Niagara Research

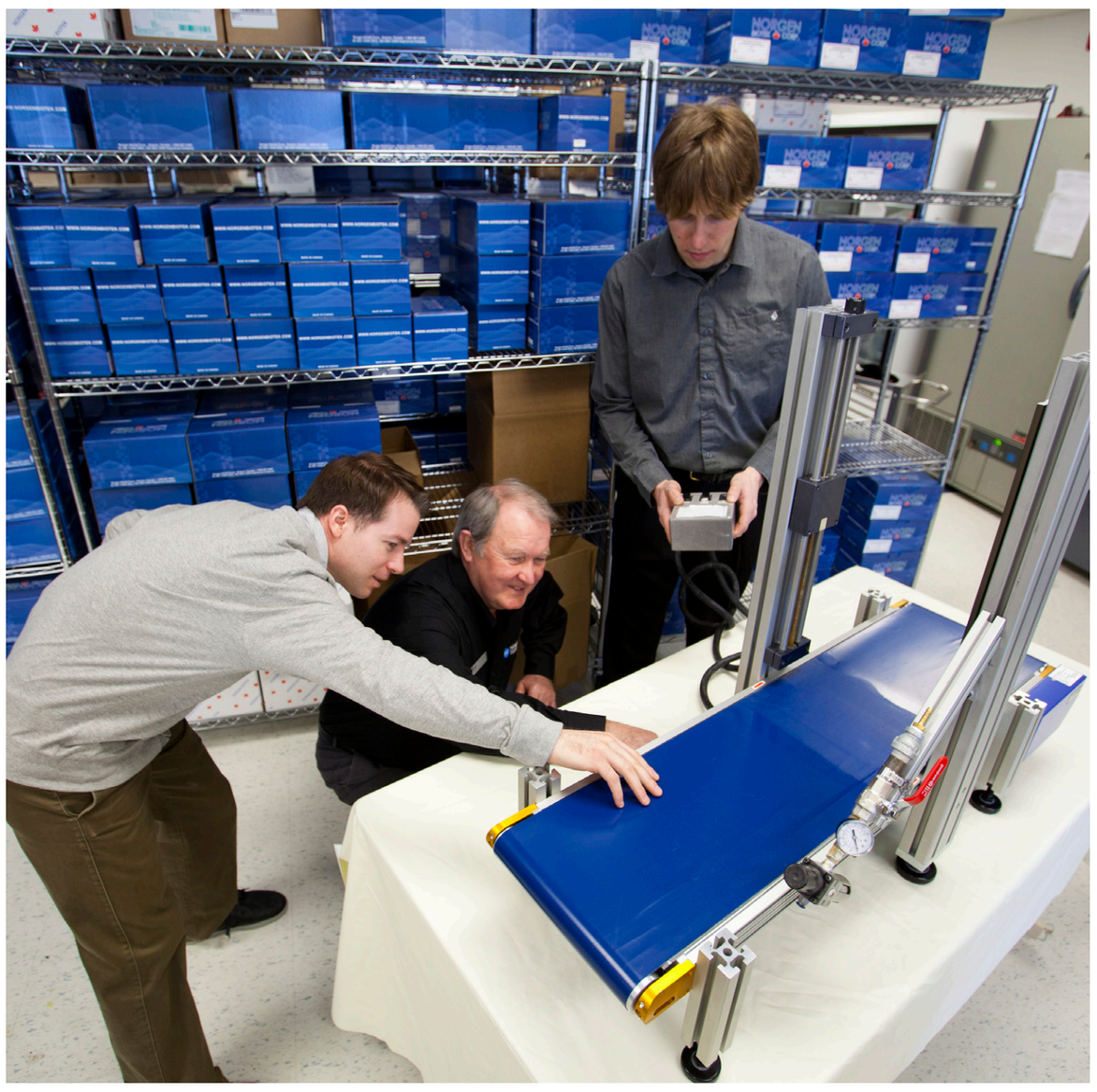
Niagara College research team helps Norgen Biotek innovate through automation

With an international customer base and a world-renowned reputation for quality, Norgen Biotek Corp. needs to keep up with the pressing demands of the world of biotechnology.

The Niagara-based company is dedicated to providing its customers with first-class sample preparation kits for RNA, microRNA, DNA and protein purification, clean-up and concentration, while also providing dedicated and expert support services to customers and partners worldwide.

