



On Deck: Marine Electrification

The Cost of Combustion Engines

In 2018, boating and shipping (international, domestic, and fishing) produced 1.056 billion tons of CO₂. (International Maritime Organization)

More than 150,000,000 tons of unburned gasoline are discharged annually in the US. (EPA)

Additionally, 80% of the lifecycle cost of military boats is maintenance.

One hour of recreational boating produces the same amount of greenhouse gas emissions as driving 800 miles.





Marine Electrification Today

Case Study: All Electric Ferries in Norway

Ampere

- Operational since 2015
- 450kW electric motor
- 1.1-megawatt battery capacity
- Recharges in 10 minutes
- 360 passengers, 120 cars
- 30-35 trips per day



[MF Ampere - Corvus Energy](#)

[The world's largest electric car ferry in scheduled traffic on the Oslo fjord - Bastø Fosen \(basto-fosen.no\)](#)

Case Study: All Electric Ferries in Norway

Bastø Electric

- Largest electric ferry
- 4.3-megawatt battery capacity
- 600 passengers, 200 cars
- 20-24 trips per day



Case Study: X-Shore

- Launched their first prototype in 2018, entered series productions in late 2020
 - Two models: 28-ft and 21-ft day cruising boats
 - 50-100 nautical mile range



Case Study: Flux Marine

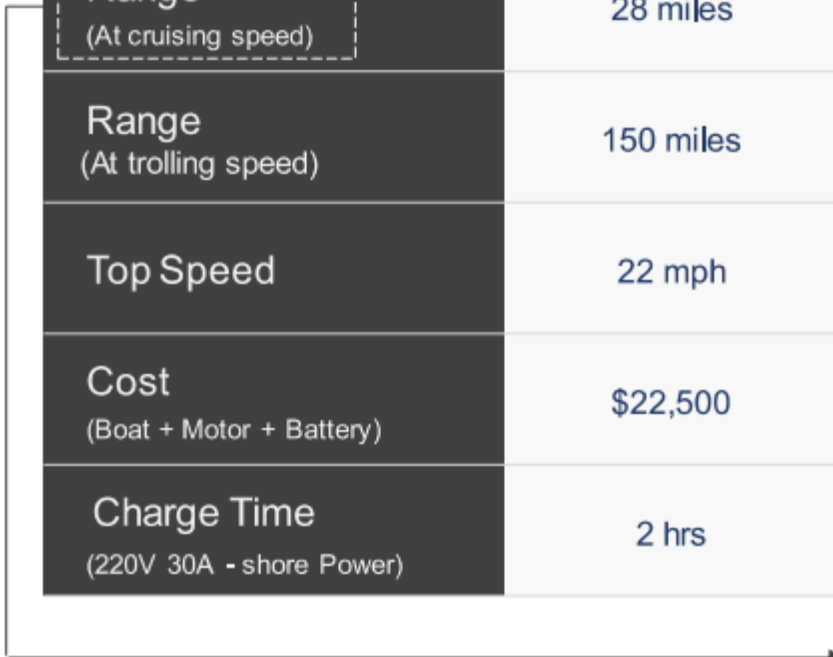
USA-based outboard manufacturer founded in 2018



15, 40, 70, and 100 HP outboard models, with plans to expand power range and step into the inboard market

	Inflatable		Dual Console		Deluxe RIB	
						
	15HP	40 HP	70 HP	100 HP	70 HP	100 HP
Range (At cruising speed)	28 miles	40 miles	33 miles	45 miles	45 miles	60 miles
Range (At trolling speed)	150 miles	200 miles	200 miles	250 miles	300 miles	400 miles
Top Speed	22 mph	30 mph	30 mph	38 mph	30 mph	36 mph
Cost (Boat + Motor + Battery)	\$22,500	\$35,000	\$100,000	\$120,000	\$120,000	\$150,000
Charge Time (220V 30A - shore Power)	2 hrs	3.5 hrs	9 hrs	12 hrs	9 hrs	12 hrs

The average boater travels between 7-15 miles per day





Questions & Conclusion