

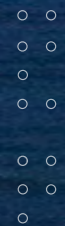


YOUR EXPERTS IN
**MARKING &
LIGHTING**
OFFSHORE
WINDFARMS



SABIK OFFSHORE
MARK IT · LIGHT IT · KEEP IT SAFE

www.sabik-offshore.com



Keeping offshore windfarms safe

Offshore windfarms are important assets that play an increasing role in the renewable energy transition. We're proud to have an important role in keeping offshore windfarms safe with our marking & lighting systems.



SAFETY IS OUR SHARED PRIORITY

From alerting pilots and mariners to potential hazards, to guiding search and rescue operations to the right location, safe vessel transfers and workspace illumination; everything we do focuses on creating a safe environment in and around your offshore windfarm.

PASSION & TECHNOLOGY

Our love of the sea and passion for technology has helped us gain a deep understanding of what it takes to properly mark and light an offshore wind farm.

Our wealth of experience helps us leverage technology to create inventive solutions developed specifically for offshore wind farms.

- ✓ Scale & Standardization
- ✓ Faster Installation
- ✓ Easy Commissioning
- ✓ Temporary & Permanent Solutions
- ✓ Experience for Peace of Mind

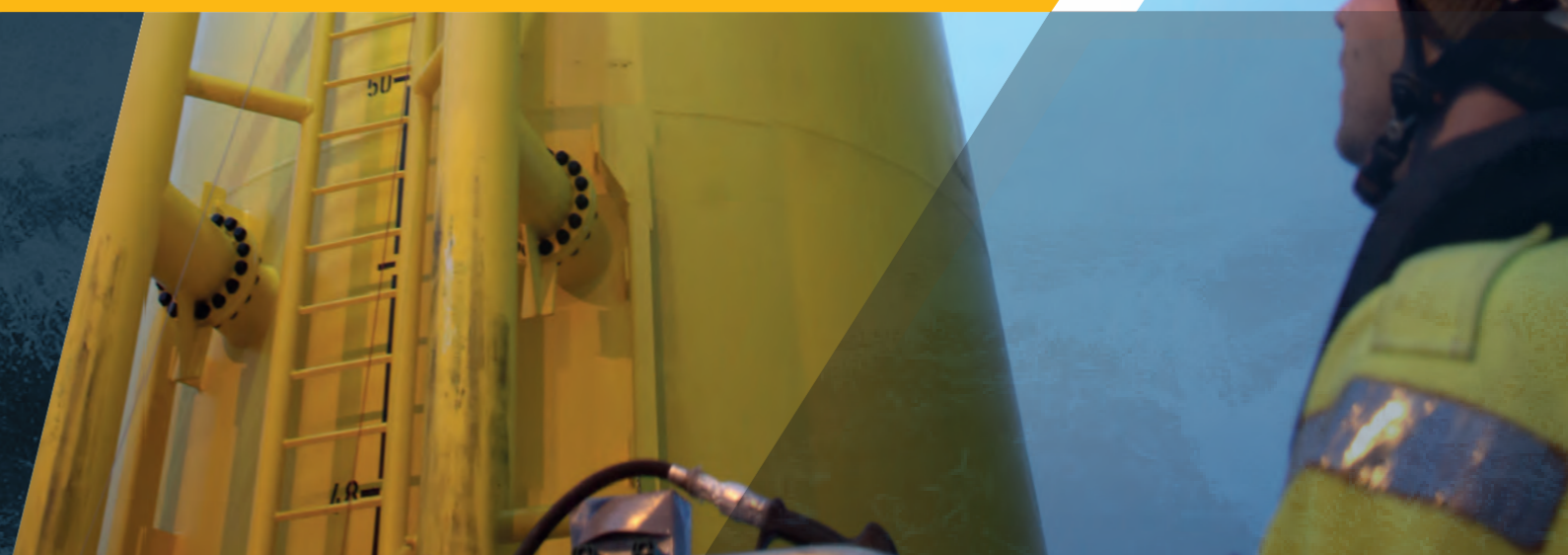
with innovative marking & lighting solutions:

 MARINE  AVIATION  SAFETY

These three areas define our existence. Tying them together into integrated systems lets us enable a safer, more sustainable world.

