



Linking Academia and Industry: UBC / Blue Energy Collaboration



Presented to: OREG Symposium, Halifax, NS
by: Bill Rawlings, UBC

1 December 2006



Outline



Background

- ▶ UBC Facilities / Research
- ▶ Blue Energy

Western Economic Diversification Project

Collaboration Framework

Ongoing Research

Lessons Learned (to date....)





Facilities

- ▶ Ocean Engineering Centre
 - 60 m x 3.7 m x 2.4 m deep towing / wave tank
 - 800 m³ wave basin
- ▶ Rapid Prototype Machine
- ▶ 2 wind tunnels
 - boundary layer wind tunnel (5'x8' test section)
 - re-circulating wind tunnel
- ▶ 23m Wave Flume

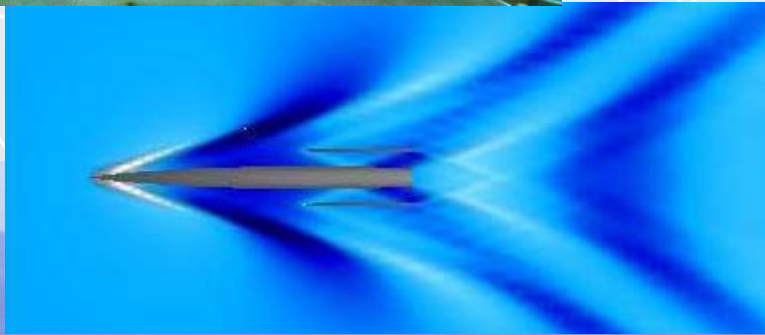
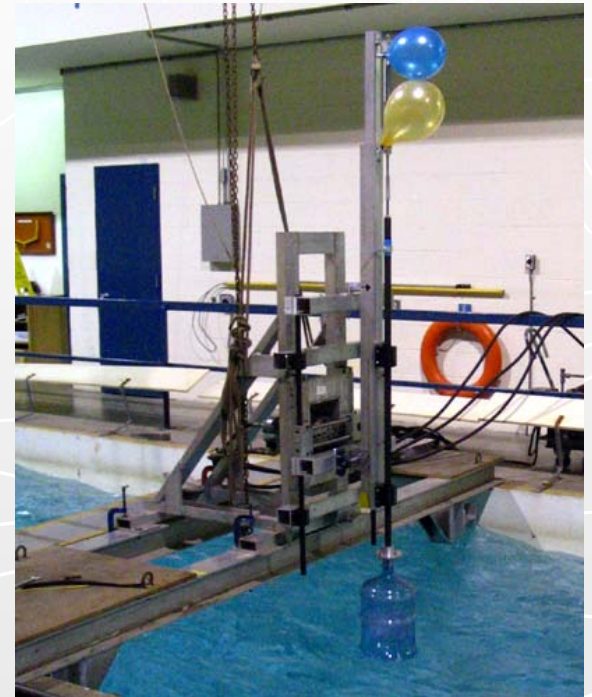
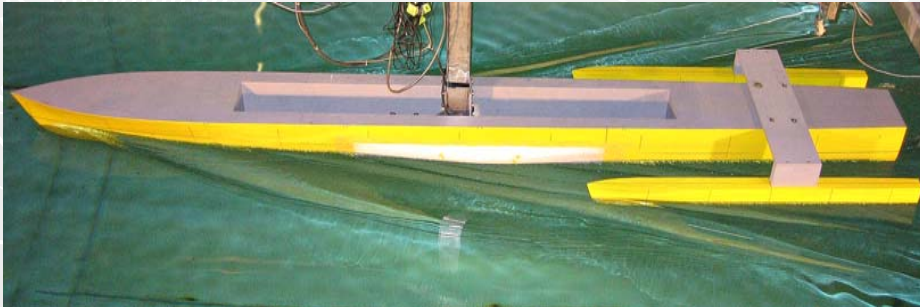