The company has become so successful, in fact, that it recently faced the potential problem of not meeting demand. To overcome that challenge, Norgen Biotek turned to Niagara Research, the Research and Innovation Division of Niagara College, which works with small and medium-sized businesses to meet their innovation goals, and to keep them competitive. With funding from various provincial and federal agencies, current students and recent graduates are hired to work alongside faculty to help industry partners leap forward in the marketplace.

Norgen Biotek has been manufacturing its products for a number of years in automated and semi-automated fashion; however as demand for the products increases, there was a need to introduce new processes and improve on existing ones to continue to meet the increased demand while ensuring consistent product quality. Norgen Biotek manufacturing and engineering staff required additional machine shop facilities and expertise to complement the internal effort to tackle increased demand on manufacturing.



Ben Laurence, research assistant, Bob Dunlop, research associate and faculty member, and David Findlay, research engineer, Norgen Biotek Corp., work on equipment modifications at the Norgen facility.

PHOTO: NIAGARA RESEARCH

Niagara Research's team of faculty and students, in partnership with Norgen's engineering and manufacturing staff, worked on two projects. The first focused on improving and adding capabilities to the automated liquid handling system, first, by automating the bottle-labelling process, providing more consistency and essentially eliminating labelling time from the manufacturing process; and second, by producing tooling for an automated column machine, the team helped increase production volume from 500 to 12,000 columns per day, or from 10 kits to 240 kits per day.

With this initial success, Norgen and Niagara Research partnered again, this time to develop and improve the liquid-filling process used in the production of the kits, by developing tools to uniformly distribute their patented silicon carbide resin on a silica sheet. The Niagara Research team used fluid dynamic principles in the design of a mechanism that accomplished uniform spray distribution and silica carbide dispersion. This was not an easy task, as silicon carbide has a density of more than three times that of water, and is therefore difficult to keep in uniform suspension in water for spraying on the silica sheet.

The technology will increase the range of nucleic acids that can be purified by Norgen kits, therefore increasing the quality and consistency of the kits. The projects also helped Norgen Biotek decrease the overall cost per unit, in turn increasing profit margins per unit sold. The enhanced quality and consistency of the kits will also be well-received by its large, international customer base.

"Access to Niagara College's excellent facilities, machining, and engineering expertise is very valuable and helped in Norgen's continual process improvement towards lean manufacturing, to allow the company to be competitive and remain a global player in the sample preparation market," according to David Findlay, Research Engineer, Norgen Biotek Corp, adding that the company was also able to create the equivalent of one and a half full-time jobs as a result of these innovations.

These projects were made possible with funding from the Applied Research and Commercialization Initiative through the Federal Economic Development Agency of Southern Ontario and the Colleges Ontario Network for Industry Innovation.

Niagara College, through its Research and Innovation Division, will continue to support collaborative research projects in various disciplines that may involve product and process applied research, engineering design, technology development, product testing, proof of concept, and piloting and problem solving. Nearby small- and medium-sized businesses can benefit from gaining access to the College's adept faculty, students, and recent graduates and exploring opportunities for innovation.

To learn more about partnership opportunities with Niagara Research, contact research@niagaracollege.ca or visit www.NiagaraCollege.ca/Research

Are you a small or medium-sized business?

Looking to innovate and bring new products and processes to market?

Niagara College can help!

niagara research is

ADVANCED MANUFACTURING

Niagara Research's technology team specializes in engineering design, prototype development, 3D digital scanning technology, and lean manufacturing processes. Niagara Research works with local Southern Ontario businesses to bring their ideas to life from idea concept through to the development of working prototypes. Our students and staff bring real-world experiences from a range of business areas including automotive, agriculture, forestry, and manufacturing. We also have access to cutting-edge technology including the FARO Edge and Focus, as well software packages including Geomagic and Designworks.

SPECIALIZATIONS

- Automation
- Reverse Engineering
- Process Improvement
- Product Design and Development
- Product Re-Design and Improvement

APPLIED RESEARCH. APPLIED DREAMS.

Niagara Research provides real-world solutions for businesses through other specializations as well:

Digital Media & Information Technologies - Agriculture & Environment
Business & Commercialization Services - Food, Beverages, and Tourism Innovation

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for partnership opportunities contact us at
research@niagaracollege.ca
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