

MIROS OIL SPILL DETECTION SYSTEM SUPPORTS DUBAI POWER PLANT

CASE STUDY

BACKGROUND

The Jebel Ali power plant - alongside its water production complex - is the world's largest single-site natural gas power generation facility, owned and operated by the Dubai Electricity and Water Authority, an arm of the Dubai Government.

Situated on the coastline of Dubai, a form of coastal monitoring was desired to alert the operator in the unlikely case of an oil spill so that activities could be undertaken to limit any contamination as quickly as possible.

THE CHALLENGE

The coastline of Jebel Ali power plant has a large water intake and several high-pressure water jets that consume and release water back into the ocean. A key requirement of the oil spill detection (OSD) system was to monitor the surrounding area for potential oil spills that can pollute the water being used by the power plant. For the OSD system to work at its best and the project to succeed in this demanding environment, it had to meet this challenge in different phases:

1) Finding an optimal location for installation

Selecting the correct location is extremely important. The key considerations are:

- finding an unobstructed view of the target area
- the ideal installation height (above 15m)
- understanding the existing sea surface and wind conditions

2) Selecting the correct solution for each site

The next phase is ensuring optimum hardware and software solution is selected which is suitable for the detection of oil close to shore and in sea conditions where waves are usually calmer than offshore or deepwater conditions.

3) Planning the installation scope

A third challenge is faced in the construction of infrastructure, particularly with cabling. Thorough forward-planning will safeguard the best foundation and ensure connection needs are guaranteed and long-lasting.

4) Testing and fine-tuning the system

Once the equipment is operational, the first few weeks will be used to monitor and understand baseline performance to further optimize operational performance and fine-tune the system as such.

5) Training of end-users

As the last but very important task, we ensure that all staff using the system receive extensive user training, covering the full scope of installation and operation of the OSD system.

THE SOLUTION

Miros' OSD system was selected by The Integrated Systems LLC (TIS) as part of a complete shoreline surveillance system. TIS also performed the installation and commissioning to our high standards.

After evaluating the site characteristics (sea surface, wind conditions & location), Miros supplied a OSD solution together with a purpose-built radar with vertically polarized antenna. This combination of Miros OSD system and hardware is proven to be very reliable for detecting oil spills and providing higher uptime in marginal conditions when sea conditions are calmer than deep water oceans (for example: coastline sea states).

The Integrated Systems LLC (TIS) constructed a 20m high tower on the coastline of the Jebel Ali Power Plant

for installing the radar and the system components. The data was made accessible into a control room, situated a few kilometers away from the coastline using a dedicated fiber optics cable.

Once a potential oil spill is detected by the system, an alarm is triggered automatically to alert to the potential spill to the user. The Miros OSD records the data for each alarm for a period of 2 years locally, which can be used for further review if necessary. The system can also predict the trajectory (or drift) of a spill by assessing the sea state and wind direction.

Avoiding false alarms is key.

With the water jets of the facility in operation, Miros customized the OSD system with a “clutter map” which removed specific areas prone to disturbance from water jets. Measuring and removing noise prone areas is essential to removing the probability of false alarms. This ensures that correct information is recorded and considerably reduces the chance of false alarms.

The OSD software was integrated into the wider surveillance system installed by Miros’ partners at TIS, working alongside other software to ensure the plant is as prepared as possible to face problems that can potentially arise through power generation. This partnership resulted in operational synergies, with systems that complemented each other and ensure preventative measures can be implemented in the improbable event of an oil spill at the plant.

The installation and commissioning of the OSD system were supported remotely at Miros HQ. This resulted in the Miros team providing a flexible approach to the project, providing multiple training sessions for the installation and operation of the OSD system to operator technicians, control room managers, maintenance and service engineers as well as other relevant stakeholders.

THE RESULT

Miros delivered a working solution with a low false alarm rate that provides hassle-free surveillance of the shoreline towards a potential oil spill. This ensures

that our oceans and environment remain safe, particularly around sensitive areas that could cause harm to the public and corporate infrastructures. With Miros’ technology being highly sensitive, the installation of the OSD system equipped the facility with early detection and mobilization capabilities, capable of detecting a leak within a couple of minutes of it appearing. Due to the accuracy of the system, a reduction in false alarms also ensures that unnecessary operational costs are kept down.

“The system presents a much quicker alternative to that previously in place at Jebel Ali, allowing for immediate detection rather than the analysis of water chemistry entering the power plant through its reservoirs. This results in a slicker response time being available to an operator, allowing decisions to be made immediately and operations to be deployed to mitigate as much damage from a spill as possible through operational efficiencies” says the TIS Projects Director.

The Miros OSD system has a renowned reputation across the oil and gas sector, with more than 250 sold worldwide and three quarters of the European Maritime Safety Agency’s (EMSA) oil spill response vessels being fitted with the system. Alongside our partners at TIS, this reputation drove the project, engaging with Miros due to our nearly two-decade experience of these types of sensors.

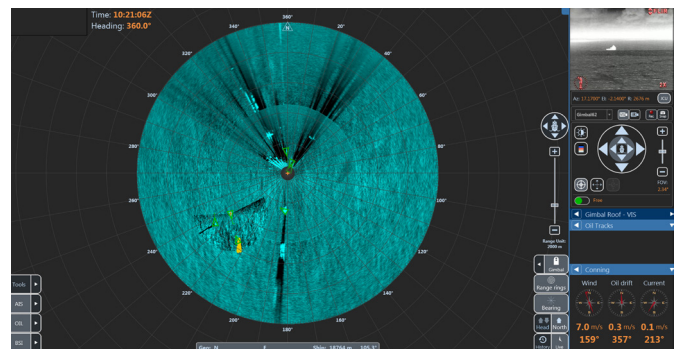


Image: Miros, OSD user interface example

CORPORATE HEADQUARTERS

Miros AS
Solbraveien 20
NO-1383 Asker
Norway

Phone: +47 66 98 75 00
E-mail: sales@miros-group.com

UK OFFICE:
Miros Scotland Ltd.
31 Abercrombie Court
Prospect Road, Arnhall Business Park
Westhill, Aberdeenshire, AB32 6FE
United Kingdom