Recent Research

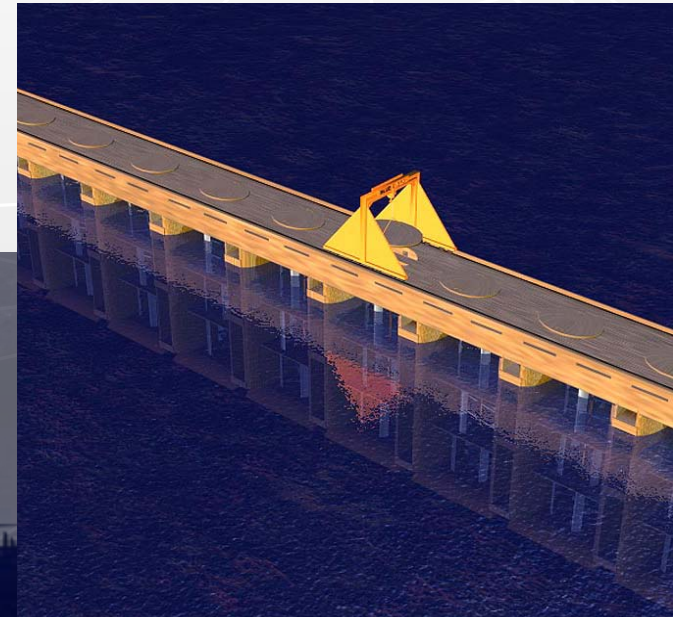
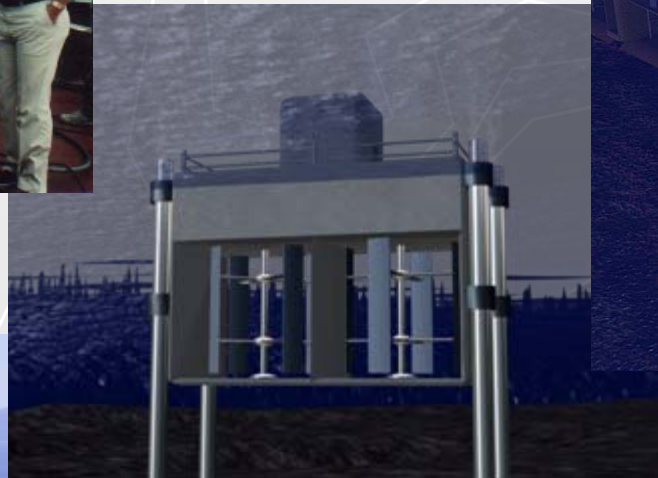
These facilities have supported recent research in the following areas:

- ▶ Ship hull optimization
- ▶ Numeric modeling of tank discharge
- ▶ Wave-buoy test bench
- ▶ Vertical-axis turbine research



Background – Blue Energy

- ▶ Developers of vertical-axis tidal current turbine technology
- ▶ Technology based on NRC research program from 1980s
- ▶ Intention of commercializing stand-alone remote units and tidal-fence configurations
- ▶ Approached UBC re: collaboration in early 2005





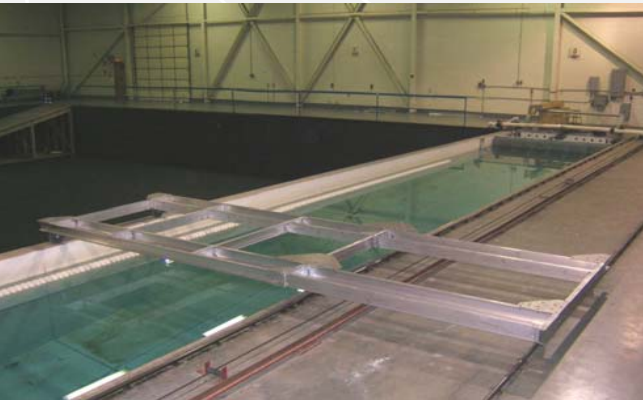
WED Project

- ▶ Even simple tests require many thousands of \$\$ in instrumentation and DAQ equipment
- ▶ Recognition of need to support ocean energy research in general
- ▶ Enhance Ocean Engineering Centre to provide that capability
- ▶ This led to the development of the **WED Research Capabilities Enhancement Project**
 - Co-funded by WED, UBC, Blue Energy Canada, BC Ministry of Energy, Mines, Petroleum Resources



WED Project

- Construction of an ocean energy testing platform
- Assemble a stockpile of instrumentation and DAQ equipment
- Subsidize co-op students to source/commission equipment and examine potential facility improvements
- Subsidize a research engineer and master's students to enhance computer modeling capabilities





WED Project Objective

Additional funding for hiring and traveling of OREG consultant to work with industry:

- ▶ work to establish ocean energy research chairs in collaboration with industry, academia, government
- ▶ consult with stakeholder groups province and nation-wide

...work to save towing tank from potential condominium development





Blue Energy / UBC Collaboration Framework



Two separate agreements in place:

▶ Grant-in-aid

- Donation to UBC for mutual interest research
- No right to IP by contributing company

