

# Breeze

INTERNATIONAL OFFSHORE WIND PARTNERING FORUM MAGAZINE

**As U.S. Offshore Wind Ramps Up,  
IPF Participants Get Down To Business**

**Tech Up Close: Marine Technology  
Demonstrations at the IPF**

**Jackups, Cable Ships & the Jones Act**

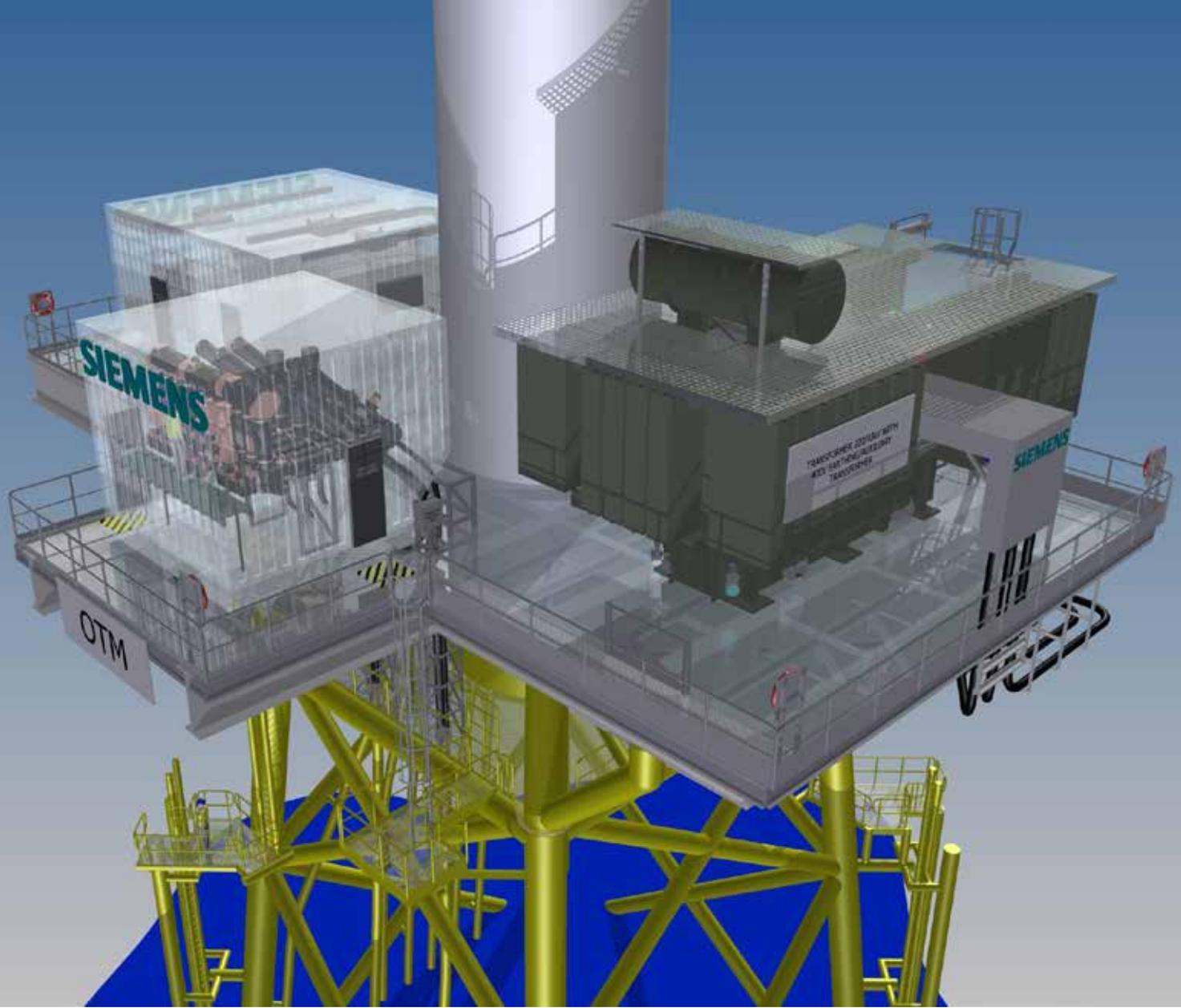
**Developers Must Reduce Risk, Cut Costs,  
& Line Up Experts To Attract Investors**

**Developers Question Which Comes First—  
the Industry or the Supply Chain?**

**Forging Partnerships, Pioneering an Industry**

**De-Risking LiDAR**

**So, How Was the 2015 IPF?  
What Participants Are Saying**



**SIEMENS**

**TABLE OF CONTENTS**



2	Thank You 2015 IPF Sponsors
3	Letter From The Editor
4	As U.S. Offshore Wind Ramps Up, IPF Participants Get Down To Business
7	Tech Up Close: Marine Technology Demonstrations At The 2015 IPF
8	Jackups, Cable Ships & The Jones Act
12	OSW Developers Must Reduce Risk, Cut Costs, And Line Up Experts To Attract Investors
14	OSW Developers Question Which Comes First – The Industry Or The Supply Chain?
16	Forging Partnerships, Pioneering An Industry – The International Offshore Wind Partnering Forum Lays The Groundwork For A U.S. Offshore Wind Industry
18	De-Risking LiDAR: Floating Systems Promise To Cut Costs Of OSW Developments
20	So, How Was The 2015 IPF? What Participants Are Saying
21	Participating Companies In The 2015 IPF
22	Membership Information

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LETTER FROM THE EDITOR

November 20, 2015

Dear Friends,

The Network's Annual International Offshore Wind Partnering Forum (IPF) is the bedrock for U.S. offshore wind supply chain education, formation and strengthening. In both 2014 and 2015, the Forum had more than 250 participants and we have seen numerous partnerships and deals result from this event.

