Problem solvers

By working with researchers at Dalhousie University, Nu-Air is gaining access to knowledge and solutions it wouldn't have otherwise

Nu-Air Ventilation Systems began nearly three decades ago designing and manufacturing heat recovery ventilation (HRV) systems—vital piece of infrastructure that control air quality and humidity in green buildings. Today the Windsor, N.S.-based company sells HRV systems to some of the most sophisticated new construction customers throughout North America—customers that include the state-of-the-art Drakes Landing Solar Community development in Okotoks, Alta., and some of Canada’s first LEED platinum buildings.

Nu-Air thrives on innovation. In-house engineers design all the products that the company sells—everything from simple heat recovery ventilation systems to integrated systems that combine things such as gas fireplaces, furnaces, air conditioning, and ventilation systems all in one unit. In fact, Nu-Air invests 20% of its profits back into its research and development. But despite an impressive string of successes, the modest manufacturing plant has its limitations too, according to Brian Gibbon, Nu-Air’s vice-president of engineering. “Sometimes we run into a problem we can’t solve ourselves,” he admits.

That’s where Julio Militzer comes in. The Dalhousie mechanical engineering professor is an expert in the factors that affect the performance of heating and HRV systems, including fluid mechanics and heat transfer. In 2010 Militzer created a spreadsheet for Nu-Air that would act as a mathematical tool to allow company engineers to measure the effectiveness and accuracy of heat exchangers. “We weren’t getting the results we were expecting from a heat exchanger,” says Gibbon. “The spreadsheet allowed us to accurately predict its performance under a variety of conditions. We were able to quickly improve the design.”

Militzer’s recent collaboration with Nu-Air was an intensive testing of a fan system to isolate the source of a troublesome vibration. As a result company engineers redesigned a bracket holding the fan in place, which fixed the problem. “We’ve worked with Militzer several times and other university researchers,” says Gibbon. “Each time it’s a short-focused effort, maybe five days of testing, but it gives us access to the kind of specialized knowledge we don’t have within the firm. We are able to narrow down problems and come up with solutions we couldn’t otherwise. It’s a important resource for us.”

To find the right researchers, Nu-Air usually contacts Dalhousie’s Industry Liaison and Innovation (ILI) Office. The office, which specializes in managing and facilitating collaborations between companies and its researchers. It also assists in the creation of spin-off ventures. Nu-Air also accesses funding through the National Research Council of Canada’s Industrial Research Assistance Program (NRC-IRAP), a federal government program that provides specialized advisory services and financial assistance to innovative Canadian SMEs.

Militzer says the NRC-IRAP program is a key resource for local companies such as Nu-Air access to world-class university resources that they might not otherwise be able to afford. “NRC-IRAP is a very successful program,” he says. “For small companies to hire someone like me, it can be very costly. With NRC-IRAP program, can get the consulting help they need at little cost.”

There are benefits to the university as well, including financial ones. But Militzer admits that he gets something more intangible and ultimately more rewarding than money from working with companies like Nu-Air: a chance to apply his academic research to solving real-world problems. “There’s a lot of satisfaction in helping people with real engineering problems,” he says. “As university professors we do a lot of research and publish a lot of papers. Some of them have impact, but most of them unfortunately just get buried in a journal. Consulting with companies like Nu-Air gives me a chance to see real results from my research. It’s a part of the job that’s really enjoyable.”

— Tom Mason

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