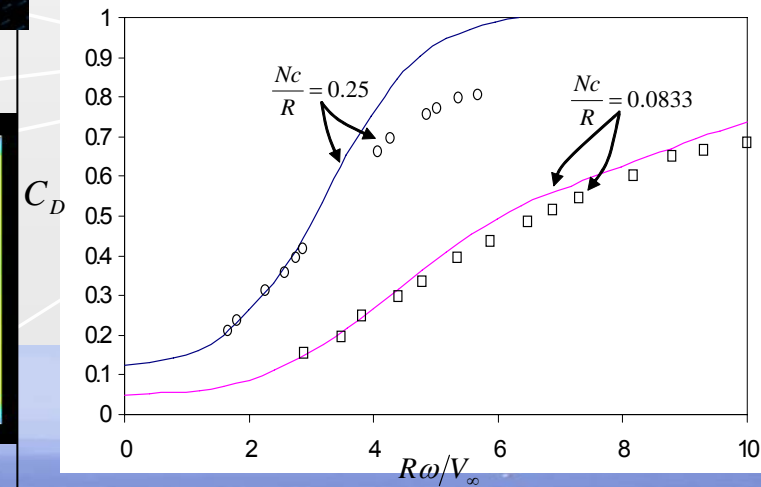
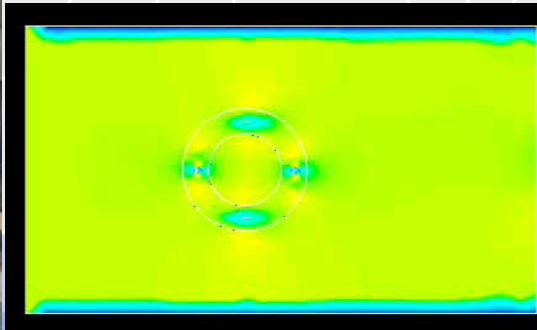
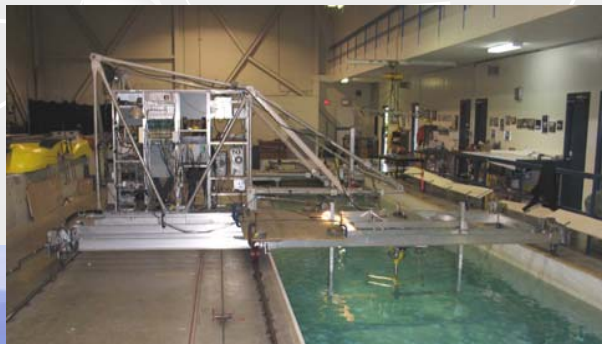
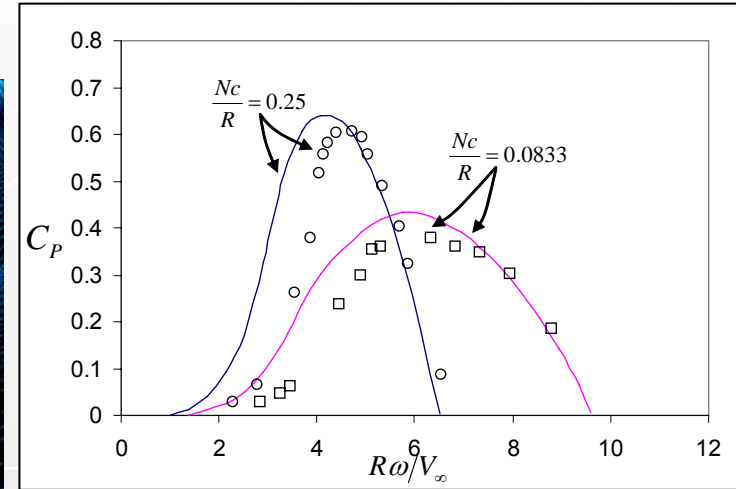
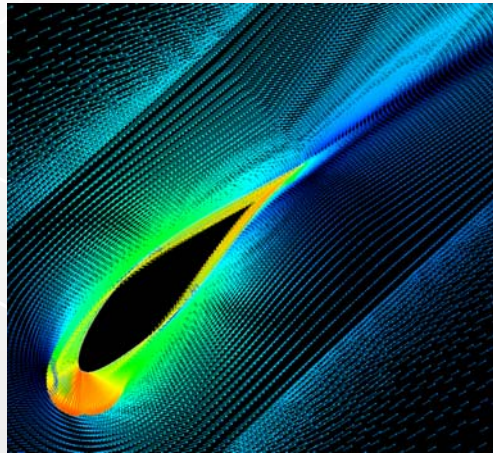
▶ Collaborative Research Agreement

- Rights to invention as follows:
 - UBC if solely developed by UBC
 - Sponsor if solely developed by sponsor
 - Joint if developed together by both UBC and sponsor
- UBC may grant sponsor a royalty-bearing license for UBC IP
- Commercial interests protected within clearly defined limits
- Overhead of 38% (excluding equipment) applicable



UBC / BE Ongoing Research

- ▶ Numerical modeling of vertical-axis turbine
- ▶ Experimental validation of predictions / results





Lessons Learned...to date

- ▶ People make the collaboration work (not necessarily researcher reputation, amount of company \$\$, or the agreement framework)
- ▶ The UILO is possible to work with; must remember they are out to protect UBC and not disrespect the company
- ▶ Industry may access resources that are otherwise difficult to access
 - Graduate researchers, technician input, hardware
- ▶ University establishes industrial partnership conducive to attracting top graduate students / researchers
- ▶ Towing tank facility provides a niche opportunity for ocean energy research
 - Accessible, fairly priced, controlled environment
 - Reasonably equipped for ocean energy testing