

2019-2020 ANNUAL REPORT

INNOVATING THE FUTURE



Western
Sarnia-Lambton
Research Park

IT IS AN AMBITIOUS GOAL...

one that we are on track to attain and one that serves as the central purpose and true promise of our being

- A place, a destination, a home where talent and technology, industry and invention, dreams and discovery converge to contribute extraordinary creations to our world and our future
- An enabler, principled in all dealings, positive in approach, and uncompromising in values
- A catalyst that anticipates needs, responds to requests, and continually seeks means and methods that can help all those that share in the quest, reach their own goals
- Relentless in the pursuit of forms and formulas that can help create economic and social good today and for tomorrow

TO OUR PARK CLIENTS, PARTNERS AND STAKEHOLDERS



(L-R): Aung Oo, Katherine Albion, Ron Listhaeghe, Rachael Fabbri

It is my pleasure to share with you our 2019-2020 Annual Report. This is an exciting time for the Western Sarnia-Lambton Research Park as we continue to expand the Sarnia-Lambton region's technology-driven business and economic development efforts.

The year 2020 was a challenging time for all businesses. We provided unwavering support to our Commercialization Centre tenants, to assist these growing organizations overcome unprecedented challenges to achieve their technology and business development ambitions. The Research Park team is excited to share some of our highlights in this report. In 2019 and 2020, we also celebrated many unique successes:

- Our tenants received funding totalling more than \$20 million to support local commercialization projects and initiatives,

- For the first time in Research Park history, all the lab suites at the Park were fully occupied,
- 21 tenants successfully "graduated" from our Research Park onto commercialization in the field since 2012, and
- In 2020, we welcomed 11 new tenants to the Research Park, including 7 startup companies.

As we prepare for 2021 and economic recovery, the Park is in a strong position for growth, through the implementation of our new strategic plan. The PARK Plan for Prosperity 2021-2025 will strengthen the Western Sarnia-Lambton Research Park's reputation in the region and further raise our profile locally, nationally and internationally. In alignment with the Park's vision and mission statements, priorities of the strategic plan enhance the role of the Research Park in the economic development of Sarnia-Lambton and as

the world-class technology incubator in the region. The four fundamental strategic priorities that will drive the Research Park's planning and activities are as follows:

- Pillar of economic growth,
- Asset management and maximization of value,
- Research and commercialization focused, and
- Knowledge centre

To become an essential pillar of regional economic growth, to manage the Park facility as a strategic asset of Sarnia-Lambton, to lead regional innovation as a world-class technology incubator and to operate as the knowledge centre in Intelligent Sarnia-Lambton are the goals of these strategic priorities.

Each strategic priority has three action items to achieve these goals. The Park will increase our visibility and collaborate with key partners to invest in and attract

entrepreneurs and new industries to Sarnia-Lambton. Prudent investments in Park facilities will attract diverse businesses to the Park while securing financial sustainability. Research and commercialization is a fundamental activity of the Park along with enhancing community involvement.

The pandemic will re-shape the global economy, and the Park will work with our partners to create a stronger and more resilient Sarnia-Lambton. The internationally recognized and award-winning Western Sarnia-Lambton Research Park will continue to be the proud entity of the citizens of Sarnia-Lambton by rigorously building on our successes, and we will continue to prosper into the future.