We would like to thank all of our sponsors and our expert speakers, who shared their knowledge and delivered a fantastic program. I believe the IPF is one of the best U.S. technical exchanges of offshore wind information.

Many attendees expressed to us that they had a hard time choosing which session to attend because they wanted to participate in all of them. It was through this feedback that the idea of the IPF magazine was born. We wanted to follow up with a specially-designed and written tool that captures important session information to assist you as you continue on your offshore wind journey.

If you were not able to attend, I hope this magazine and its content gives you a sense of the depth and breadth of information delivered.

We hope to see you at the 2016 IPF in Newport, Rhode Island. Please mark Oct 2nd-5th on your calendars.



Liz Burdock  
Executive Director  
Business Network for Offshore Wind

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### **Mission**

Along our Atlantic coastline lies an energy resource with the power to create unparalleled job growth and economic transformation—offshore wind. The Business Network for Offshore Wind is dedicated to building a business network that will usher the U.S. into the offshore wind market. We empower businesses with the education, tools, and connections necessary to participate in the creation of a booming new industry.

## CONTRIBUTORS

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**Linda Strowbridge** – Linda Strowbridge is a Baltimore-based freelance business writer. An accomplished journalist for print, broadcast and online media in Canada and the United States, Linda specializes in translating complex topics into clear and compelling coverage. Her current freelance work focuses largely on clean energy, the built environment, and conveying the insights of innovators in a broad range of business endeavors.

As U.S. Offshore Wind Ramps Up,

# IPF Participants Get Down to Business

By Carl Levesque



## Every year brings progress in the U.S. offshore wind power movement. But when the 2015 International Offshore Wind Partnering Forum got underway in Baltimore at the end of September, the atmosphere seemed just a little more electric.

Every year brings progress in the U.S. offshore wind power movement. But when the 2015 International Offshore Wind Partnering Forum got underway in Baltimore at the end of September, the atmosphere seemed just a little more electric.

That's because all indications are that "the time is really now," as Business Network for Offshore Wind Executive Director Liz Burdock said in her opening remarks. Of course, there's the nation's first offshore project, the Block Island facility off the coast of Rhode Island, which entered the construction phase earlier this year. And, as Burdock noted when she listed off several industry benchmarks and accomplishments, DONG Energy—the world's leading offshore wind energy developer—has come to America, setting up shop here in the U.S. this past spring.

Thus, this year's Partnering Forum revealed an industry buzzing with activity, laying the groundwork for growth, and tackling the tough questions.

### STRONG KEY INDICATORS

Burdock praised the first wave of U.S. industry participants, many of whom were on hand at the forum, who are laying the foundation for a strong industry. "You are here first," she told the receptive audience. "You are the early birds. So congratulations."

Early participants certainly stand to benefit from their business acumen. The U.S. represents a power-hungry market in a global offshore wind industry poised for growth. Offshore wind is expected to more than triple globally in the next several years, said MAKE Consulting Senior Technology Advisor Aaron Barr, speaking at an afternoon session. By 2024, a quarter of global wind installations will come from offshore wind, Barr's firm projects.

"So you guys are in the right place and focusing on the right markets," he said.

And if you think DONG Energy isn't serious about doing business in the U.S., consider what Ninna Ipsen, the company's Procurement Director, had to say in a "Lessons Learned from Europe" session at the Partnering Forum. "There is not one project that we have not done," she pointed out. "We have not cancelled any projects."

Translation: The company fully intends to see its U.S. work through to completion.

### ESTABLISHING POLICY, SUPPLY CHAIN

The Partnering Forum was notable as much for its detailed discussion—specifically, the challenges that lie ahead—as its examination of the broader, bullish industry picture.

Many panelists throughout the packed program stressed the importance of the U.S. developing strong policy to foster industry growth. DONG Energy's Ipsen said offshore wind energy companies must be able to "count on the approval process" and urged members of the industry to work together in advocating for sound policy at both the federal and state levels. Summing up the situation was Barr, who said, "I really think the chicken and the egg is policy."

*Continued on page 6*



Continued from page 5

Speaking of chicken or the egg analogies, the topic of developing the supply chain garnered a significant amount of attention, particularly in the session, “Which Comes First: Offshore Wind or the Supply Chain?” Addressing the question captured in his session’s title, Søren Juel Peterson, Director of Business Development for Offshore Wind at Ramboll, put it plainly. “There will have to be an offshore wind market to create and justify a supply chain,” he said.

Some panelists warned that initial projects may require more sourcing from Europe before an industry-specific supply chain can fully develop. Andy Readyhough, Senior Business Development Manager at DeepOcean, noted that in the United Kingdom, organizations have worked together to develop the domestic supply chain. His comments underscored the importance of such events and organizations as the Partnering Forum and the Business Network for Offshore Wind.

