ORPC Autonomous Turbine Generator Unit

Presented to

6th Annual Entrepreneurs Forum

Group 2 Flash Talk, 3:15-3:45pm

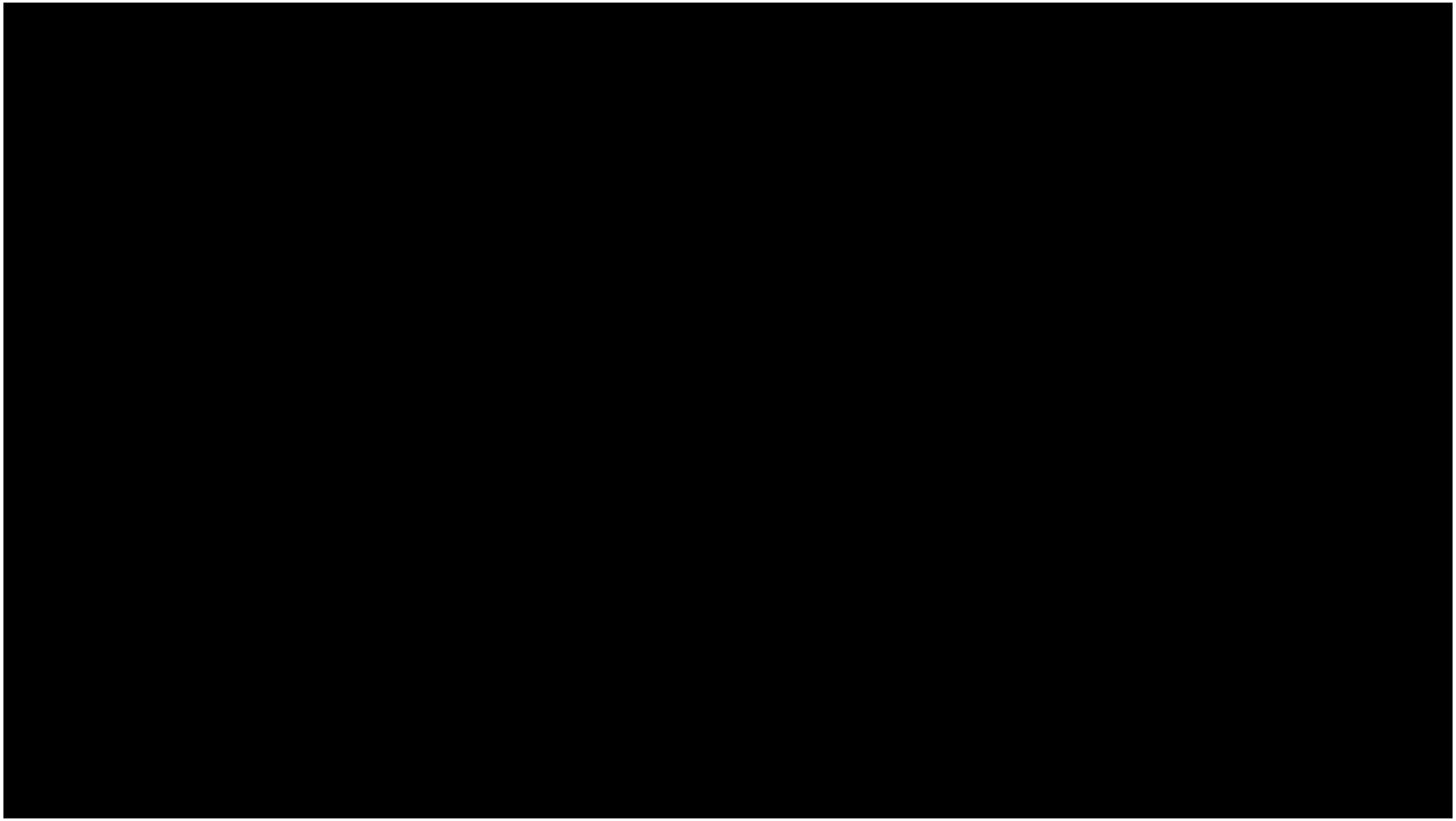
August 26, 2020

CMR CENTER FOR MARINE ROBOTICS

ORPC

Nathan Johnson, Vice President - Development

Proven technology



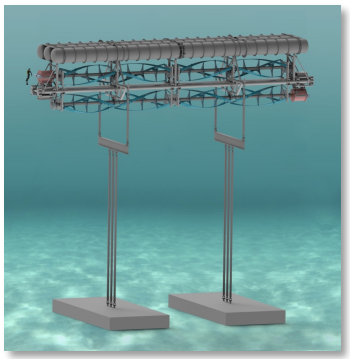
A Decade of Innovation from Maine and Alaska to Global Markets