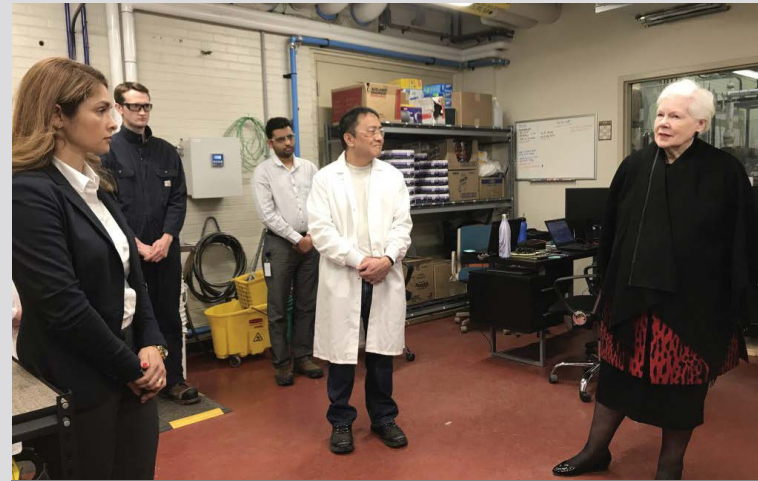
Katherine Albion
Executive Director
Western Sarnia-Lambton
Research Park

STORY OF SUSTAINABILITY

WOODLAND BIOFUELS



(L-R): Rick Williston, Katherine Albion, Her Honour the Honourable Elizabeth Dowdeswell, Lieutenant Governor of Ontario



(L-R): Alex Ward, Doug Cuthbertson, Kashyap Vyas, Bill Gong, Her Honour the Honourable Elizabeth Dowdeswell, Lieutenant Governor of Ontario

A BORDER COMMUNITY

Situated on the shores of Lake Huron, the riding of Sarnia-Lambton in Southwestern Ontario is part of a rich agricultural region that enjoys one of the warmest climates in Canada. Largely known for its traditional petrochemical industry, the border community has more recently evolved into a centre for bio-industrial research and the development of newer eco-friendly technologies.

ACCELERATING GROWTH

Thanks to its position at the centre of the Great Lakes corridor, Sarnia-Lambton has outstanding access to major markets in Canada and the United States. In the early 2000s, the region established the Sarnia-Lambton Biohybrid Chemistry Cluster in partnership with Bioindustrial Innovation Canada, Western University, Lambton College, and local industry to accelerate growth for new enterprises in the sector. Today the

Cluster is helping to diversify the economy, change the future of production in Southwestern Ontario, and drive sustainability. Central to this evolving economy is the Western Sarnia-Lambton Research Park.

CHANGING THE FUTURE

For over a decade the Research Park has been home to the country's largest clean-tech incubator, the Commercialization Centre. One notable company participating in the incubator is Origin Materials, a US biochemical startup that was attracted to Sarnia-Lambton after scouting other locations around the world. Instead of using petroleum, the startup uses plant-based materials that are easily accessible in the area like wood chips, corn stalks, and wheat straw – common byproducts of the nearby agriculture industry. Thanks to newly-formed alliances with the world's two largest bottled water companies—Nestle and Danone—they have developed and launched a bio-based plastic bottle made from 100 percent sustainable and renewable

feedstock. As other international clean-tech companies arrive, Sarnia-Lambton's influence will continue to grow nationally and around the world.

REFLECTIONS

I was eager to visit Southwestern Ontario as it reflected a very real example of the need for resilience when faced with transformative change. This area once had the highest standard of living in the country, due to its border location and a history of agricultural and industrial power but its recent story was one of economic decline and environmental challenge.

Sarnia-Lambton had questions about its future: Where can we find hope and promise? How can we balance economic growth with environmental health? How can we cope with change?

During my visit to the region, I was invited to visit the Western Sarnia-Lambton Research Park. I was struck by the collaborative spirit and forward-thinking

of the tenants of the Research Park. It was clear in my many conversations that the questions the community had been forced to ask itself were being met with innovation and imagination. By utilizing the existing infrastructure, resources available from the agricultural surroundings, and skilled labourers from the college, many of the whom were part of retraining programs, the area has begun to reinvent itself.

The story of Sarnia-Lambton is important for all Ontarians – it shows us what can be achieved when we reimagine a future with people at the heart of decision making. Though economic opportunity appeared to take priority over environmental stewardship and social cohesion, it is apparent that the community has embraced the concept of sustainability, listening to all sectors of the community, applying lessons from the past, with the objective of creating a resilient future for all. The story is a work in progress and one worth watching in the coming years.

