



WHITE PAPER

AtoN Types, Solutions & Emerging Technology



www.sealite.com

We believe technology improves navigation™

Aids to Navigation (AtoN) play a pivotal role in maritime safety and extend much further than being the traffic lights of the sea. We are a long way from the days of a traditional lighthouse whose kerosene lamp served as a simple warning of danger ahead.

The navigational tools available to mariners today are vast and they continue to evolve as new technologies are realized.

Types of AtoN

Congestion within the world's ports and shipping channels continues to grow, with the maritime industry relying on AtoN to ensure navigational safety and to manage traffic conditions.

AtoN types include:

- A fixed platform (lighthouse or beacon)
- A floating AtoN (marine buoys with distinctive shapes and colours)
- Visual aids (marine lanterns and sector lights set to specific IALA flash characters)
- Non-visual aids (AIS transmitted by VHF, Racon, MET data, GPS, SATCOM)
- Audible aids (fog signals, horns and alarms)

These AtoN tools are critical in providing mariners with information that is precise and in real time.

They are best used in combination for validation and are often used to indicate current conditions, the position of other vessels and to provide forewarning of nearby risks and hazards.

Mariners have a responsibility to trust and abide by the information provided by these AtoN tools. In turn, AtoN managers have an obligation to ensure their assets are in good working order and are delivering accurate and reliable information.

Failure to comply to these obligations by either party poses a risk to navigational safety and can also lead to hefty financial penalties.



The IALA Constitution defines a Marine Aid to Navigation (AtoN) as “a device, system or service, external to vessels, designed and operated to enhance safe and efficient navigation of individual vessels and/or vessel traffic”.

~ IALA BASIC Documents, [Edition 1.0](#)



Emerging Technology

In recent years we have seen a new wave in the engineering and design of AtoN within the marine industry. The sourcing of products with advanced features is becoming more common, as authorities try to combat escalating operational costs.

The cost of power - and in some cases, changes in government regulation - have contributed toward the move to using energy efficient and solar powered solutions.

Increasing labour costs has created a strategic shift towards the use of digital technology to help streamline the management of assets by connecting them to advanced monitoring systems.

An example of this is the advent of fully self-contained LED marine lanterns. These offer an easy to install, low maintenance AtoN solution. When powered by solar and equipped with advanced [satellite monitoring](#), the asset essentially becomes a set and forget system.

With these advancements, there is no reason for AtoN managers to rely on calls from the field to find out an asset is out of service or has broken its mooring. The scheduling of frequent maintenance visits - all to simply check on the status of the AtoN - will soon be a thing of the past.

[Asset management systems](#) provide a low-cost option for monitoring and managing assets of virtually any type. These systems collect and securely store data, which is then used by the AtoN manager.

All stakeholders (asset owners, installers, managers or maintenance personnel) have a common view from wherever they are located at any time.

More recently, the introduction of [third-party gateway devices](#) has allowed products with different protocols to communicate with each other. They access, exchange, integrate and cooperatively use their data in a coordinated manner, providing they have the required permissions.



Streamlining AtoN Management with the Right Solutions

When undertaking any new project, or when replacing an already existing asset, project managers should take the following into consideration:

- The needs of mariners
- The level of risk to mariners
- Site requirements
- Capital investment for the project
- Ongoing maintenance requirements

The first step should always be to evaluate the level of risk. The IALA risk assessment toolbox provides guidance for AtoN managers. Once a complete risk assessment has been made, asset specification and selection should take place.

This selection should be based not only on the initial project budget, but also the estimated investment over the life of the AtoN.



It is important to make a considered decision around the style of lamps and their energy usage. Older style lamps can be more expensive in the long term, due to the cost of frequently replacing parts and the high power costs.

To significantly reduce operating costs, a combination of LED lighting, solar power and battery backup is best.

Ongoing maintenance is another cost that can quickly add up. When selecting a floating AtoN, UV-stabilised polyethylene buoys are a good alternative to steel, because:

- They are much easier to manoeuvre, light-weight in comparison to steel, and never require repainting.
- They are a low maintenance solution, often requiring only one inspection per year.
- Onsite service personnel can clean them quickly and easily with a pressure hose, without the need to remove them from service.

AtoN managers can save even more by choosing marine lanterns that offer remote monitoring and control.

It is best to use these in critical field locations where you have the resources to respond.

Monitoring and control provides reassurance that an asset is performing as expected and positioned on station, where it should be.

Connection to an asset management system provides improved visibility, with assets only requiring attention onsite when an alarm is triggered or when a reduction in performance is identified.

Maintenance visits can be scheduled by AtoN managers less frequently, and prioritised and scheduled ahead of time.

Want to Learn More?

Sealite has developed a series of on-demand webinars in collaboration with industry leading professionals. They are hosted by Malcolm Nicholson, Global Product Manager for Sealite who has over thirty years of experience in the marine industry.

The educational webinars are free to view and cover a variety of topics. Visit: www.sealite.com/on-demand-webinars/ to find out more.



Risk Assessment Training

IALA's World Wide Learning Academy offers [Level 1 training](#) to AtoN managers and other interested parties.

The IALA Risk Management Toolbox course provides the theoretical and practical training necessary to have a satisfactory understanding of:

- IALA Waterway Risk Assessment Program (IWRAP Mk2)
- Port and Waterway Safety Assessment tool (PAWSA)
- Simplified IALA Risk Assessment Method (SIRA)
- Simulation

Further details on IALA's World Wide Training Academy can be found [here](#).



The Sealite Difference

Sealite is known in the industry for delivering what the others can't. This is the convenience of a complete packaged solution.

The business is in the unique position of being able to match Aids to Navigation buoys with marine lanterns, mooring, hardware and sinkers to deliver a complete packaged product.

With satellite connectivity and Star2M, the customer can then manage the solution from anywhere at any time.

For customers that require something outside of the range, bespoke products can be designed and manufactured to meet customer specific requirements.

With authorised distributors located in most countries across the globe, the support you need with local knowledge and expertise is not far away.

We are committed to the manufacture and delivery of quality products that are built to last.



About Sealite

Sealite is a global manufacturer of marine Aids to Navigation. The company is headquartered in Australia, with manufacturing and office locations in the United States, Singapore, Colombia, and the United Kingdom.

The Sealite team is dedicated to servicing the marine industry through the efficient design and production of leading-edge products.

Through close working relationships, maritime authorities and private customers around the globe now trust Sealite to enhance the safety of their operations.

For more information about Sealite, please visit our website at www.sealite.com, email us at info@sealite.com, or call us on one of the numbers below.

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All Sealite products are manufactured to exacting standards under strict quality control procedures. Sealite's commitment to research and development, investing in modern equipment and advanced manufacturing procedures has made us an industry leader. By choosing Sealite you can rest assured you have chosen the very best.



- ✓ Experienced & Trained Personnel
- ✓ Precision Construction
- ✓ Worldwide Distribution Team
- ✓ Total Quality Management
- ✓ Agile Manufacturing
- ✓ ISO9001:2015
- ✓ Product Innovation
- ✓ Rapid Turnaround

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