**BUILDING PARTNERSHIPS**

No question, working together and partnering are what it will take to keep moving the industry forward in the U.S. Plenary session speaker Robert Wallace made that clear, citing examples ranging from the music and entertainment industries (e.g., Paul McCartney and Michael Jackson working together) to development of the Hoover Dam, a monumental project for the era that required the collaboration of six companies. (Those companies, in fact, formed a company called Six Companies, Inc., Wallace noted.)

Partnering, of course, is what the International Offshore Wind Partnering Forum was all about. The schedule provided plenty of opportunities for attendees to interact with one another, build relationships, and get business done. Both the Pier-Side Lunch and closing Network Reception (complete with technology demonstrations) proved to be lively events in which participants mingled in the scenic setting along Baltimore’s harbor.

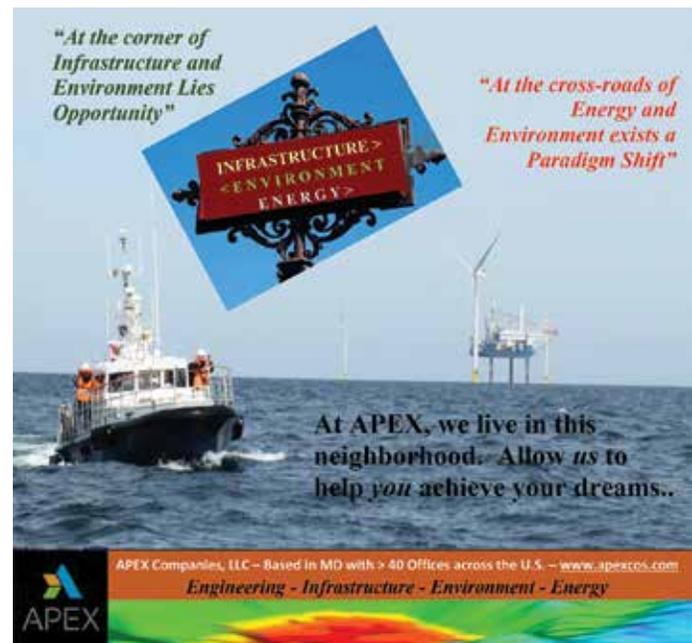
“It was fantastic to see so many outstanding companies dialoguing, sharing knowledge, and building relationships,” said Burdock. “We designed this event to help move the U.S. offshore wind energy industry forward, and so we’re thrilled it was such a success. With the momentum the industry is continuing to build, I know the 2016 International Offshore Wind Partnering Forum will, yet again, be the best ever.”



**Business Network for Offshore Wind Supply Chain Portal**

Please fill out our supply chain questionnaire on [www.bizmdosw.org](http://www.bizmdosw.org). With only 10 short questions, it includes more than 110 categories that help us identify which services and products you can provide for the development, construction, operations and maintenance of offshore wind projects.

We also share this information with developers and OEM prime contractors looking for partners. Additionally, the Network disseminates targeted information and RFPs to our members. Explore details about membership on page 22.





# Tech Up Close

Marine Technology Demonstrations at the 2015 IPF

The Business Network for Offshore Wind hosted the 2015 International Partnering Forum (IPF) at Pier V in downtown Baltimore. The pier-side location of the IPF allowed for demonstrations of state-of-the-art offshore wind technologies, structures, and water crafts in the element they were designed for: sea water.

Technologies included a range of marine applications, including:

- geophysical survey, instrumentation and processing
- multi- and single-beam hydrographic survey
- autonomous surface and underwater vehicles
- underwater imaging systems
- Light Detection and Ranging (LIDAR) remote sensing
- fish and marine life avoidance systems
- drone applications: construction and turbine and blade inspection

The featured demonstration was of a GARC, a Greenough Advanced Rescue Craft created by Maritime Applied Physics Corporation (MAPC) and utilized by the U.S. Navy. The GARC is a multi-functioning water craft that can operate either manned or unmanned, in depths that range from 11 inches to 25 foot waves, reach speeds up to 45 knots and goes for 121 nautical miles before refueling with either gas or diesel fuel. The GARC is also certified for airdrops by the U.S. gov-

ernment, made with Kevlar and can hold up to 800 lbs. MAPC has marketed the GARC to the offshore wind industry as an effective tool to monitor undersea cables.

Other companies presenting technologies included Aeolus Energy Sea, Apex Companies, LLC, GEOmatx Surveying and Mapping, IP Subsea, and Phoenix International. It is a unique opportunity to interact face-to-face with offshore wind industry leaders.

For more information, explore the 2015 International Offshore Wind Partnering Forum website at [www.oswstrong.com](http://www.oswstrong.com).



*Tom McElroy of GEOmatx discussing features of his survey vessel*

# Jackups, Cable Ships & the Jones Act

*By Linda Strowbridge*

Although it is awash in sophisticated turbines, cutting-edge LiDAR systems and other advanced technologies, the offshore wind energy industry is also fundamentally a maritime operation. So the success of any OSW development hinges on crews of highly skilled mariners deftly operating specialized vessels.

That was the message from speakers at a session entitled “Building Power Plants in the Ocean: Opportunities for U.S. Shipbuilders” at the International Offshore Wind Partnering Forum.

“You cannot advance the offshore wind energy industry today without the full cooperation of the maritime industry,” said Jason Folsom, commercial head of offshore wind for the Americas Region of Siemens Wind Power.