Greg Nuttall will tell you that most people believe that clean technology is desirable, but prohibitively expensive.

He will also tell you that Woodland Biofuels is proving them dead wrong.

Nuttall, CEO of the private company, is using a demonstration plant established with the assistance of the Western Sarnia-Lambton Research Park to validate their ability to transform biomass into ethanol at a lower cost than gasoline, even at current oil prices.

Remarkably, considering that fuel is the largest single contributor to greenhouse gas emissions, the Woodland Biofuels technology is slashing these emissions by as much as 92%.

HARNESSING TECHNOLOGY TO REDUCE FUEL COSTS AND SAVE THE ENVIRONMENT

THE RESEARCH PARK'S KEY ROLE IN WOODLAND BIOFUELS' SUCCESS

Nuttall is quick to praise the Western Sarnia-Lambton Research Park for its contribution to Woodland's accomplishments - recently recognized with a \$1.9 million grant from Natural Resources Canada's Investments in Forest Industry Transformation program and an additional \$2.8 million investment financed by Canada's Clean Growth Program.

"The level of collaboration at the Research Park was the absolute key to our success," Nuttall said. "The Research Park made it possible for our company to 'navigate the waters' in Sarnia by meeting and interacting with suppliers, contractors and vendors and - ultimately -

to get the demonstration plant up and running. The entire ecosystem that exists here in Sarnia and the expertise found here have made Sarnia the perfect place for Woodland to locate. The Research Park was an essential part of that deliberation."

HELPING CANADA TO LEAD THE WORLD IN FIGHTING CLIMATE CHANGE

Most ethanol currently produced in Sarnia-Lambton is blended into gasoline. The Woodland Biofuels cellulosic ethanol demonstration plant, located at the Research Park, is creating ethanol from forestry and agricultural residuals and from construction and demolition wood waste.

"The remarkable reductions accruing from the process,

in almost completely eliminating GHG emissions, is making Canada a leader in the fight against climate change," Nuttall has told reporters and investors.

The profound results demonstrated by the demonstration plant will soon enable Woodland's first commercial plant, to be built here in Sarnia-Lambton.

CLEAN, RENEWABLE FUEL AT THE LOWEST COST ON THE PLANET

Greg Nuttall's claim that Woodland Biofuels is producing "clean, renewable fuel at the lowest cost on the planet" is being proven to prospective industry partners, and the Western Sarnia-Lambton Research Park is providing what Nuttall describes as "essential support in making this happen."

(L-R): The Honourable Kate Young, London West MP, Parliamentary Secretary to the Minister of Science and Sport and to the Minister of Public Services and Procurement and Accessibility, Katherine Albion, Greg Nuttall



BIC BIOINDUSTRIAL INNOVATION CANADA

LAMSAR INC.

ACCELERATING TECHNOLOGY DEVELOPMENT, PROMOTING COMMERCIALIZATION AND ENABLING BROADER PRODUCT ADOPTION

NEW TO THE RESEARCH PARK IN 2020, LAMSAR INC. ALREADY FEELS RIGHT AT HOME



(L-R): The Honourable Kate Young, London West MP, Parliamentary Secretary to the Minister of Economic Development and Official Languages (FedDev Ontario), Katherine Albion, Michael Faba, Sajib Barua, the Honourable Mélanie Joly, Minister of Economic Development and Official Languages

Since 2008, when BIC was first established as a not-for-profit business and technology accelerator, the accelerator has been a strategic partner of the Western Sarnia-Lambton Research Park. While the Research Park has provided the “bricks and mortar” essentials of laboratory and office space, pilot plant hosting and an opportunity to meet and collaborate with potential partners and clients throughout Sarnia-Lambton, BIC has offered investment, advice, and critical services.

