

A World-class University-Industry Consortium for Wind Energy Research, Education, and Workforce Development

Lead Organization: Illinois Institute of Technology

Principal Investigator: Mohammad Shahidehpour

Progress Report

September 28, 2010

Spending as of 09/27/2010

■ Personnel:	\$130,886
■ Fringe Benefit:	\$21,922
■ Travel:	\$1,476
■ Equipment:	\$157,162 (+\$3,850,000=\$4,007,162)
■ Subcontract:	\$155,315
■ Student Tuition:	\$20,588
■ Other:	\$10,221
■ Total Direct Charge:	\$497,570 (+\$3,850,000=\$4,347,570)
■ Indirect Charge:	\$136,546
■ Total:	\$634,116 (+\$3,850,000=\$4,484,116)
■ Cost Share:	\$128,256

Projected Spending through the End of FY2010 (09/30/2010)

■ Personnel:	\$130,886
■ Fringe Benefit:	\$21,922
■ Travel:	\$1,476
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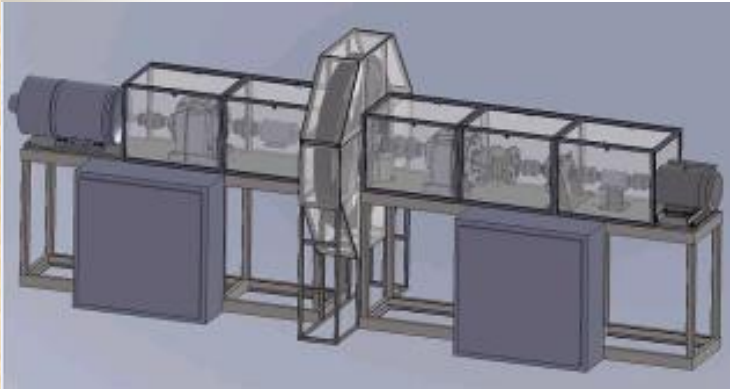
Major Consortium Activities in Q4

- *Task 1.0 Procure a 1.5MW GE Test Wind Turbine*
 - The purchase agreement will be signed by Invenergy on Monday, September 27, 2010. Immediately following the complete execution of the agreement, IIT will then make the drawn down from DOE no later than the end of the day on Tuesday, September 28, 2010.
- *Task 2.0 Install an 8KW Viryd Test Wind Turbine*
 - The 8KW lab wind unit is already installed by Viryd and tested in one of the ECE labs. We plan to demo the unit in the Thursday meeting.
- *Task 3.0 Install a Small Wind Turbine for Public Awareness*
 - We are progressing quickly on the installation of the field wind unit. The potential location of the field wind unit is the IIT Soccer Field. We are currently working with DOE to remove the NEPA clause so we can procure and install the unit. Various administrative offices at IIT have approved the plan for the installation of the unit on campus, and have begun the green permit process for the City of Chicago.

Two Small Wind Units

- On the left is the 8KW lab wind unit, which is already installed and tested in one of the ECE labs.
- On the right is the photo of the IIT Soccer Field, which is the potential location of the field wind unit.

Stuart Field Looking West



Major Consortium Activities in Q4 (cont.)

- *Task 4.0 GE Wind Turbine Reliability Study*
 - Argonne and Invenergy representatives are invited to IIT to discuss the potential research opportunities with the large wind unit. Both parties have agreed to attend. We plan to put together a collaborative white paper for soliciting additional DOE research funding for the large wind unit.
 - Mohammad Shahidehpour met with Jim Gagnard (CEO of SmartSignal and IIT Board member) last week to discuss the possibility of adding sensors to the large wind unit. Jim had an earlier discussion with Michael Polsky (President of Invenergy) about the wind unit. SmartSignal is preparing a wind unit instrumentation proposal to IIT and Invenergy as part of our research on the large wind unit.

Major Consortium Activities in Q4 (cont.)

