ghMaritime Offshore - Wind Farms

Proactive protection of your wind farms - and timely responses to potential threats

ghMaritime Offshore Wind Farm is a fully automated surveillance and safety solution which effectively minimizes the risk of ship collision and collateral damage on offshore wind turbines, transformer stations and export cables. Compared to the conventional safety measures currently applied at wind farms, the solution is designed for proactive protection - for timely and precise responses to potential threats.

Benefits

Proactive and cost-effective security
Timely communication and warnings are effective preventive measures to protect costly assets from collateral damage, ensure uninterrupted operations, avoid environmental disasters and, ultimately, the loss of human lives.

Reduced operational costs
24/7 automated surveillance reduces the requirements for inspections. Operators' time is freed for other tasks, thereby reducing or optimizing operational costs. Effective surveillance can also reduce unplanned downtime to a minimum.

Identify and document perpetrators
All activity in the defined surveillance zones is logged which provides the best possible evidence for correlating the occurrence of damages with a perpetrator. In case of an incident, the perpetrating vessel can easily be identified and its presence be documented for compensational purposes.

Continuous improvements
Advanced statistical analysis and reports of traffic patterns in and around the wind farm enables continuous risk assessment and a still better marking of the wind farm and its assets.

Features

Common operational picture
Though inherently automatic, the system provides operators with a high performance display system for a common operational picture of all activities in and around the wind farm. Display of warnings and alarms, a powerful data repository for statistical analysis, replay and documentation. Effective automatic tagging, colouring and removal of targets can be applied to minimize information overload and direct attention can be turned to unknown intruders. The system integrates, coordinates and combine information from the following main sources: AIS, Radar, VHF/FM and AM and CCTV.

Ship information
When the user clicks on a target (e.g. an AIS equipped ship, base station, virtual area, etc.) on the map, information about the target is displayed in the information window. All ship information can be displayed as labels on the map, attached to each ship. Historical tracks and projected heading can also be displayed for selected ships.

Replay mode
This allows the user to switch between Online mode and Replay mode. Replay mode allows the user to display old AIS data stored in the database. Online mode shows data as they are received from ships.

Zones and event triggers (WatchDogs)
Any number of zones around the wind farm can be defined along with event triggers which are activated when entering the zone or if zone regulations are violated, e.g. speed limits or anchoring restrictions. Within the zones all activities are

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logged and depending on the type of event, operators as well as vessels can be notified by message on display, SMS, light and/or sound. All alerts are fully configurable. Zones can be defined down to circular zones arround the individual turbines enabling the most accurate "near-miss" or collision registration. Examples of event triggers, also called 'Watch-Dogs', are:

- The Region WatchDog will monitor vessel traffic within a specified area. The WatchDog is activated when a vessel enters the area and deactivated when it leaves the area.

- The Passage Line WatchDog will monitor a specified passage line for vessel crossings.

- CPA WatchDog: The Closest Point of Approach/Time to Closest Point of Approach WatchDog can be set up to trigger alarms if a ship gets to close to a fixed structure.

- WatchDog event notification: WatchDogs can be set up to detect important events (such as: near-miss, collision course or if vessel enter/exit an area) and to notify users via e-mail or SMS.
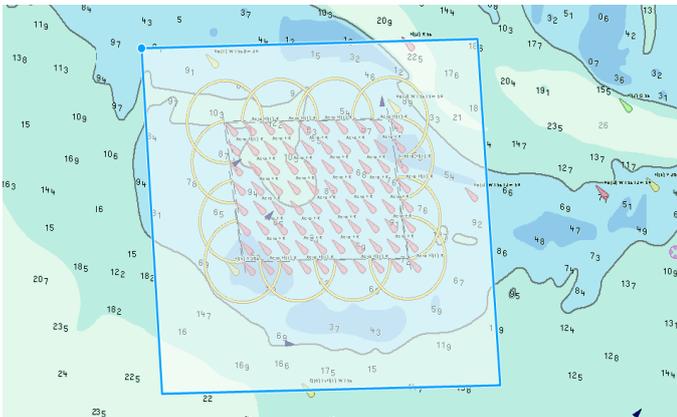

Figure 1. Examples of zones around a wind farm. Any number of zones can be defined along with event triggers which are activated when for example a vessel enters the zone.

Filtering options

Adaptable filters enable minimizing false alarms, i.e. alarms caused by vessels with legitimate presence in the wind farm's surveillance zones. In general, filtering can effectively be applied on all information and combinations of information from AIS and radar intelligence.

Statistics and reports

Based on logged tracks and events, the system can automatically and on schedule, e.g. on a weekly or a monthly basis, generate advanced statistical reports. Changes in traffic patterns, traffic density plots and reports of "near miss" situations are examples of valuable intelligence. Various visualization and export options are supported.

Surveillance of export cables

Cable zones can be defined covering export cables from the wind farm to shore. Exact mode of operation can be aligned with local/international rules and regulations for protection of export cables e.g. non-anchoring zones. Warnings will be given if :

- a vessel crosses into the zone

- if a vessel stays within the zone for longer than anticipated with the given course/speed
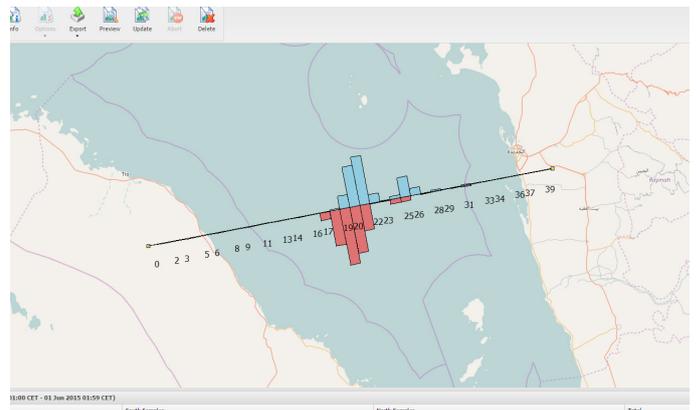

Figure 2. Passage line histograms are an effective tool to e.g. determine how many passages occur in each direction.

Technical description

The ghMaritime Offshore Wind Farms solution is based on our widely used and field proven AIS software - implemented by coast guards and maritime administrations worldwide. The solution includes a web-based display for operators and an event notification server hosted by GateHouse Maritime.

Training

GateHouse Maritime provides an online two-day training session where operators and administrators receive hands-on training in operating the solution for optimal utilization. The training session is included in the price of the solution.

Support & Maintenance

GateHouse Maritime offers 24/7 support and maintenance, which can be purchased in addition to the solution.

Request for price or more information
Please, contact us at maritime@gatehouse.dk for further information.

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