OUR CORE BELIEFS

-  Safety
-  Integrity
-  Expertise
-  Simplicity
-  Sustainability
-  Inventiveness



Marking & Lighting Offshore Wind Farms

SPS SIGNIFICANT PERIPHERAL STRUCTURE

An SPS is a structure on a corner or major directional change in the windfarm direction. Other structures on the periphery can also be considered an SPS determined by local requirements. As a general rule, these structures will have the most marking equipment on them.

OSS OFFSHORE SUBSTATION

The OSS is generally inside the windfarm. This acts as a central location to collect communication and energy to send to shore.

IS INNER STRUCTURE

These structures are within the peripheral boundary of an offshore wind farm.

IPS INTERMEDIATE PERIPHERAL STRUCTURE

These are other structures along the periphery of an offshore wind farm that will be marked with a yellow marine lantern.

PS PERIPHERAL STRUCTURE

All other structures along the periphery.

Windfarms are comprised of many separate structures. The marking system brings all these structures together so that the mariner or pilot sees that there is one large hazard in front of them. This done through various marking techniques. Each type of structure plays a unique role in the communication of this message. Local guidelines vary, this is a general description.



MARKING GUIDE

Explore the specific marking requirements for your region.

This is a general description, contact your local Sabik Offshore representative for specific details on your project.

The following pages present the three functional areas covered by our marking & lighting solutions. →



MARINE AIDS TO NAVIGATION

Aids to navigation help mariners understand their surroundings. Depending on the country the windfarm is located, a combination of navigation aids will be used such as:

Marine Lantern: yellow flashing light indicating an obstruction.

ID Sign: for nighttime legibility, we can either illuminate the daytime marking with a special floodlight or use a separate ID Signboard and light mounted on the railing.

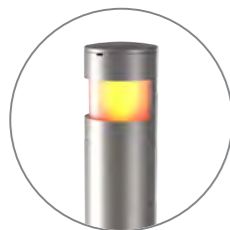
Fog Signal: in times of low visibility, triggered by a visibility sensor or MRASS a fog signal emits an audible signal to warn mariners of an obstruction in the area.

AIS: the Automatic Identification System signal shows the turbine location on digital maps.

MLCS: the Marking Light Control System acts as link between the ParkMaster™ server and the components on the railing. It gathers information, gives commands and holds the necessary battery backup for the components.

OVP box: the Over Voltage Protection box serves as a protective barrier as electrical lines transition from the outside to the inside.

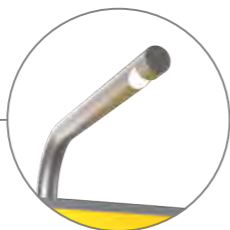
KEY PRODUCTS



Marine Lantern



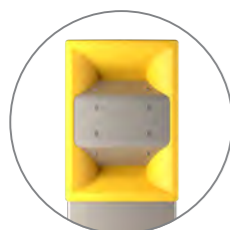
ID Signboard



ID Sign Floodlight



AIS



Fog Signal



Visibility Meter



MLCS



OVP Box

- 1 MLCS
- 2 OVP Box
- 3 Marine Lantern
- 4 ID Sign Light
- 5 ID Sign Board
- 6 Fog Signal
- 7 Visibility Meter



MARKING GUIDE

Explore the specific marking requirements for your region.

AVIATION OBSTRUCTION LIGHTING

Turbines reach high into the sky and pose a hazard for aircraft. Using a variety of lights, we can make the area safer for aircraft to navigate through and around an offshore wind farm.

Medium Intensity Obstruction Lights: sit on top of the nacelle and signal to a pilot there is an obstruction in their way.