Originally established as a Centre of Excellence for the emerging bioindustrial sector, BIC has grown to support the emerging hybrid chemistry clusters in Sarnia-Lambton and Eastern Ontario to foster regional economic development, jobs and access to global markets.

THE ONTARIO BIOINDUSTRIAL INNOVATION NETWORK (OBIN)

In February of 2020, BIC received a \$15 million investment from FedDev Ontario. These funds were used to create the Ontario Bioindustrial Innovation Network (OBIN).

Five years earlier, in 2015, BIC had expanded its accelerator capability with the launch of COMM SCI – the Centre for Commercialization of Sustainable Chemistry Innovation.

Through OBIN, of which the Research Park is a key component, BIC is investing in some 150 early-stage, innovative clean technology small and medium-sized companies (SMEs), enabling them to scale-up, grow and develop. In the process, BIC has created and maintained almost 700 jobs, filed for multiple patents, leveraged \$142 million from third-party investors and developed sixty-seven highly-trained personnel.

BIC was the primary investor, for example, in Forward Water Technologies, and was an early investor in Woodland Biofuels – two companies that currently have labs and pilot plants located at the Western Sarnia-Lambton Research Park.

CREATING JOBS, DIVERSIFYING THE ECONOMY AND SUPPORTING CLEAN TECHNOLOGY IN SARNIA-LAMBTON

Since 2008, BIC has been working with the Western Sarnia-Lambton Research Park to accelerate the development and to advance the commercialization of bioindustrial-based products. Both partners are focused on creating and fostering a knowledgeable and diversified cluster of industrial, agricultural and academic partners amidst one of Canada’s primary petrochemical refining industry clusters and the Southern Ontario agricultural heartland.

“THERE IS NOT A BETTER PLACE TO BE...”

“We promote the Western Sarnia-Lambton Research Park always and everywhere,” proclaims BIC Executive Director, Sandy Marshall. “There is not a better place to be if you need labs and pilot space, and professional staff support. We are constantly telling early-stage companies to locate here. We have great assets at the Research Park at incredible value.”

One of the fastest-growing companies in the region, LamSar Inc. came to the Western Sarnia-Lambton Research Park only in the past year, but is already proclaiming the benefits.

LamSar is a general and mechanical contractor specializing in custom shop fabrication of piping and steel in support of a multitude of projects throughout the Sarnia-Lambton petrochemical and refining complex and the hybrid chemistry cluster.

Incorporated in 1979, LamSar prides itself on the company’s ability to seek out and take advantage of opportunities. The client-driven company emphasizes the requirement to be reactive to customers’ needs.

“We have full confidence in any task assigned to us, says LamSar’s Randy Goertz. “No task is too large or too small. We do it all.”

That can-do attitude has led to rapid growth and expansion for LamSar.

AN INTERNATIONAL COMPANY WITH A GROWING CLIENT LIST

LamSar’s elite team of managers and designers are spread over multiple workplaces. Head office in Corunna features ten acres of paved surface for module fabrication and pre-assembly. An adjacent rail spur allows shipment to anywhere in the world. LamSar recently became an international

company, with offices in Michigan and the Emirates.

A NEED FOR PROFESSIONAL SPACE DREW LAMSAR TO THE RESEARCH PARK

One of the benefits of LamSar’s continuing expansion was the awarding of a large project by NOVA Chemicals – a long-standing client. The new contract created a need for professional floor-space for drafting and engineering.

LamSar found that, and more, at the Western Sarnia-Lambton Research Park. In addition to attractive meeting and office space and knowledgeable,

professional staff, LamSar discovered some of the most competitively-priced office space in the entire region and a chance to share a working environment with industry leaders in the Sarnia-Lambton region.

As the knowledge centre of Sarnia-Lambton, an advanced cluster of companies are located at the Research Park. In addition to Nova, they found Enbridge – a client – and Worley – an engineering firm with which LamSar is collaborating. IEC Partnership (Industrial Educational Co-operative) recently became a tenant in the Research Park. LamSar

is involved with IEC for staff training.