*(continued on page 10)*





*Continued from page 8*

A market leader in offshore wind turbine technology, Siemens has sold more than 3,100 WTGs to date. Its equipment accounts for more than 5.8 gigawatts of installed capacity in offshore sites, primarily off the coast of Europe and increasingly off the coast of China.

However, “maritime logistics are absolutely essential to those offshore developments,” Folsom said.

Offshore wind developments require a range of specialized vessels, including installation jack-ups, maintenance jack-ups, crew transfer vessels, service operation vessels, offshore accommodations platforms, offshore transmission platforms, flotels, and others. Currently, the United States lacks those key pieces of OSW infrastructure.

In a presentation entitled “Development of Offshore Construction Vessels and Techniques in Immature Windfarm Markets,” Offshore Design Engineering (ODE) Renewables Manager Gwenna Corbel described the difficulties, and some oddities, experienced by developers of Europe’s offshore wind industry.

When the first OSW developments began in the early Nineties, Europe didn’t have any specialized offshore wind vessels. So European companies attempted to adapt vessels previously used for offshore oil and gas developments and other sectors. Companies converted roll-on, roll-off ferries into cable-laying ships, turned a catamaran into a heavy-lift vessel, and converted cargo ships into jack-up vessels, some with legs extending to 85 meters.

That history of innovation included some ill-fated or simply bewildering efforts, including one project that involved cutting a tanker in half in order to use it to lay cable off the coast of Germany and another that involved craning fully assembled wind turbines onto offshore platforms. The company reportedly never repeated the installation process due to its exceptionally high difficulty and risk, Corbel said.

Europe now has vessels specifically designed for OSW development needs. However, contracting those vessels to temporarily service U.S. OSW developments will not be practical in many cases, due to their high cost and limited availability.

Instead, speakers suggested that developers of America’s first offshore wind energy projects will need to embrace a hybrid approach to maritime infrastructure – an approach that includes some contracted European vessels, some converted

**“That history of innovation included some ill-fated or simply bewildering efforts, including one project that involved cutting a tanker in half in order to use it to lay cable off the coast of Germany and another that involved craning fully assembled wind turbines onto offshore platforms.”**

American vessels and potentially some American-built OSW vessels. Such an approach, Folsom calculated, will likely make U.S. OSW projects 4-7 percent more expensive than European projects until the U.S. develops its own world-class maritime solutions.

Most vessels operating in American OSW projects will fall under the provisions of the Jones Act. However, two speakers – H. Clayton Cook, principal of Cook Maritime Finance, and Tricia Love Thomas, partner at Gross, Mendelsohn & Associates, P.A. – said U.S. companies have considerable opportunities to reduce the cost of American-built vessels.

The MARAD Title XI program allows vessel owners to issue bonds to finance up to 87.5 percent of a vessel’s cost. The CCF Program provides deferrals of federal and state taxes while a vessel is being paid off, effectively providing the vessel owner with interest-free loans. In addition, the Jones Act allows non-citizen lease financing of new vessels.

Used wisely, those regulations can dramatically cut the cost of a newly built, American ship, Cook and Thomas said. A \$300-million vessel, for example, could cost more than \$438 million to build and finance. By wisely using MARAD Title XI, CCF and non-citizen lease financing, a vessel owner could reduce that total cost by more than \$168 million, a 38 percent savings.



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# OSW developers must reduce risk, cut costs, and line up experts to attract investors

The complexities, potential and pioneering aspects of offshore wind developments naturally attract innovators and entrepreneurs, and simultaneously unnerve financiers.

By Linda Strowbridge

At “Show Me the Money,” a IPF session moderated by Glenn Dorr of Lloyd’, speakers explored the challenges that face OSW financing and some best practices that can mitigate those risks.

“There is plenty of money out there,” said Aaron Klein, Vice President of Power and Renewable Energy Investment banking at KeyBanc Capital Markets. “My problem from the lender side, is show me the projects.”

An active investor in renewable energy projects, KeyBanc has financed 155 projects in 32 states, representing more than 10.8 GW of renewable energy generation. In total, it currently has over \$2.5 billion committed to renewable energy projects in the U.S. and Canada.

However, OSW developments need partners and vendors who have proven they possess the expertise to successfully put a commercial project in the water, in order to attract investors, Klein said.

OSW projects, other speakers stressed, must also lower their risks and lower their costs to attract investors.

Gcube Insurance Services – a leading provider of insurance on renewable energy projects and the insurer of 48 offshore wind projects – has developed detailed knowledge of the operations and conditions that create the most risk for OSW investors, said Al Caceras, senior vice president and head of underwriting in the U.S.

Cable failures are the source of 38 percent of claims and account for 78 percent of money paid out. Foundation problems are the second largest source of claims, accounting to 16 percent of claims and 12 percent of payouts.

**“There is plenty of money out there,” said Aaron Klein, Vice President of Power and Renewable Energy Investment Banking at KeyBanc Capital Markets. “My problem from the lender side, is show me the projects.”**

Gcube which has paid out \$125 million in OSW claims to date, works to mitigate risk by forming longstanding partnerships with OSW companies, working closely with them on projects and arranging third-party inspections of project work, Caceras said.

At Mott MacDonald, Renewable Energy Advisor Caedmon Shayer insists that both capital and operating costs of OSW developments need to come down in order to make them more financially attractive. One of the largest management, engineering and development consultancies in the world, Mott MacDonald worked on \$6 billion of offshore wind developments last year alone.

