



By: Murray McLaughlin

Innovation - The Road To Prosperity

In the book “Blueprint to a Billion” by David Thomson, he produced a leadership formula which is: Blueprint for Leadership = FOCUS on relationships and products, DRIVE to innovate and explore, and ABILITY to manage the 7 Essentials simultaneously (7 Essentials - Value proposition; Market segment; Customers; Alliances; Returns; Management Team; and Board).

Those companies that have been able to focus on all three areas of Focus, Drive and Ability at the same time have been successful. As I read this book and look at the companies we work with at SCA and BIC, I naturally try to see how they can manage this equation. I believe they will do well as they grow, but DRIVE to innovation is a key component at present.

I have had two other examples that point to Sarnia’s Road to Prosperity. First was the Annual Meeting of Sarnia-Lambton Workforce Development Board (SLWDB) where they launched their report “Sarnia Lambton Green Economy”, which looks at future work force needs in Sarnia-Lambton related to a Green Economy. It is a very good study and probably the first one done by a regional group in Canada. The key now is to attract the green biobased chemistry industry to Sarnia for their full-scale facilities. Understanding the need for green jobs will lead to appropriate training and certification.

The SCA’s annual meeting had keynote speakers who focused on the needs for innovation as a means to build the future products for companies, and to help companies transform their business to meet future growth potential.

Secondly is Naima Raza, a national science fair

winner, a grade eight student from Sarnia who made ethanol from newspaper for her science project. See her story in this issue of our newsletter. I believe she will be among the science or business leaders of the future, or both as she develops her skill sets.

Then there is the story told by Premier McGuinty at a recent luncheon about his father and his nine brothers and sisters when they sat around the dinner table. His father would say “No one of us is as strong as all of us; no one of us is as smart as all of us.” It instilled a “philosophy of working together”.

These segments bring me back to the Blueprint for Leadership and Sarnia. I believe Sarnia has the Focus, Drive and Ability.

Sarnia is focused on the future, but with a desire to also maintain the present through innovation. The region has a drive to become a national cluster, with a focus around Hybrid Chemistry and it has ability through its people to become a true cluster.

To learn more about Sarnia and its future focus of a hybrid chemistry cluster, please contact Murray McLaughlin at SCA, or George Mallay at Sarnia Lambton Economic Partnership (SLEP)

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ALSO IN THIS ISSUE:

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The Sarnia, Ontario student, who enters Grade 9 at Northern Collegiate

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Duopar Gets SCA support for Production of Competitive Green Railway Ties

The SCA has committed funding to Brampton, Ontario-based [Duopar Technologies Inc.](#), which produces railway ties composed of 100% waste-based composite material. The railway industry in North America alone replaces an estimated 20 million ties annually, typically using a creosote-covered product.

To test its production concepts, Duopar operates in a leased 40,000 sq. ft. former industrial plant in Brampton, Ontario. The plant has been renovated and modified and most of the trial equipment has been delivered and installed. Over the next few months, the company expects to produce 500 railway ties for pre-sales testing and qualification by Canadian Pacific Railway. A successful testing result could lead to a much larger production order from CPR.



Jim Inglis,
President of Duopar

Results from customer testing of its prototype have already confirmed that Duopar's "green" railway ties demonstrate superior performance, while providing environmental benefits with their recyclable and non-toxic materials. The new products are designed to ultimately replace existing concrete, wood and petroleum-based railway products that pose environmental issues. Creosote coated ties contain toxic materials that could leech into the soil and groundwater around train tracks.

"Our goal is to become the leader in the manufacture of high performance green railway ties that are cost competitive and made from 100% recycled material," says company president Jim Inglis. There are over 250,000 miles of Class 1 railway track in North America. "As we work through the challenges of the moulding process, our ultimate target would be to produce about 100,000 ties per year."

Recycled waste material utilized by Duopar includes plastic that is difficult to recycle through municipal programs and old asphalt. The



Inspecting the processor Duopar's Brampton, Ontario plant

composite ties are durable and weather and insect resistant.

Inglis, a corporate lawyer, says Duopar has created the conditions necessary for rapid growth and initially is focused on its core railway-related business. This will generate revenues, which can be used to grow the core business and fund a licensing effort. In addition to SCA support, the company has received major funding support from Sustainable Development Technology Canada (SDTC).

SCA funding support is designed to help Duopar move forward in its commercialization efforts. In a two-stage program, the company is working towards upgrading its moulding process and achieving a cost-effective production level of one tie per minute.

Inglis says SCA support has been critical to Duopar's development. "For a new project trying to get off the ground, it's often essential to have additional funding beyond the private funding from your shareholders. That's where the SCA stepped in to help us move forward on our environmental project." He adds that SCA expertise will also be supportive in sourcing suitable suppliers of recycled materials.