TAKING ADVANTAGE OF OPPORTUNITIES AT THE RESEARCH PARK

Goertz says that LamSar believes in taking advantage of opportunities, and he has found that in the ideal location, and the well-organized, professional atmosphere of the Research Park.

“It sets the right tone for an expanding company,” Goertz feels, as LamSar continues its work and plans future projects.



(L-R): Dave Hill, Randy Goertz

FORWARD WATER TECHNOLOGIES

A COMPANY IN THE VANGUARD OF THE 21ST CENTURY SOCIALLY-CONSCIOUS ECONOMY

Few stories at the Western Sarnia-Lambton Research Park are as inspiring as the scientific and conservationist advances demonstrated by Forward Water Technologies.

Simply put, Forward Water is using a proprietary technology known as “forward osmosis” to transform industrial wastewater into clean water.

For industry, the Forward Water technology promises to eliminate the costly and environmentally harmful methods currently employed to dispose of wastewater.

For the rest of a world far less richly-endowed with fresh water than Canada, the promise and the potential is even greater.

THE RESEARCH PARK IS HELPING SARNIA TO BECOME A LEADER IN CLEAN WATER TECHNOLOGY

Forward Water Technologies CEO Howie Honeyman says that we are living in exciting scientific times, and that more lie ahead. Canada has enrolled in the fight against climate change, and “the winds of change are blowing,” he says, in the socially critical areas of environmentalism

and good water stewardship, and in the regulatory atmosphere involving both. Respecting our water resources is important. “Southern Ontario,” Honeyman says, “and especially Sarnia, is one of the world’s most productive regions in the research of clean water technology.”

THE TECHNOLOGY OF FORWARD OSMOSIS

Some ten years ago, Queen’s University research professor Philip Jessop, working with GreenCentre Canada, discovered the forward osmosis process. He was able

to draw contaminated water through a membrane, leaving behind the contaminants. The low energy (and consequently, low cost) process was chemistry-induced, rather than applying physical pressure.

Forward Water became independent in order to advance the process to the demonstrable engineering stage, at which point the Western Sarnia-Lambton Research Park became an integral component.

FORWARD WATER AND THE RESOURCE PARK

“We love the Research Park,” CEO Honeyman says. He cites economics – the competitively low costs of lab and engineering space, versus both Toronto and the local community. He also praises the Research Park, their partners Bioindustrial Innovation Canada and Lambton College for, among other things, their expertise on grant applications and new and creative fundraising methods.

Most particularly, Honeyman cited the Research Park’s role in providing it a base from which to use the pilot plant to both meet potential industrial clients for the clean water technology, and to demonstrate how the Forward Water process can solve a problem for industry while being socially responsible and conserving water.

The next stage for Forward Water is industrial contracts leading to a full commercial plant.

LAMBTON MANUFACTURING INNOVATION CENTRE

CELEBRATING LAMBTON COLLEGE’S KEY RESEARCH AND INNOVATION ROLE WITHIN THE WESTERN SARNIA-LAMBTON RESEARCH PARK

Two decades ago, a revolutionary and progressive new role was crafted for the province’s college system. Realizing the immense benefit to communities, the government began to fund applied research and to focus on practical teaching.

Lambton College was quick to embrace this new role. The college reached out to companies, hospitals and other key institutions within the Sarnia-Lambton community, with increasing success. As community collaboration proliferated, the number of projects grew.

The College began seeking increased capacity. It did so at a time when the Western Sarnia-Lambton Research Park was also expanding its resources.

Lambton College and the Research Park began working together, attracting small and medium-sized enterprises (SMEs) that needed research and development work (R&D) completed but were not large enough to do on their own.

As the Western Research Parks began to receive international recognitions, Lambton College’s reputation in research and innovation grew with it: today, Lambton College is the only college in Canada which has been ranked among the top three research colleges nationally for the past four years.