That experience equipped the company with some key lessons on how to contain OSW costs. They include:

- Draft plans that enable you to work in as many weather conditions as possible.
- Value-added contractors can make big differences to project costs.
- Robust contracts are essential.
- Retaining top talent is vital in the complex OSW industry.

Some cost reductions will naturally happen as the industry evolves and OSW developments become more standardized, Shayer said.

The industry, however, may need bolder advances to become truly financially attractive, Shayer added. "We need revolutionary approaches to significantly drive costs down."



OSW developers question which comes first –  
the industry or  
the supply chain?

**It's a classic chicken-and-egg situation but involving multi-million-dollar vessels, leading-edge technology, bold investments and one of the world's most promising sources of renewable energy.**

*By Linda Strowbridge*

Offshore wind developments in American waters would enable the U.S. to tap an enormous clean energy source and construct a completely new industry. But as speakers at one session at the International Offshore Wind Partnering Forum noted, American OSW proponents will have to tackle a key conundrum facing the industry, namely “Which comes first: Offshore wind or the supply chain?”

“The world is in the midst of a global power shift towards renewables,” said Aaron Barr, senior technology advisor with MAKE Consulting.

Offshore wind, which currently accounts for less than 3 percent of newly installed wind energy capacity annually, is expected to grow to 23 percent of new wind power installed annually worldwide by 2024. The United States, Barr said, has a significant long-term OSW project pipeline, surpassed only by Germany and the United Kingdom, and is preparing to install 850 MW of offshore wind capacity by 2023.

Those plans, however, are still early stage and the nascent sector faces formidable challenges.

OSW developments in the U.S. will face tough competition in energy markets due partly to low natural gas prices, increasingly competitive prices for onshore wind and solar energy, resistance by traditional energy companies, and relatively flat levels of power consumption in the U.S. Although state renewable portfolio standards and some federal initiatives could support OSW developments, Barr suggested that additional clean energy policies could be essential to establishing an offshore wind sector.

Furthermore, American entrepreneurs will have to successfully address that chicken-and-egg scenario and tap an expert and affordable supply chain for a brand new industry.

“There will have to be an offshore wind market to create and justify a supply chain,” said Soren Juel Petersen, director of business development for offshore wind at Ramboll.

In a presentation entitled “The Circus Comes to Town,” Petersen said the U.S. could take two paths to developing that supply chain and industry. It could draw on existing, foreign expertise and suppliers, and develop domestic knowledge and OSW business activity gradually. That approach would generate fewer jobs and economic activity within the U.S., but ensure that projects were founded on proven technology and predictable risks and costs. Alternately, the U.S. could focus on using domestic suppliers and leverage knowledge of other industries to develop expertise in offshore wind. That approach would generate more economic benefits within the U.S. but potentially saddle OSW projects with unproven technologies, sub-optimal solutions, and higher risks and costs, he said.

Petersen proposed the best solution lay somewhere in the middle.

“I would assess that with the right mix of U.S. and foreign suppliers and service providers, the U.S. has a better chance of establishing an offshore wind market with a reasonable cost of energy,” he said. “The U.S. suppliers and service providers could have a considerable – and over time increasing – stake in this process.”

Petersen estimated that, in total, 46 percent of OSW project costs could be sourced with U.S. companies. On a 400-MW project, that would generate approximately \$1.5 billion of domestic business.

“So when the circus comes to town,” Petersen said, “participate as much as possible and learn the tricks for what you cannot do so that you will be capable of doing the tricks together with the artists or on your own the next time.”

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# Forging partnerships, pioneering an industry

The International Offshore Wind Partnering Forum lays the groundwork for a U.S. offshore wind industry

*By Linda Strowbridge*

In one of the early steps towards building a supply chain for American offshore wind projects, Apex Companies, LLC and Offshore Design Engineering (ODE) signed a teaming agreement at the outset of the 2015 International Offshore Wind Partnering Forum (IPF).

“As the offshore wind industry emerges in the United States, teaming agreements between leading European and

U.S. companies are significant milestones,” said Liz Burdock, executive director of the Business Network for Offshore Wind. “These agreements build the knowledge and capacity to execute and deliver offshore wind projects.”

Such partnerships are also the goal of the International Offshore Wind Partnering Forum, an annual event by the Business Network for Offshore Wind.

**“This industry is approaching a tipping point,” [Liz] Burdock said. “We are poised to see the energy sector tap into the phenomenal power available off the Eastern U.S. coastline – offshore wind. The businesses meeting now will be the winners when offshore wind reaches its potential as a thriving U.S. industry. They are the ones who will have the knowledge and connections to become major players as the supply chain develops.”**

Leaders of Apex and ODE met at a previous Network event and began to see potential in jointly pursuing business opportunities. Over the course of a year, Apex and ODE worked on several projects together and concluded their partnership could deliver new opportunities to each company and expanded services to their clients.

At the IPF in Baltimore this September, Apex and ODE formalized the arrangement.

“With this teaming agreement, we have truly broadened our ability to deliver both the siting, designing, constructing services and port and waterways capabilities our offshore wind clients need most with comprehensive expertise spanning both sides of the Atlantic,” said Jay Borkland, Apex vice president.

