

Combating pollution

Ferries are the perfect starting point for the electrification of commercial boats

WORDS: JAMIE PRATT

Ferries typically make regular, repeat trips to predetermined destinations.

This enables operating times and recharging requirements to be precisely calculated and the appropriate infrastructure put in place.

They're used throughout the world, so there's no shortage of opportunities to develop innovative design solutions and create vessels suited to specific local requirements. An ideal location for their implementation is Southeast Asia, where high demand and population density can lead to overcrowded waterways and unacceptably high levels of air pollution.

In Thailand, this situation is a cause for major concern in the country's capital, Bangkok. On the 372km (230-mile) Chao Phraya River, traditional wooden ferries, which are typically powered by old, excessively large engines, emit levels of pollution that contribute to a gray smog that frequently fills the air and chokes the lungs.

With an estimated 2,600km (1,600 miles) of waterways, Bangkok is widely known as the Venice of the East. It has 10 million residents, plus 23 million annual visitors, and demand for water travel is high. This has resulted in historic monuments, such as The Grand Palace and the Temple of Dawn, often being shrouded in a gray, polluted atmosphere.

Electric future

However, this could soon change thanks to a fleet of aluminum-alloy electric ferries that are currently under construction. Designed by Energy Absolute, Southeast Asia's leader in renewable energy technology, this unique ferry is based on a catamaran design.

The team has ambitious plans to build 42 of the vessels, which are expected to revolutionize waterborne passenger transport in Bangkok. With a passenger capacity of 200, each 24m-long (78ft) ferry will be powered by two electric motors and have 26 lithium-ion battery packs providing an 800kW/h capacity, with a range of up to 100km (62 miles) per charge. Maximum speed will be 13kts (15mph), which is faster than many of the ferries currently used on the Chao Phraya River.

Rapid charging technology will be used and the company plans to install a network of dockside fast charging stations. A vessel can be charged in around 15 minutes, so usually by the time passenger transfer is complete, the ferry will be ready to depart.

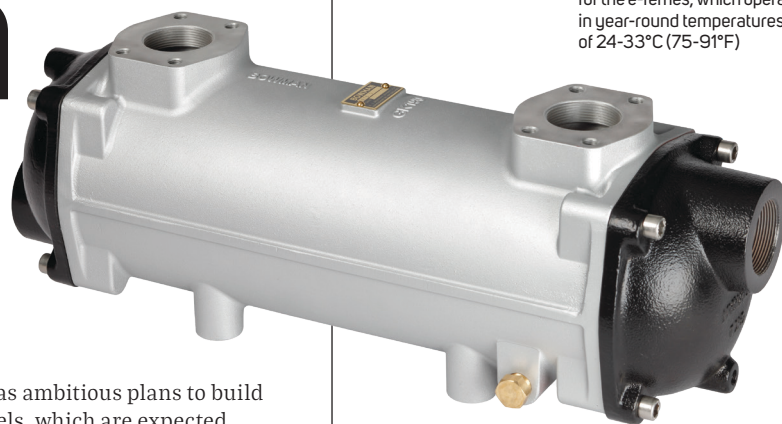
Cooling technology

Cooling was a major consideration; the high ambient air temperatures in Bangkok require a proven, reliable solution. After research, four Bowman GL400 marine

1

1. A typical Bowman marine grade heat exchanger, similar to those used in the Bangkok e-ferries

2. Efficient cooling is crucial for the e-ferries, which operate in year-round temperatures of 24-33°C (75-91°F)



specification heat exchangers were selected for initial trials.

With the trials successfully completed, Energy Absolute has begun ramping up production and the first new catamaran has now entered service. Early projections suggest it will double riverboat usage to over 60,000 passengers per day, with the new electric ferry accounting for around 50% of all users.

And, having been proven during the ferry's sea trials, Bowman's heat exchangers will be at the heart of the electric propulsion system, providing the cooling solution both for the batteries and the motors.

Bowman is now recognized as a world leader in cooling solutions for electric and hybrid propulsion systems. Hundreds of the company's heat exchangers have been installed in applications worldwide, and provide efficient, reliable operation. +

2

