



INNOVATION ABSTRACTS

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IT'S IN THE WIND...FROM RURAL CANADA TO THE WORLD STAGE

Lethbridge, Alberta, sits in the southern part of a western Canadian province, well-known for the wind it experiences. Wind turbine installations began appearing 15 or more years ago to capitalize on a natural resource and promote green energy consumption.

In 2005, it became clear that many of these turbines were beginning to require maintenance and there was a lack of local workers trained in this field. Also, as more and more wind farms appeared on the energy drawing board, many European manufacturers were sending technicians to Canada for the initial construction of these farms and the maintenance of existing units. The cost to the wind farm owners to have these turbines maintained by German technicians was costly. Industry members turned to their local community college to help craft a solution tailored to their needs.

Solving the Problem

Designing a training solution for a growing, relatively new industry was a challenge the Industrial and Technical Training manager of Lethbridge College (LC) could not refuse!

Industry consultation netted some interesting feedback. To repair a nacelle (the turbine), no one type of education provided the necessary preparation. Wind farm operators felt that a combination of electrical and mechanical skills was necessary, obviously coupled with an ability to work safely at significant heights. Rigorous safety training was an absolute necessity.

Industry pointed out that they needed these technicians quickly and the demand would be exponential as more installations developed in Alberta, across Canada, and in the United States.

Finding Your Champions

Two faculty (electrical and mechanical backgrounds) teamed up to build the curriculum. They were excited about the potential of developing a new program that

could support local wind farms and provide workers for an industry that had huge growth potential. Following the consultative process, they set about creating an offering that would provide the needed skills to students in a compressed period of time. Aside from the previously noted educational components, industry wanted an internship component to ensure that soon-to-be graduates had traditional college "hands-on" opportunities. Wind farm operators partnered with Lethbridge College to facilitate these experiences and, in many cases, offered employment to their trainees.

Kicking It Up a Notch

It became clear that the demand for wind turbine technicians was phenomenal. Sections filled up quickly, and waitlists grew. The faculty felt that their program was solid, but they wanted validation that they were preparing students to be successful.

After research, they learned that a number of major wind industry players had come together in Germany to create what has since become the European gold standard for wind turbine technician training. The BZEE (Bildungszentrum für Erneuerbare Energien e.V.) organization works much like American accreditation systems; the curriculum, teaching methodologies, designated outcomes, and evaluation/assessment instruments must meet established standards. The two faculty members spent five weeks in Germany with BZEE and returned home with instructor certification, allowing the potential for Lethbridge College BZEE certified grads. As a result, they re-tooled their program and prepared for a site visit from BZEE officials.

Serendipity

While program enhancement was continuing, the college became aware of a number of local nacelles that had been decommissioned. Currently, there is such demand for wind turbines in the private sector that securing one for training purposes is costly and challenging. Lethbridge College secured nine used nacelles at a fraction of the cost of a new unit; the faculty and students were ecstatic, and they began assessing their opportunities for learning.



Turbines from the field allowed for research about wear and tear, failure points, etc. Three of the nacelles were identified for initial refurbishment and mounted on steel flatbeds to allow for transport to other sites to facilitate training for other institutions.

Creativity and Innovation

As the turbines were being overhauled, one of the faculty had the idea to simulate the movement of the nacelle when it was installed hundreds of feet above the ground (called “yaw” and “pitch” in the industry) so that students could understand the impact of wind on the equipment. He built and programmed a process control unit to create these effects. Learners were able to see on the ground what they normally would be able to experience only at great heights.

Meeting the Gold Standard

In order to have wind turbine technician graduates become BZEE-certified, officials from BZEE made an on-site visit in fall 2007, to begin the program evaluation process.

There was scrutiny of content and processes. Students, faculty, and industry partners were interviewed, equipment was assessed, and training materials and examinations were evaluated. The team spent several days at the college, ensuring that all of the training requirements had been met.

The wind turbine technician program was BZEE-certified, and Lethbridge College was identified as the lead college in North America for training instructors and students in the methodology. Post this visit, faculty have been involved in helping BZEE develop and enhance examination materials for the future.

Further “Sharpening of the Saw”

To continue to ensure the WTT program remains leading-edge, a Lethbridge College team attended the 2008 World Wind Energy conference in Husam, Germany. This annual event attracts more than 700 exhibitors, and the speakers focus on the global future of wind energy. Only two post-secondary institutions were in attendance, and Lethbridge College was one of them.

Suppliers to the wind industry were interested in donating products or expertise to help the development of the turbine technician program. A leading wind turbine braking system manufacturer made a significant donation so that LC students could be trained on that equipment. Industry leaders offered product manuals and were prepared to explain them and enhance the student experience.

Side Benefits

As a result, we now have some staff members sitting on the Federal taskforce to plan for the future of wind energy in Canada. The Wind Turbine Technician program is just a starting point. Assessing wind farm placement, providing research capabilities around the impact of wind turbines, training wind farm managers, installing and maintaining “small wind” turbines for individual rural applications, and creating GPS siting for individual nacelles for safety purposes is a growing industry that LC (and other colleges) can serve.

The Takeaways

How do institutions distinguish themselves and create cutting-edge programming?

- **Watch the horizon.** Be aware of the shifts that are occurring in industry and the economy, and work to be ahead of the curve in creating training options that may not be self-evident currently.
- **Leverage the Leaders.** When faculty and/or staff promote initiatives that, at first blush, may seem to be “out there,” give their ideas a serious second thought.
- **Find the Money.** This is easy to say, but not necessarily easy to do. With tight budgets, a project that may appear to be an “add on” may not get due consideration. However, if the premise is solid and it has potential to enhance opportunities for students, the institution, and the community, some creativity may be needed to find resources.
- **Focus on Excellence.** Lethbridge College aspired to be a world leader in Wind Turbine Technician training and has achieved this goal. However, resting on laurels is not an option.
- **Collaborate with Others.** Lethbridge College has been in discussion with a number of institutions in Canada and the U.S.

Any college (large or small, rural or urban) can make a major impact. Thoughtful risk-taking and creative financing are key ingredients.

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