“Not only does this partnership strengthen our capabilities, it’s evidence of the fact that not only in Maryland, but nationally and internationally, companies are ready to harness the power of offshore wind and usher in a new generation of alternative energy. It’s this type of collaboration between companies like ours and Apex that will make that happen,” said Dan Woodman, ODE’s business development director.

Throughout the day at the International Offshore Wind Partnering Forum, speakers echoed that U.S.-foreign partnerships will likely be key to assembling the expertise, resources and supply chain needed to create a U.S. offshore wind industry.

Describing the creation of the industry as “a heavy lift,” BITHENERGY CEO Robert Wallace stressed the endeavor will require many partnerships “and everyone you meet today has the potential to be a partner for your company.”

The day-long International Offshore Wind Partnering Forum attracted more than 130 companies, research organizations, government agencies and others from the U.S. and Europe.

Workshop topics covered myriad issues facing the nascent industry, including “Lessons Learned From Europe,” “OSW Game Changers: Technology Advances,” “Critical Elements for a Successful OSW Hub in the U.S.,” and “Foundations Made in the U.S. & Innovative Logistics = Cost Savings + Jobs.”

Along the harbor pier, the Forum featured a display and demonstrations of U.S. state-of-the-art technologies, including technologies adapted from military use to enable offshore wind operations. Those included: autonomous surface and underwater vehicles, underwater imaging systems, drone technologies, hydrographic survey equipment, and technologies for geophysical surveys, instrumentation and data processing.

“This industry is approaching a tipping point,” Burdock said. “We are poised to see the energy sector tap into the phenomenal power available off the Eastern U.S. coastline – offshore wind. The businesses meeting now will be the winners when offshore wind reaches its potential as a thriving U.S. industry. They are the ones who will have the knowledge and connections to become major players as the supply chain develops.”



(left to right) Daniel Woodman (Offshore Design Engineering), Liz Burdock (BizMDOSW) and Jay Borkland (Apex Companies, LLC)

# De-risking LiDAR

**Floating systems promise to cut costs of OSW developments**

*By Linda Strowbridge*

Fondly referred to as “small and wobbly,” emerging technologies for floating LiDAR are promising to cut the cost of offshore wind resource assessments and potentially improve the financial attractiveness of OSW developments.

During the “Catching the Wind” session at the International Offshore Wind Partnering Forum, representatives of Babcock International Group, AXYS Technologies, Maritime Applied Physics Corporation, and The Carbon Trust discussed technological challenges and advances in floating LiDAR, and their financial ramifications.

“In the last few years, floating LiDAR has moved from being an innovation to a technology used on commercial projects,” said Marc Costa Ros, senior manager of the Offshore Wind Division at The Carbon Trust.

Those advances have been achieved through extensive efforts – and occasional setbacks – by multiple companies and organizations.

Babcock International developed the industry-leading Zeph-IR 300 LiDAR unit and installed it on an elevated platform attached to a low-motion buoy. The floating LiDAR system can survive harsh marine conditions. It can be easily repositioned, easily accessed for maintenance, and generates less data uncertainty, said Andy Paterson, program manager.

Early sea trials of the unit off the coast of Wales, however, prompted Babcock developers to make some design changes. A small turbine which was rated for offshore conditions and installed to partially power the unit, needed to be re-



placed after proving it wasn't robust enough to function in the Irish Sea and blew apart during a bout of very high winds.

Babcock officials decided the communications system needed improvements to maintain SatCom and GPRS connections. They also determined that simplified deployment and recovery processes could reduce the unit's dependence on specific vessels and, consequently, reduce its operational costs and increase its availability.

Maritime Applied Physics Corporation, meanwhile, has developed a floating system that places LiDAR and radar on a gimbaled mast that remains nearly vertical despite buoy motion. The new technology which has been in the water for about two months, is low-cost, high endurance, and easily deployed by either a crane or a small tow vessel, said Mark Rice, president and CEO.

Such technology advances are key to making offshore wind developments financially attractive, said Graham Howe, director of sales for AXYS Technologies.

### **Uncertainty about wind behavior at an OSW site and its impact on equipment performance and energy generation elevates financing costs. So "uncertainty reduction is top priority," Howe said.**

"Forty-four percent of the cost of an offshore wind farm comes from the cost of capital," Howe said.

Uncertainty about wind behavior at an OSW site and its impact on equipment performance and energy generation elevates financing costs. So "uncertainty reduction is top priority," Howe said.

Research, he said, is demonstrating that the accuracy of anemometry data from floating LiDAR, such as Babcock's technology, is comparable to data collected from stationery, meteorological mast systems. Floating systems, however, are cheaper and can be moved to multiple locations, expanding the amount of wind resource data collected.

"Floating LiDAR technology reduces uncertainty in resource measurements, reducing the cost of capital, increasing efficiency of development," Howe said.

As part of its Offshore Wind Accelerator Roadmap, The Carbon Trust is currently working to advance commercial acceptance of floating LiDAR technology by supporting technology trials, and developing best practices and key performance indicators.

"We are de-risking floating LiDAR," Costa Ros said.

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"[The Forum] made me realize that the U.S. education system and workforce training needs to be preparing for OSW."

"I have been trying for months to get [company] to sit down with me. At the reception the rep came down to see the demonstration. We talked for an hour! That was worth the price of admission."

"I got to speak with everyone I wanted to without having to chase them. The best part was all the terrific conversations and having everyone in the same room."

