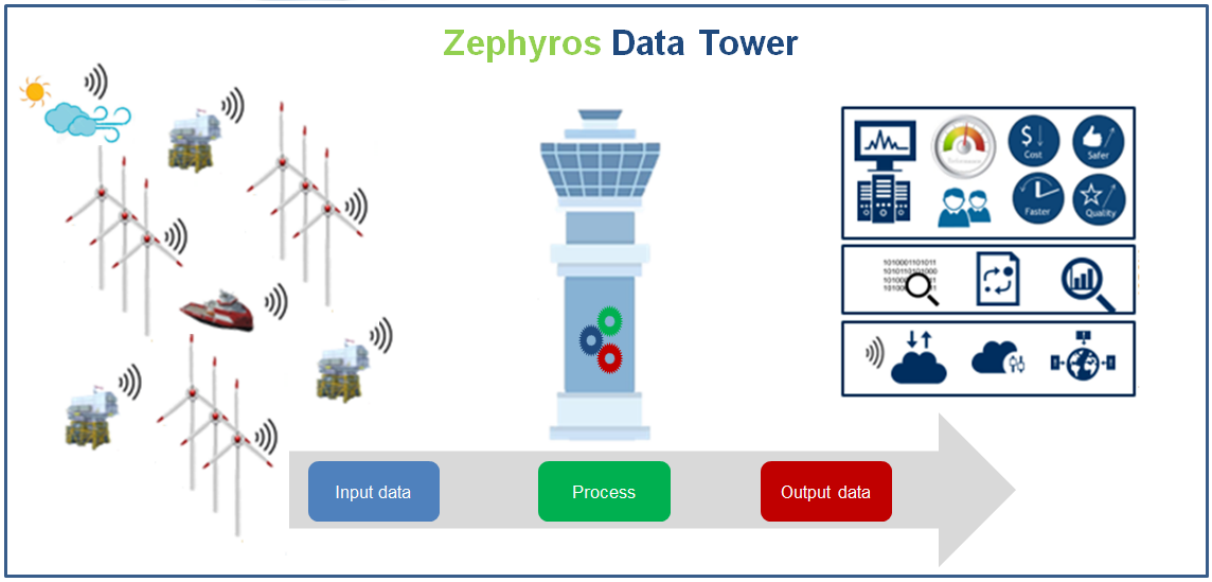
Offshore wind energy plays an indispensable role in meeting the objectives of the Dutch energy agreement. The objectives are to have operational 4.4 GW in 2023 and then to increase this to 11,5 GW in 2030. Dutch industry can make an essential contribution to these objectives through smart operation and maintenance (O&M) of wind farms at sea, resulting in a world-class standard on maintenance, management and operations.

Zero Downtime and Zero on-site Maintenance

World Class Maintenance cooperates with the Center of Expertise Water & Energy to set up and develop FieldLab Zephyros. This initiative unites the Dutch offshore wind sector (industry, education and knowledge institutes) in achieving better offshore wind energy performance. The goal of Fieldlab Zephyros is to develop, test and demonstrate innovations and to develop related knowledge and skills. The ultimate goal: no unnecessary downtime and no need for on-site people executing maintenance at the offshore wind energy system. This will accelerate the development of large-scale offshore wind, making it an ecological, economic and competitive source of renewable energy.

Zephyros Data Tower

The ambition of Zephyros is to create an umbrella Data Tower functionality for the operation and maintenance of the North Sea offshore wind system.



This (virtual) Data Tower receives (real-time) data from the total North-sea offshore wind system on a large number of indicators. Consideration will be given to:

- sensor and diagnostic data from the assets;
- inspection and maintenance data;
- operational data from the management and maintenance operation;
- supply chain data;
- meteorological data;
- etc.

Fieldlab ZEPHYROS DATA TOWER

The starting point is that all owners/operators participate in this Data Tower and make their data (protected for third parties) as much as possible real-time available.

From data to recommendation

Using algorithms and machine learning, performance- and performance killer information of the total system will become available at an early stage related to Operations & Maintenance activities. This makes it possible to give high-quality advice to the individual (wind farm) management organizations regarding failure behavior, condition of the assets, performance improvement, lifetime extension, maintenance optimization logistic optimization and benchmark information between (types of) windmills and total wind farms.

Cyber security

The initiative takes into account the growing concerns about the cyber security of the electric grid. The fundamental issue at stake is to determine the next steps for improving grid security. Thereto the Zephyros Data Tower will also consider cyber security aspects of a shared North-sea offshore wind system and provide operators a best of breed solution.

Approach

The advantage of the Data Tower lies in the large scale applications which oversee the entire system with all relevant aspects, allowing cross-fertilization of knowledge, (real-time) data and the development of best practices. For the owners/operators, this results in increased operational efficiency in addition to financial benefits. The use of resources becomes more targeted because the need for maintenance will be known earlier and more specifically.

The aim is to investigate, through a research project the design requirements of such a data tower, the possibility to obtain the required data, to quantify the benefits by means of a business case and to visualize the required investment.
If the business case turns out to be positive, a joint industry research project will be started, aiming to actually design the Data Tower, testing it on a small scale (test lab) and then on a larger scale in a living lab with support from multiple owners/operators.

Participating organizations in this initiative are:

STORK A Fluor Company · UNIVERSITY OF APPLIED SCIENCES · TenneT Taking power further · SPM condition monitoring solutions · CGI · ECN · TNO innovation for life · UREASON Responding to your environment

Start innovating together

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