

Experience from the Field: Improving Performance & Reducing Cost in the Supply Chain

Presented to



Halifax, Nova Scotia
Session 9.1, 1:40-2:50 p.m.
November 6, 2014

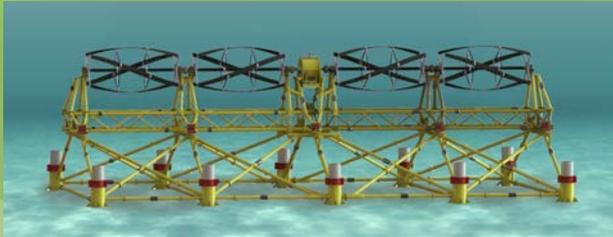


John Ferland, Vice President - Project Development

About ORPC

- Established ten years ago in 2004 to develop new technology and projects that generate emission-free electricity from rivers and oceans while creating substantial local economic benefits
- Modular, effective and proven core technology component (turbine generator unit, or TGU) with low vertical profile that has been adapted for tidal, river and deep water ocean current applications
- An industry leader in development of hydrokinetic energy projects, including community, agency and other stakeholder outreach, environmental protocols, monitoring and licensing, supply chain development, and maximizing community economic opportunities
- Launched ORPC Solutions in 2013 to provide development, regulatory and strategic assistance to colleague companies in the offshore wind, ocean and river hydrokinetic industry internationally.
- Headquartered in Portland, Maine; operations center in Eastport, Maine; and project development office in Anchorage, Alaska. Subsidiaries in Nova Scotia (ORPC Nova Scotia Ltd.) and Chile (ORPC Chile SpA). Currently 20 employees.

ORPC Power Systems



TidGen® Power System



TidGen® TGU

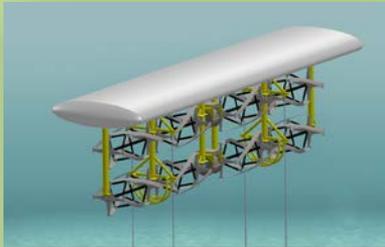
ORPC's patented turbine generator unit (TGU) uses proprietary advanced design cross flow (ADCF) turbines to drive an underwater permanent magnet generator.

