

# Watching Waves



**Busy Singapore port adds sensor technology to ensure safe berthing**

MISSION: WATER STAFF

In today's global economy, the shipping industry serves as a silent partner to connect businesses and customers around the world.

According to the International Maritime Organization (IMO), over 90% of trade is transported via sea.<sup>1</sup> The vast majority of the food we eat, clothes we wear, and devices we use in daily life spent time on a ship.



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Singapore is one of the busiest ports in the world.



Land reclamation works for Pulau Tekong also require large dredging vessels.

Attracting over 130,000 vessels annually, the city-state of Singapore offers a glimpse behind the curtain into the shipping community.<sup>2</sup>

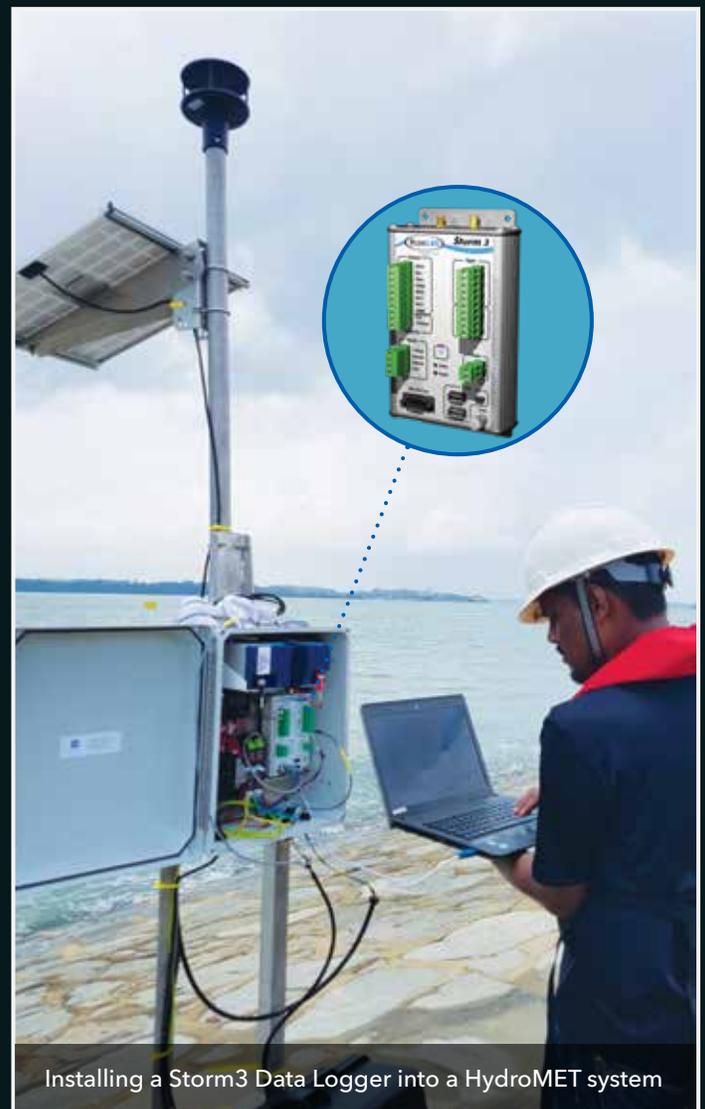
Since the arrival of Sir Thomas Stamford Raffles in 1819 – and his successful effort to establish a trading post for the British East India Company – Singapore has developed into a thriving economic hub for Southeast Asia. This development is attributed to the area’s strategic location for commerce, sitting squarely at the mouth of the Malacca Strait where 40% of all maritime traffic passes each year.<sup>3</sup> Ultimately, Singapore has some of the busiest ports in the world and is at the intersection of trade between 120 different countries, plus.<sup>4</sup>

## A Focus on Efficiency & Safety

With the large volume of cargo vessels relying on the country’s ports, the Maritime and Port Authority of Singapore (MPA) has the challenging task of managing the safe and efficient operation of surrounding waterways. While the average consumer may not spend much time considering how goods arrive at their doorstep, behind the scenes agencies like the MPA are intimately involved with the logistics.