Heli-Hoist / SAR Light Combo: the green Heli-Hoist signals to a helicopter pilot that it is safe to commence lifting operations on a turbine. The SAR light can either be a separate light or combined with the Heli-Hoist light. This red light is part of a search and rescue program.

Low Intensity Tower Light: once turbines reach above 215m (699ft) an additional layer of communication is added. The tower light usually positioned just below the blade tip in its downward rotation and indicates to a pilot an additional height of the obstruction.

Visibility Meter: where applicable a visibility meter will dim the intensity of the lights according to atmospheric surroundings.

Aviation Light Controller: this acts as a link between the ParkMaster™ server, ADLS server (if installed) and the components.

KEY PRODUCTS



Medium Intensity Light



Tower Light



Heli-Hoist / SAR Light



Visibility Meter



Aviation Light Controller



Helicopter Corridor Light: ALS500

- 1 Medium Intensity Obstruction Light
- 2 Heli-Hoist / SAR Light
- 3 Visibility Meter
- 4 Aviation Controller
- 5 Low Intensity Tower Light



MARKING GUIDE

Explore the specific marking requirements for your region.

SAFETY LIGHTING

It is important to ensure a safe working environment for the service technicians on a wind turbine. While properly illuminating work spaces on the turbine, these lights must not overpower the aids to navigation communicating outwardly to the mariners.

Focused lighting creates a safe working environment through:

Platform Lights: these lights illuminate the platform where a technician will be walking and working.

Boat Landing Light: properly illuminating the ladder for safe transfer from vessel to turbine. These lights have a focused beam illuminating only the area needed to avoid light pollution and blinding reflection off the water surface.

Tower Internal Lights: providing enough light to work safely on the inside of the turbine tower.