"A positively open-minded networking opportunity."

"An impressive program and list of speakers."

# So, how was the 2015 IPF?

"I thought the content was excellent and you had great participation from industry."

What participants are saying..

"Great job on organizing the event. I made a number of connections that will be helpful as our company moves forward in this space."

"It was nice meeting so many last week. I found the Partnering Forum to be well done and time well spent."

"It was a great educational opportunity; bringing people up to speed with education on drones and their role in offshore wind."

"There was more information and networking at this conference than the past three OSW conferences I've gone to put together. The format and the way it's set up is very beneficial in terms of encouraging people to team up. I've made a number of solid connections."

"Thanks for a very interesting few days. High quality speakers. I thought that you did a first class job of putting such a great event together and look forward to next year's."

"Thanks for everything. It was fantastic avenue and hope to contribute more in the future."

"Thank you for a very good event indeed. I was surprised at the willingness of the American people to discuss and listen when talking about collaboration. The enthusiasm in the discussion was great. And openness. Really."

"The Business Network has introduced us to a number of people in the industry and made connections that are invaluable in terms of teaming, finding supply opportunities with developers and actually and moving into other parts of the world."

"It was very in depth. Speakers knew they were speaking to the industry. People are saying both positives and challenges. They want to make sure we get a complete picture."

"This organization is great. For offshore wind, this organization is the place to be."

# Participating Companies in the 2015 IPF

AdBm Technologies  
 AECOM  
 Aeolus Energy Sea  
 Alpha Energy, LLC  
 Alpine Ocean Seismic Survey, Inc.  
 Alstom Power, Inc.  
 Alstom Wind  
 Amerigo Offshore, LLC  
 Apex Companies, LLC  
 Arcadia Windpower / Green Sail Energy  
 Arcon Welding Equipment, LLC/Toroid  
 Atlantic Wind Transfers  
 AWB Engineers  
 AWS Truepower, LLC  
 AXYS Technologies, Inc.  
 Babcock International Group  
 Bernard Energy Advocacy SCRL/CVBA  
 Bird Technical Communications  
 BITHENERGY  
 Blount Boats, Inc.  
 Blue Water Shipping  
 BMT  
 BVG Associates, Inc.  
 BWI Sparrows Point, LLC.  
 C. Steinweg  
 C&C Technologies  
 Cape Hatteras Wind Energy  
 Channel Wind  
 Cianbro Corporation  
 City of Salisbury  
 Cobham Advanced Electronic Solutions  
 CohnReznick, LLP  
 Community College of Baltimore County  
 Cook Maritime Finance  
 Cowi North America  
 DeepOcean  
 DHI  
 DONG Energy  
 Dronepire Inc.  
 Eclipse Group  
 Ecosse Subsea Systems  
 Falck Safety Services  
 Fishermen's Energy of New Jersey  
 Force Technology Denmark  
 Gardit A/S  
 Gcube Insurance Services, Inc.  
 GEOmatx Surveying and Mapping  
 Glosten Innovative Marine Solutions  
 GO-ELS, Ltd  
 GrandView Aviation  
 Gross, Mendelsohn & Associates, P.A.  
 GTA Inc.  
 H.U. Dove  
 Holmatro, Inc.  
 HR Wallingford  
 Inchcape Shipping Services  
 Institute for Energy and Environmental Research  
 IP Subsea  
 John S. Connor, Inc.  
 K2 Management  
 KCI Technologies  
 KeyBanc Capital Markets  
 Keystone Engineering, Inc.  
 Lake Erie Energy Development Corporation  
 Lloyd's  
 LM Wind Power  
 Lockheed Martin  
 M&T Bank  
 Main(e) International Consulting  
 Maine Marine Composites  
 Make Consulting  
 Maritime Applied Physics Corporation  
 Maryland Climate Coalition  
 Maryland Energy Administration  
 Maryland Environmental Service  
 Maryland Export Assistance Center, U.S.  
 Department of Commerce  
 Maryland League of Conservation Voters  
 Maryland State Senate  
 McNeilan & Associates  
 Metropolitan Regional Council of Carpenters  
 Morgan State University  
 Moss Marine USA, Inc.  
 Mott MacDonald  
 National Renewable Energy Laboratory  
 Northland Power Inc.  
 NovaVis, LLC.  
 Ocean Conservancy  
 Oceaneering International, Inc.  
 Offshore Design Engineering (ODE)  
 OGOS Energy, LLC  
 Phoenix International  
 PMSS America  
 PNC Bank  
 Pole Star Maritime, LLC  
 Prime Manufacturing Technologies, Inc.  
 Princeton Energy Resources International  
 Ramboll  
 Red Penguin Associates  
 Rutgers University  
 Sabik Offshore  
 Seacor Marine LLC  
 seaLIDAR  
 SeaPower Systems, LLC  
 Seatower  
 Semmes, Bowen & Semmes  
 Senvion Wind Energy Solutions  
 Siemens  
 South Boats IOW  
 Statoil  
 Strum Contracting Company  
 Sullivan & Worcester  
 Sustainamatrix  
 T. Parker Host, Inc.  
 TEDCO  
 Tetra Tech  
 The Carbon Trust  
 Toroid Corporation of Maryland  
 Tufts University  
 U.S. Bureau of Ocean Energy Management  
 U.S. Bureau of Safety & Environmental Enforcement  
 U.S. Department of Commerce  
 U.S. Department of Energy  
 U.S. Wind  
 UK Trade & Investment  
 UMBC-Joint Ctr. for Earth Systems Technology  
 University of Maryland  
 University of Maryland Eastern Shore  
 University of Maryland, Baltimore County  
 University of Maryland, College Park  
 VBMS  
 Ventower Industries  
 Virginia Offshore Wind Coalition  
 Virginia Tech Advanced Research Institute  
 Visionergy, USA  
 Volvo Penta of the Americas  
 Watershed Marine Services  
 Whiting-Turner  
 Whitman Consulting Group  
 Windcat Workboats  
 Wor-Wic Community College  
 Worcester County, Dept. of Economic Development



We are stronger if we stand together.

