

Central Management Systems: under the spotlight



PES hears from Rainer Duus, Project Management & Sales, INTEC, as he discusses the ever growing importance of Central Management Systems within the wind sector....

INTEC Industrial Technologies has stood for highest quality and reliability since its foundation in 1999 in Dietramszell near Munich.

In recent years, we have been able to expand our business activities based on sustainable growth. We offer our customers sophisticated engineering solutions in the fields of aeronautical engineering, naval systems and automotive engineering.

Recently, INTEC expanded its maritime business by opening a branch office located in Wilhelmshaven near its customers: German Navy, Federal Waterways and Shipping Administration, as well as wind energy customers. In this sector, we specialise in systems engineering and high-tech system integration. We are capable of designing, developing and implementing IT-systems or subsystems, to support them and to conduct after-sales services; our project processing complies with international standards such as V-model or DoD MIL-STD 498.

Central Management Systems for Offshore Windfarms

The modern economy cannot function without central management systems –

they control and manage large amounts of information in all areas of industry and/or administration. Incoming info is processed and displayed in a way most convenient for human senses to perceive. Sectors like renewable energy will not be able to do without central management systems when facing current and future challenges.

During the construction, operation and maintenance of offshore wind farms not only in the North and Baltic Seas, wind farm operators need to consider complex, maintenance-intensive and safety issues. Operators are facing major challenges, due to offshore wind farms' locations in the open sea, which are hardly or non-existent for onshore facilities, at least in terms of complexity. A lack of electric power supply infrastructure, mobile telephone systems or the Internet renders offshore operations significantly more difficult and thus requiring efficient, as well as, sustainable solutions. Offshore wind farms are complex and demanding working environments that require a smooth distribution of information without any losses. Thus, crucial data needs to be available promptly to all members of staff.

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For this reason, operators depend on innovative solutions which can quickly be adjusted to evolving processes and requirements in order to optimize costs and implement or comply with new safety regulations. This means that software support by a central management system is essential and indispensable for the deployment and operational phases as well as the maintenance: INTEC Industrie-Technik GmbH & Co. KG is able to provide this.

The Benefits of linking Information

The establishment and subsequent operation of offshore wind farms is a costly and technically challenging task. The operator has to commit to statutory regulations and guidelines and ensure personnel safety. This includes, for instance, compliance with regulations on offshore working time or proof of workers' and vehicles' current classification as offshore-capable based on qualifications and certificates.

In addition, operators have to ensure that the wind farm does not constitute a danger to maritime and air transport. Thus, offshore windfarms are required to be sufficiently marked for air and maritime traffic. This is provided by using visual features and radio equipment on wind turbines which must be regularly checked and maintained.

Operators have recourse to various IT-systems and sensors for handling these tasks e.g. AIS, radar, wave measuring buoys or weather stations. All of these systems gather a variety of data. Mostly, these data are in no way related to each other. Thus, these individual records can only be represented as a single piece of information. The fact that this info is in no way interconnected impedes all possibilities for process optimisation and personnel expenses remain high. The planning and deployment of staff as well as

the assessment of qualifications for the work-to-be-performed still have to be accomplished, coordinated and monitored manually. If an IT-based, structured maintenance instructions storage is unavailable, maintenance operations require much more intricate planning. In the worst case, costly special equipment has to be located if it cannot be found in its rightful place.

Representation, Management and Monitoring

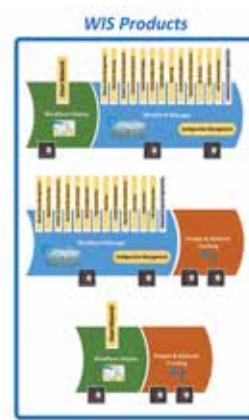
These are precisely the processes supported by central management systems. The existing IT-infrastructure can remain in use and serves as an additional interface for obtaining information. Hereby, a central management system follows the representation; management and monitoring of offshore wind farms. Ideally, this system should be composed of:

- Maritime Surveillance
- Management/Administration
- Staff/Material Tracking

These components ensure that information will be processed, linked and displayed.

The management and administrative system enables operators to gather staff-, vehicle- and wind farm master data. Furthermore, qualifications and certificates can be added. The system then automatically determines whether a person or vehicle is currently and generally qualified for offshore application. The system notifies any missing elements to a record e.g. a missing document or validation expiry. Thus, the respective companies or ship owners can be informed promptly. The complete records of staff and vehicles are readily available for optimal planning and creating all the required work- or access permits.