- *Task 5.0 Viryd Wind Turbine Reliability Study*
 - Discussion is ongoing with Viryd on potential small wind turbine reliability studies. An initial plan is drafted.
- *Task 6.0 Noise Reduction in Wind Turbine Design through Fluid Dynamics and Acoustics*
 - The theoretical study on reducing wind turbine noise through fluid dynamics and acoustics is ongoing.
- *Task 8.0 Advanced Wind Integration Study for Utility-Grade Operation*
 - Advanced wind integration study for utility grid operation is ongoing . In particular, input data for various case studies are being prepared. Three project subcontractors are involved in preparing the study cases.

Major Consortium Activities in Q4 (cont.)

- *Task 9.0 International Collaboration on Wind Energy Research*
 - A wind energy conference in Chicago will be held on September 30, 2010.
 - 8:00-8:30am Registration and Introduction
 - 8:30-10:45 Discussion on project implementation
 - 10:45-12:00 Tour of the DOE-funded projects at IIT
 - 12:00-1:00pm Lunch
 - 1:00-3:00 Symposium on Future of Wind Power Event
 - 3:00-4:00 Reception

Morning Session of the Wind Energy Conference

- The **MORNING SESSION** will include presentations by consortium members and discussions of ongoing tasks. The discussions will be followed up by a tour of the DOE-funded projects at IIT.
 - **Presentations (8:30-10:15 am)**
 - Mohammad Shahidehpour, IIT; Frank Bristol, Acciona; Jim Gagnard, SmartSignal; Alan Cain, Innovation Technology Applications, and Ganesh Raman, IIT; Greg Rouse and John Kelly, Intelligent Power Solutions; Alireza Khaligh, IIT; Richard Gowen, Dakota Power; Zuyi Li, IIT; John Birge, University of Chicago
 - **Discussion (10:15-10:45 am)**
 - All Consortium members
 - **Tour of the IIT Projects (10:45-12:00 noon)**
 - **Wind Turbine Installations.** The wind energy consortium tasks include the installation of two 8-kW wind units at IIT for research and education. The first unit already installed in one of the laboratories at IIT will be demonstrated as part of the campus tour.
 - **Perfect Power Smart Microgrid.** IIT has been working on a DOE-funded perfect power project since 2008. The project is converting IIT to a microgrid for enhancing reliability, sustainability, and efficiency of its electricity grid. A tabletop model of the campus buildings is developed and a demonstration of the perfect power concept will be presented to the consortium members and guests.

Afternoon Session of the Wind Energy Conference

- The **AFTERNOON SESSION** features **Symposium on Future of Wind Power (1:00-3:00 pm)**
 - The symposium will bring industry and government leaders together to discuss breakthrough technologies, innovations, and implementation developments in the industry. The state of the Wind Energy industry in the United States is facing numerous challenges, from wildlife and zoning concerns to the deficiencies of our nation's electric transmission grid. Yet, the industry is also being presented with new opportunities, from the country's first offshore wind farms, to new smart grid technologies that allow better integration of intermittent power into the grid.
 - Symposium Speakers:
 - Brian Connor – U.S. Department of Energy
 - Sonny Garg – President, Exelon Power & Senior Vice President, Exelon Generation
 - Michael Polsky – President/CEO, Invenergy
 - Paul McCoy – President, Trans-Elect
 - Kurt Yeager – Former President, EPRI / Executive Director, Galvin Electricity Initiative
 - Joshua Milberg - First Deputy Commissioner, City of Chicago Department of Environment

Major Consortium Activities in Q4 (cont.)

- *Task 10.0 Engage Undergraduate Students in Wind Energy Research*
 - Two IPRO courses that engage undergraduate students in the wind energy research are being offered in the Fall semester of 2010: one in electrical engineering and one in mechanical engineering.
- *Task 12.0 Offer Degree Program and Certificates on Wind Energy*
 - Two graduate level courses are being offered in the Fall semester of 2010: one is Elements of Sustainable Energy and the other is Elements of Smart Grid.