KEY PRODUCTS



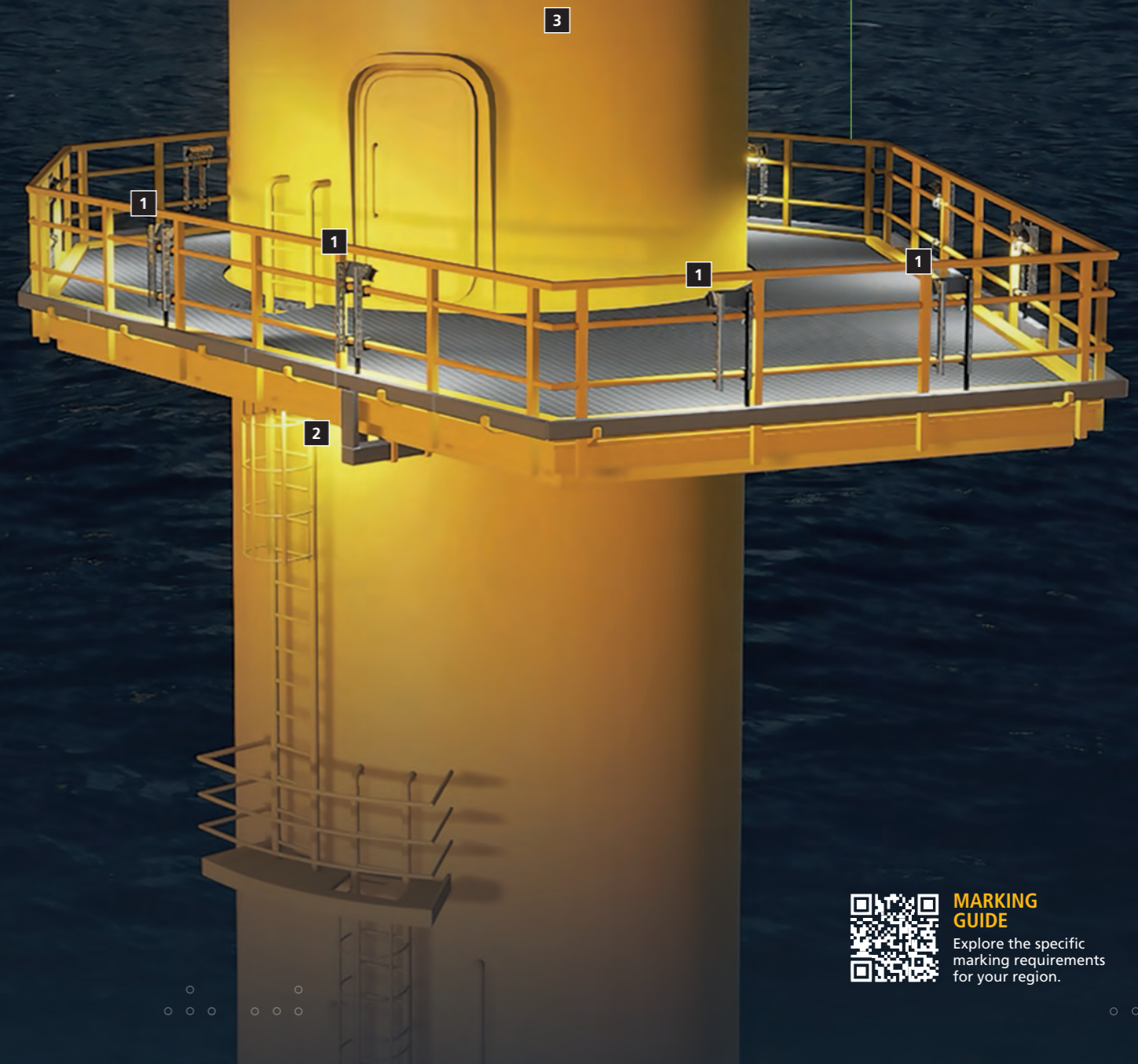
Boat Landing Light:
ALS450



Platform & Tower
Internal Light: LA40

This is a general description, contact your local Sabik Offshore representative for specific details on your project.

- 1 Platform Illumination Lights
- 2 Boat Landing Light
- 3 Tower Internal Lights



MARKING GUIDE

Explore the specific marking requirements for your region.

We're here to help:

At every stage we have the knowledge, expertise & skill to support in marking your offshore windfarm.

1. PLANNING



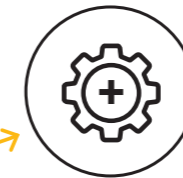
With our experience of marking systems and involvement with local authorities, we are equipped with in-depth knowledge to advise you on the marking set-up for your project. From detailed marking plans, installation diagrams, to simulations and equipment lists we'll help guide you through the permitting and design phase.

2. CONSTRUCTION



In our local markets we can provide area demarcation of the construction site through Cardinal and parameter Buoys including service and maintenance. We can also provide temporary self-contained lights start the construction process while we closely with our customers to ensure seamless project implementation on the permanent marking systems.

3. COMMISSIONING



During the commissioning process, our engineering team is ready to assist remotely. In some instances we can even provide supervision.

4. OPERATIONS & MAINTENANCE



Requirements change, the lifetime of a windfarm can be extended, new challenges may arise. We have knowledge to develop and adapt technology for your situation, from new requirements to lifetime extension projects.

Why Choose Sabik Offshore?

- ✓ EXPERTISE
- ✓ SPECIALIZED PRODUCTS
- ✓ PROVEN TRACK RECORD
- ✓ UNRIVALLED SOLUTIONS

22
YEARS'
EXPERIENCE

ACROSS
5
LOCATIONS

90
PROJECTS
DELIVERED

4,606
TURBINES
MARKED

33GW
PROTECTED

Mark it, Light it, Keep it safe!

Achieving Scale through
Simple Installation,
Easy Commissioning
& High Quality

Your Experts in Marking
Offshore Windfarms!



Learn more about
marking offshore wind
with our video series.



Get in touch. We're here to help.



Markus Barner

Business Development
mb@sabik-offshore.com | +49 173 26 74 907
Languages: German, English


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