2010
Largest ocean energy device deployed in U.S.

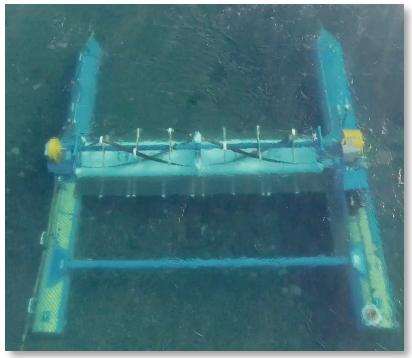
2012
First ocean energy device to connect to regional grid in all of the Americas

2013
Catamaran retrieval reduces costs by 60%

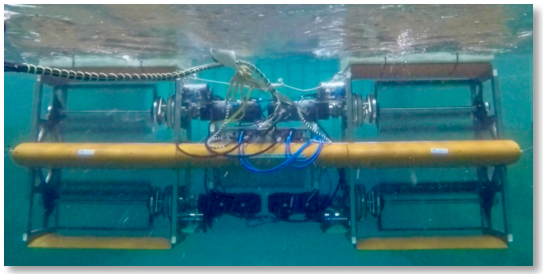
2014-2015
Self-deployment using ballast system



2016-2019
Buoyant tensioned mooring system



2019-2021
Commercial river system with storage and smart grid



2020s
Autonomous, self-propelled system

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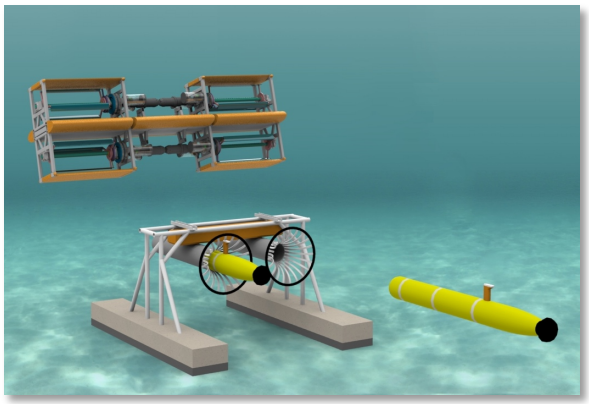
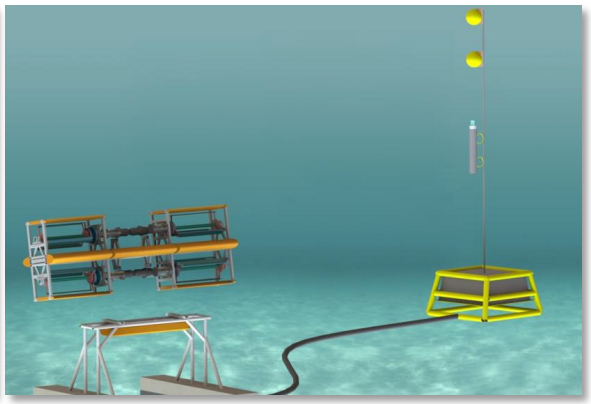
Specifications

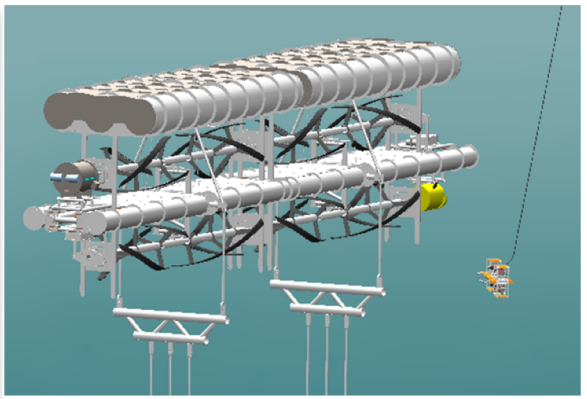
Dimensions	1.4 m x 3.9 m x 1.0 m
Dry weight	1100 kg
Generation at: 2 knots 4 knots 6 knots	 0.4 kW 3.2 kW 10.9 kW
Max thrust at 5 knots	 > 6,000 N (600 kg buoyant)

Market Applications

Military & Defense	Mobile Power & Platform	Tethered Life & Maintenance
UUV Charging	Site surveys & characterization	Subsea construction, heavy lift
Surveillance	Sensing networks	Subsea operations & maintenance
Counter Measures	Ocean chemistry collection & analysis	Subsea equipment relocation
Port Security	Geotechnical surveys & coring	Subsea salvage
Ocean Passage Monitoring	Deploying or retrieving instrument packages	