Per the MPA, there are approximately 1,000 ships in Singapore at any given moment, with a ship arriving or departing every two to three minutes. The agency’s Port Operations Control Centre monitors vessel traffic for up to 10,000 ships, ensuring cargo is delivered in a timely manner, on schedule, and as safely as possible.<sup>5</sup>

This is no simple undertaking, especially considering the size and scale of container ships are exponentially growing in size, some reaching nearly 400 meters in length thanks to growing pressure to maximize shipping volume.<sup>6</sup>



Installing a Storm3 Data Logger into a HydroMET system

### Sources

1. [business.un.org/IMO/Profile](http://business.un.org/IMO/Profile)

2. MPA Singapore (Maritime and Port Authority of Singapore), *Facts & Trivia*

3. [The Economist](http://The Economist), *Why Singapore Became an Economic Success*

4. MPA Singapore (Maritime and Port Authority of Singapore), *Facts & Trivia*

5. MPA Singapore (Maritime and Port Authority of Singapore), *Facts & Trivia*

6. [Marine Insight](http://Marine Insight), *World's 10 Biggest Container Ships 2017*



Installing a SonTek SL500 instrument which transmits changing level and velocity data to the HydroMET station.

## Meeting the Challenge

Within an already busy port setting, large scale marine construction projects such as the land reclamation works being undertaken by **Hyundai Engineering** at Pulau Tekong require cutting edge systems to ensure the safe management of barge pilotage.

The combination of increased shipping traffic and the need for barges to safely anchor while waiting to offload sand to the island led to the development of standard operating procedures for safe vessel management. A key requirement of this SOP was the measurement of real-time water current and wind speed data to facilitate safe mooring. These parameters are critical for safe anchorage and piloting vessels.

In conjunction with Hyundai Engineering, a specialized team of technology experts from **Sea and Land Technologies Pte Ltd** supplied a [SonTek SL-500 sensor](#) to provide real-time data collection for current speed and direction. With integrated pressure readings, the SL-500 can also calculate wave-height and period, additional information to help ensure a ship's safe anchorage and berthing. This high accuracy sensor was paired with [YSI's Storm3 data logger](#) to record and transmit the data to the Hyundai Control Centre via cellular modem. From there, the information is used to provide alerts when mooring conditions are unsafe.

## Keeping up with Demand

As both sensor and information technology continue to evolve, ports and harbors will begin to rely more and more on real-time meteorological and water current data for decision making. Optimizing port operations will remain a fundamental mission for port authorities around the world. As long as consumers continue to demand faster delivery of goods – and governments seek to expand land reclamation work – the shipping industry will continue to deploy new strategies to move items from point A to B even faster (and safer).



The real-time data dashboard used to alert operators of rapidly changing, potentially dangerous conditions.

## About Sea and Land Technologies

Established in 1994, Sea and Land Technologies has been synonymous with the marketing and sales of high technology products and services designed for Marine Survey specializing in servicing the requirements of the user community in areas like Oceanography, Hydrography, Hydro-Met observations, Geophysical and Seismic studies as well as Coastal and Environmental monitoring.

Their commitment to meeting clients' needs and expectations is expressed in their proposition: **Global Technologies | Seamless Solutions.**

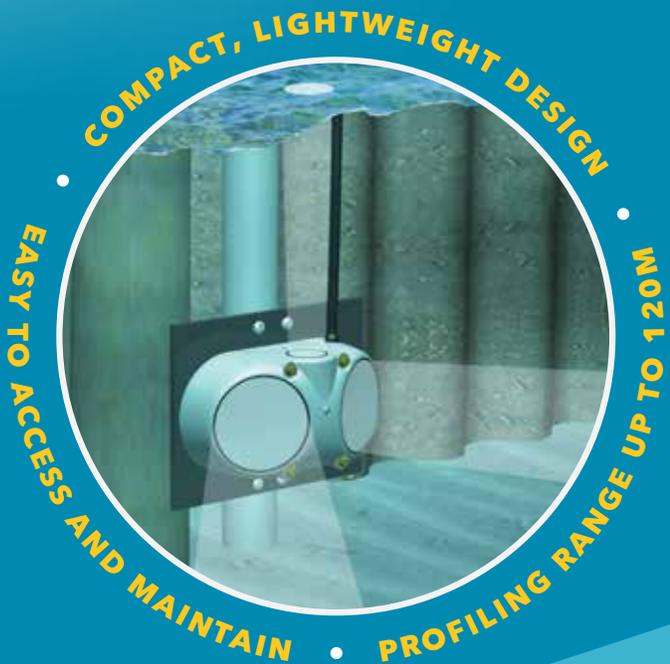
It is a shared ideal that inspires and drives them to bring clients the latest and best technologies from around the globe. It is a promise to deliver solutions that help push the boundaries in the pursuit of excellence.



For more information, visit: [www.sea-landtech.com](http://www.sea-landtech.com)

# SonTek-SL500

Superior velocity, level, and volume data quality



The **SonTek-SL500** was specifically designed for horizontal measurement applications and can be easily installed on the side of any wharf, bridge, piling or any other vertical structure.

#### Typical applications include:

- Tide, current & wave monitoring
- Vessel traffic systems
- Ship berthing
- Channel flow

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