**Join Today!**

The Business Network for Offshore Wind is **solely focused** on the creation of an offshore wind industry.



The Business Network for Offshore Wind brings people together. Our excellent relationships with government and industry leaders help our members achieve more, grow their businesses, meet the right people and shape an industry.

#### **Achieve More**

Membership demonstrates your ambition and positions your company as a leader. Increased exposure provides a competitive advantage, allowing you to achieve more.

#### **Grow Your Business**

Membership illustrates your commitment to the industry. In this emerging industry, OSW international and local network members are looking for like-minded partners. Network members are their first choice. Use this opportunity to grow your business.

#### **Meet The Right People**

Membership opens doors. Our members find new partners and customers, expand their knowledge and meet the right people.

#### **Shape An Industry**

Membership empowers businesses. Members contribute to the design and development of public-private programs, policies and resources that shape the offshore wind industry in Maryland.

**It starts here.**

It starts here.

#### **Information Starts Here.**

The Network keeps our members up-to-date on the offshore wind industry with member-only newsletters, information-sharing and access to our members-only website.

#### **Education Starts Here.**

The Network provides educational programming. Member-only breakfasts and webinars give you the knowledge and tools to have better business conversations, determine your niche in the offshore wind industry and make more informed business decisions.

#### **Connection Starts Here.**

The Network brings together more than 800 international and domestic businesses. We introduce you to regional and global contacts for rapid entry into the offshore wind market. We “connect the dots” between members to create an aggregate capability through business matchmaking and networking events.

#### **Collaboration Starts Here.**

The Network hosts many events including an Annual Offshore Wind Industry Meeting. The annual meeting is the place the offshore wind industry comes together to share information, collaborate and move the offshore wind industry forward.

#### **Innovation Starts Here.**

The Network facilitates partnerships between academia and business to create innovative technologies and processes that lower the cost of energy. Our members stand out as leaders among U.S. innovators.

#### **Visibility Starts Here.**

The Network creates opportunities for member exposure at international, national and local events. We organize trade pavilions and promote members through our member directory and marketing prospectus. Using the Network member logo on your website, email signatures and printed or display materials highlights the importance of your company to the sector.

#### **Leadership Starts Here.**

The Network has formed member-only working groups and Maryland’s Lower Eastern Shore Cluster as places where companies can work on industry-specific issues and develop business-driven solutions. The working groups are great places for companies to exhibit their leadership. Working groups include: Infrastructure, Innovation & Commercialization, Advocacy, Workforce Training and Economic Development, Marketing, Communications and Outreach.



#### **Contact:**

Liz Burdock  
(202) 403-7507 or  
liz@bizmdosw.org

**THANK  
YOU  
MEMBERS!**

*We appreciate  
your  
membership.*



Join us next year in  
Newport,  
Rhode Island!



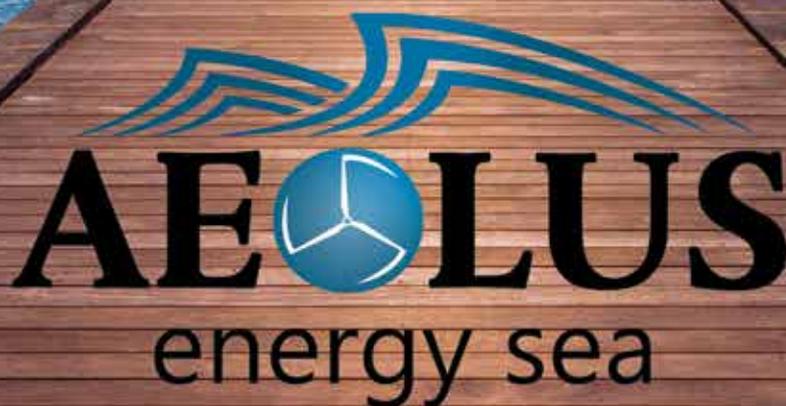
The Lower Eastern Shore and the State of Maryland are “Open for Business” offering a variety of loans, grants and tax credits to enable business to relocate or expand and create jobs. A strong local workforce is ready to fill competitive wage jobs and two universities and a community college in the region offer continuing education and training programs for all skill set levels. With water access to both the Chesapeake Bay and the Atlantic Ocean and the region’s long maritime history, workers know the marine environment and how to work on and with it.

**Lower Shore Wind is a Breath of Fresh Air for Business.**



# We Know How To Get There

...It's Straightforward Teamwork



Serviced over 100 projects & 91 Windfarms in 21 States - *Aeolus Energy Group*  
Construction • Inspection • Repair • Maintenance

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