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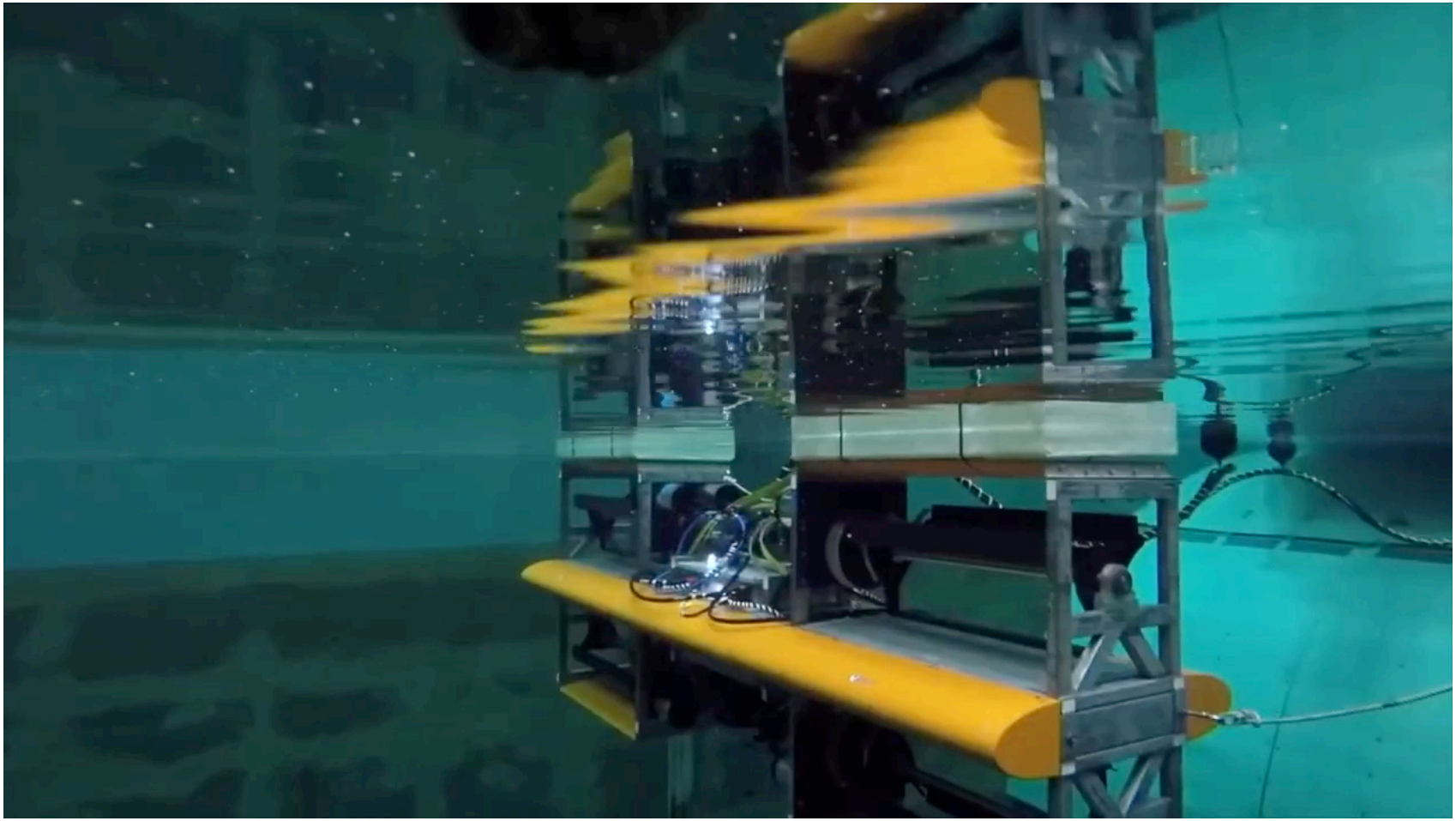
Autonomous TGU Testing



Can a Small Maine Town's Innovation Turn the Tides on Sustainable Energy?

PBS NEWS HOUR

The New York Times

The Search for Energy Takes a Turn Underwater

Thank you!

Nathan Johnson

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The Boston Globe

In Maine, a US first in tidal energy

FAST COMPANY

MOST INNOVATIVE COMPANIES 2013

THE WORLD'S TOP 10 MOST INNOVATIVE COMPANIES IN ENERGY