TidGen® - for tidal and deep river sites

OCGen® - for deep water ocean sites

RivGen® - for river sites, particularly those serving isolated communities

**OCGen®
Power
System**



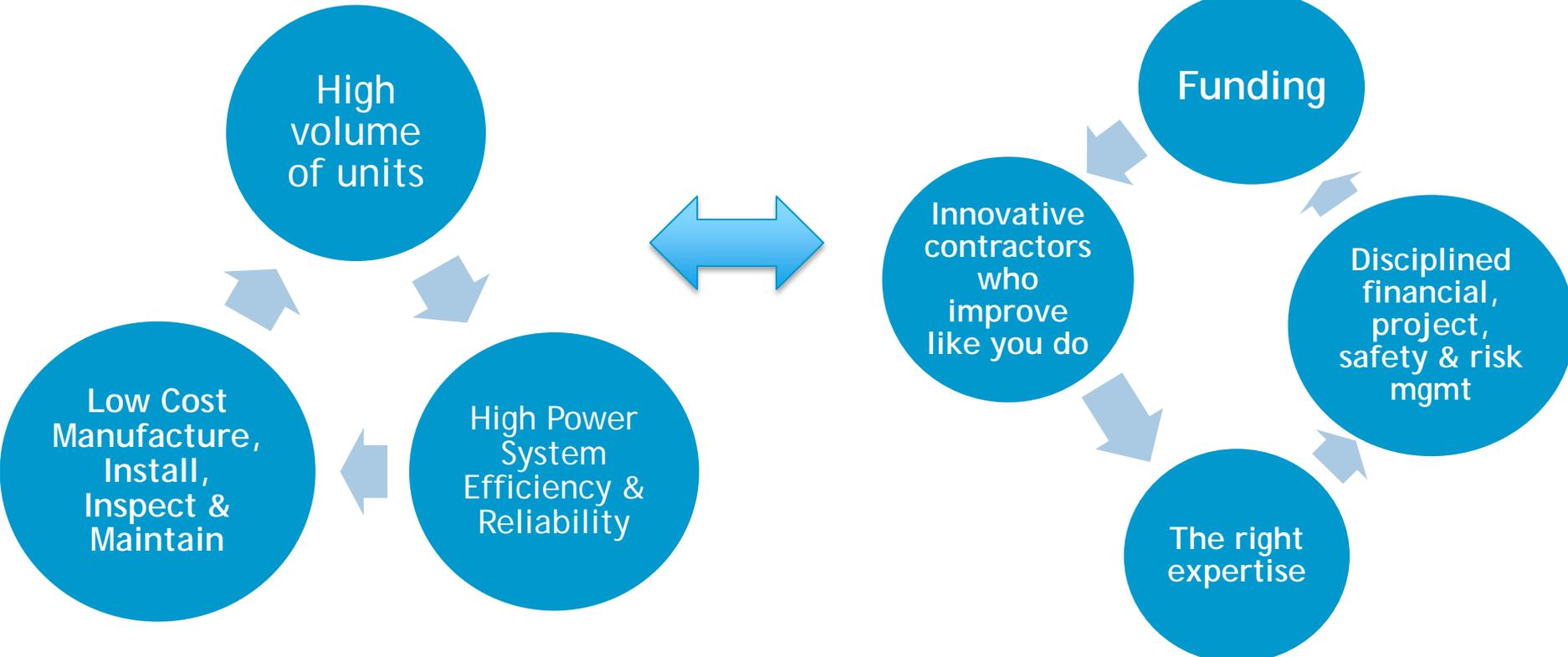
**RivGen®
Power
System**



Key Factors in Reducing Costs

What the Market Demands

What You Need to Satisfy the Market



Three Supply Chain Examples

- Improved field techniques
- Environmental monitoring
- Use of local knowledge and talent



Improved Field Techniques

Improved vessel type and procedures used for installation and retrieval reduced costs by 60%.

1st Generation - 2012



2nd Generation TidGen[®] - 2013



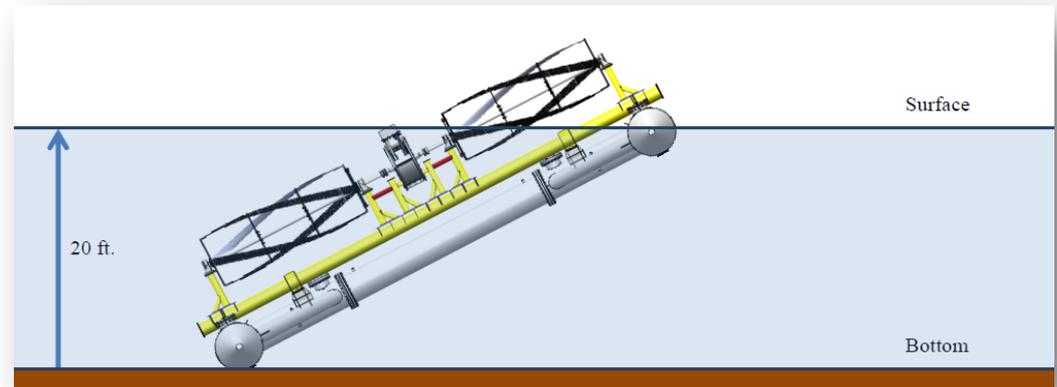
2nd Generation OCGen[®] - 2014



- Rivers have no slack tide.
- Anchors hold the device in place.
- Pontoon support structure design uses ballast methodology to eliminate the need for large cranes and other costly assets.
- Ideal for working in remote regions that have very limited locally available resources.

Improved Field Techniques

Self-Deploying/Self-Retrieving River Device



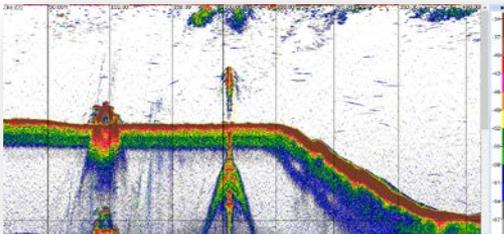
Approach to Environmental Monitoring

Challenges

- Limited existing data & methods
- Determining marine life interaction with hydrokinetic turbine
- Dynamic, rigorous marine conditions
- Cost

Solutions

- In-house management reduces cost by 50%.
- Be the face of the company with regulators and the community
- Work with best team of engineers and scientists possible
- Develop best practices and industry knowledge base
- Innovative uses and equipment
- Demonstrate the viability of adaptive management
- Seek third party funding for environmental work



Local Knowledge & Expertise



- Nobody knows the local waters better than the locals.
- Skill sets developed over time by contractors become invaluable, and efficiency and work safety are enhanced through experience.
- Choose good partners early. Changing horses mid-stream can be problematic, requiring costly and time consuming backtracking to develop the necessary capacity.

A horizontal splash of water with bubbles, rendered in shades of blue, spans across the top of the slide.

Thank You!

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