Even during scheduling, it can determine whether all staff and vehicles are qualified for the offshore work to be performed. The system automatically prevents overlaps and monitors compliance with working time rules. After scheduling, the system gathers all corresponding documents and required information on spare parts in order to inform the technical staff. Technicians can effortlessly locate tools, spare parts and other equipment via material tracking. Ongoing operations are monitored and coordinated by the control room via maritime surveillance. Maritime surveillance





displays the wind farm and maritime traffic in the area optionally via AIS, radar or further sensors like CCTV from within the wind farm. Thus, operators are provided with a current visual of their work and application area.

All employees receive the same info

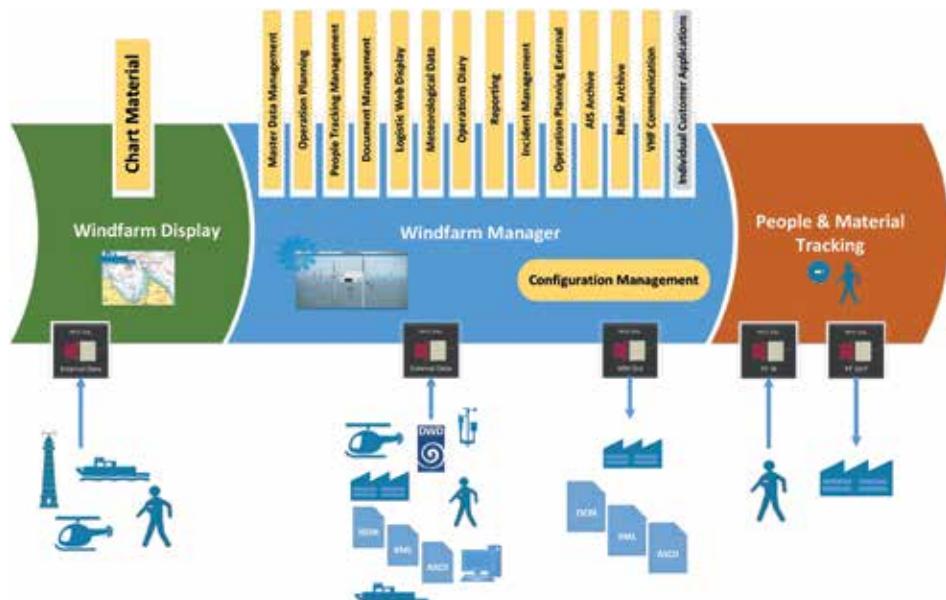
If operators are in possession of a central management system including an interface for maritime surveillance, additional information can be added to the data. People and Material Tracking may also be added, or current relevant shipping traffic may be monitored exclusively. It is also possible to view the construction status of a wind farm or to display cable lines including their status within the wind farm. The deployment of personnel and vehicles within the wind farm can be actively supported with all relevant information by the control room.

The great advantage of central management systems:

All employees receive the same quality of information, even across departments. The networking of information and the central management system allows the maximization and optimization of the process flow, personnel deployment and expenses. Consequently, the central management system supports not only one section of the wind farm (e.g. the control room), but also other departments responsible for technical and logistic processes.

Sustainable, constantly updated systems are better than stand-alone solutions

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legal provisions, processes and, above all, technical challenges. The offshore wind industry is still a very young business and thus constantly undergoing rapid changes requiring flexible responses. IT management solutions created for one particular wind farm operator usually involve high acquisition as well as maintenance costs. As a result, the software suppliers' continuous development of a product and the updateability of the existing system are substantial features to be considered when procuring a central management system.

Central management systems' software producer, INTEC Industrie-Technik has focussed specifically on these special requirements. Many years of experience have proven that IT management solutions explicitly created for one specific customer, so-called stand-alone solutions, are limited in the extent they can be adapted to new technical challenges and changing environmental influences. It is particularly the sustainability of an IT management solution that bears most

potential for long-term cost and planning security.

Taking in to account all above INTEC has developed WINDFARM INFORMATION SUITE (WIS). WIS combines three products:

- Windfarm Display (Maritime Surveillance)
- Windfarm Manager (Configuration and Administration)
- People, Material and Vehicle Tracking

These are purchasable in a package, individually or in any combination, according to the customers' personal needs. A combination of all three provides a suite ensuring that operators can have their processes mapped out and executed from a single user interface. As a highly flexible licensing model, this solution guarantees long-term planning and cost security.

WIS undergoes continuous development and enhancement. Nowadays, INTEC is able to provide further technical (SCADA)

and commercial management of offshore windfarms as well as the construction of control rooms for wind farms as a complete package. Construction of control rooms comprises:

- Individual advice and planning of new buildings, reconstruction and redevelopment
- Ergonomics and Design studies
- Large Screens
- Light technical calculations
- Furnishing of control rooms
- Interior construction /Drywall construction
- Construction Management and installation ■

For more information please go to:

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