R&D conducted by Lambton College within the Research Park has substantially benefitted the community,

helped it to diversify, and has provided the highly specific training that industry requires. It has also created local jobs. Lambton College students have been given the opportunity to work closely with partners on “real world” applied research.

THE LAMBTON MANUFACTURING INNOVATION CENTRE (LMIC)

Located within the Research Park, LMIC represents one of the most important evolutions of the partnership between Lambton College and the Research Park.

LMIC offers innovative services focused on 3D design, 3D printing and 3D measurement. Focused on product, process and service development through partner collaboration, LMIC worked with more than twenty partners in their labs at the Research Park last year.

INNOVATIVE MANUFACTURING TO SOLVE PRACTICAL PROBLEMS

LMIC has worked with Bluewater Health, 3D printing needed PPE components, and manufacturing hand sanitizer. A vaccine project

is underway with a company in Toronto, and LMIC is providing assistance to other Lambton College research centres which are working with Suncor Energy and Western University on antibody experiments.

Other innovations include a device for Topspin Technologies to reduce the severity and frequency of concussions, and a prototype allowing long-haul truckers to convert waste heat from diesel engines to power production.



Sajib Barua



Dariel Gomez

ENERGY UPGRADES

WESTERN SARNIA-LAMBTON RESEARCH PARK'S AGGRESSIVE PURSUIT OF ENERGY UPGRADES

Dr. Aung Oo has spent a lifetime studying the strategic use of energy.

Dr. Oo is the Director of Technology and Facilities Management at the Research Park. His advanced program of energy conservation has made the Research Park one of the lowest energy-consuming complexes in the region. His success has given the Park a much smaller environmental footprint.

For our tenant partners, this has translated into professional office, meeting and laboratory space that carries one of the most competitive leasing costs in Ontario.

A mechanical engineer with a Master's degree in energy technology and a doctorate in heat transfer, Dr. Oo came to the Research Park in 2008 and immediately began finding ways to lower operating costs. With successful strategic energy studies for Ontario Power Generation and CF Industries, he set a target of achieving the lowest per-square-foot energy cost of any commercial or institutional user in Ontario.

Following an initial spate of energy-cutting measures that produced significant savings, the Western Sarnia-Lambton Research Park conducted a thorough and intensive energy assessment in 2015.

INVESTING IN ENERGY EFFICIENCY

As a result, investments were made in five different projects to increase energy efficiency.

These included the installation of variable frequency drives on the campus' HVAC system. A program of automation upgrades affecting energy usage was conducted in all five buildings of the Research Park, and a switch was made to LED exterior lighting. New interior LED lighting came with dimmers and controllers, and additional improvements were made to the chiller system and cooling tower.

The Research Park's energy upgrades resulted in energy costs reduced by half.

THE COMBINED HEAT AND POWER PROJECT (CHP)

The CHP is a 400 kW natural gas engine with a heat recovery system. Installed in 2018, the CHP allows the Research Park to generate electricity for internal use. The recovery heat from the CHP is used to keep the Park's buildings warm. The Park is currently generating as much as 75% of the required electricity demand, and the recovered heat meets an estimated 60% of the annual requirement.

As technological innovations arise, the search for new energy savings continues.



Aung Oo

WESTERN SARNIA-LAMBTON RESEARCH PARK PERFORMANCE

2019-2020

\$132,000,000

ESTIMATED CONTRIBUTION TO THE SARNIA-LAMBTON COMMUNITY

51

NUMBER OF TRANSFORMING ENTITIES

32

COMMERCIALIZATION CENTRE TENANTS

10

INTERNATIONAL TENANTS

13

NEW ENTITIES TO SARNIA-LAMBTON

21

GRADUATES SINCE 2012

WESTERN SARNIA-LAMBTON RESEARCH PARK

TEAM

Katherine Albion
Executive Director

Aung Oo
Director, Technology and
Facilities Management

Ron Listhaeghe
Facilities Services Manager

Rachael Fabbri
Administrative Coordinator

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