Duopar's Brampton, Ontario plant

DUOPAR TECHNOLOGIES INC

[Duopar Technologies Inc.](#) of Brampton, Ontario, has developed a composite green concrete replacement material that can serve a variety of new product applications based on its performance/cost benefits. Through its involvement with the SDTC, the company partnered with Canadian Pacific Railway on a project that seeks to replace the use of creosote-covered railway ties with ones that are made of 100 per cent waste-based composite material. CPR uses about one million ties annually. Key officers of Duopar are President Jim Inglis and VP Research Brian Ambramson.

Renix Commercializes Ion Exchange Technology

Funding from the Sustainable Chemistry Alliance will help [Renix Inc.](#) build a pilot unit for its ion exchange technology and take the technology forward into operating facilities for clients to test and evaluate.

“With a major processing technology such as ion exchange, the



Christine Haas. CEO Renix, London, Ontario

ability to offer clients the option to see and test the system in a pilot scale unit is essential to its adoption by industry,” says Renix President and CEO Christine Haas. Technology offered by Renix is targeted to industries utilizing ion exchange in their processing operations. This process is widely used in industrial processing in such sectors as food and beverage, nutrition, pharmaceuticals, power generation, mining and specialty chemicals.

The early stage company evolved from research at the University of Western Ontario and offers cost savings and production efficiencies with its Continuous Fluidized Ion Exchange (CFIX) technology. An evolution from commonly used batch and semi-batch ion exchange, CFIX offers simultaneous and concurrent resin regeneration.

Haas says CFIX fits into the concept of integrated supply chains, as it is well suited to decontaminating or concentrating byproduct or waste streams. Further, there are several applications in agri-food processing area, particularly for the production of ingredients - such as the separation/purification of soy protein isolates (SPIs)



CFIX white resin. Renix, London, Ontario

from crushed soybeans.

SPIs are a rapidly growing segment of the soybean market as their use on food products and nutritional supplements has been expanding rapidly. Current SPIs are produced using hexane (or similar solvent) extraction combined with alcohol and/or acid precipitation. CFIX technology produces solvent-free SPIs through a more environmentally responsible way that is also less damaging to the product. Solvent-free SPIs could become a unique product from Southwestern Ontario.

Renix plans to build and sell CFIX systems. It is currently in the commercial demonstration stage working with potential customers of existing ion exchange processes to help improve their competitiveness. Renix’s technology also opens the door to new economic applications for ion exchange where prior ion exchange technologies could not compete with other processing alternatives.

Haas sees strong synergies between SCA’s mandate and Renix operations. “SCA is interested in developing businesses in the area of sustainable chemistry while CFIX fundamentally changes a chemical process that for many organizations is one of the most costly and complex in their facility.” It can offer improvements that make processes more environmentally responsible (for example, by eliminating the use of a hazardous air pollutant such as hexane, or by providing a method to clean up waste streams) or that reduce processing steps or chemical usage.

“SCA and Renix will have many, many opportunities to work together on bringing the technology into several processing industries.”

Haas adds that Renix will benefit from both SCA’s investment and expertise. “The backing of the SCA, with such strong chemical and processing industry experience, provides an excellent opportunity for Renix to learn from and work with the members of the organization.”

RENIX

Based at the University of Western Ontario Research Park in London, Ontario, [Renix](#) is an early stage company founded to commercialize platform industrial ion exchange technology. Continuous Fluidized Ion Exchange (CFIX) technology, developed by researchers at the University of Western Ontario, offers cost savings and increased production efficiency in manufacturing operations. Businesses that rely on ion exchange represent over \$US 700 billion in goods produced annually in the USA and spend over \$US 50 billion in annual capital.

Nurturing a Career in BioScience

At 14, Naima Raza is already well on her way to a potential career in environmental science.

The Sarnia, Ontario student, who enters Grade 9 at Northern Collegiate Institute this fall, is hoping to extend a winning streak in science fair competitions that led to a gold medal in the junior division at the Canada Wide Science Fair held in Toronto in May.

Following up on her previous silver award win at the national competition, Naima struck gold with her entry titled The Newspaper Fuel: Enhancing Cellulosic Ethanol Production. Through researching the topic, she says she became more comfortable in undertaking four months of work on the project.

“This project involved the creation of cellulosic ethanol out of newspaper, and improving the production process by pretreating the newspaper before converting it into ethanol. I tested the organosolv process, which includes adding ethylene glycol, and the oxidative delignification, which includes adding hydrogen peroxide, pretreatment processes. To the best of my knowledge, these two pretreatment methods have not been performed on newspaper before.”

Widespread public interest in issues such as global warming has stimulated her interest in environmental science. “Humans and the environment work reciprocally - whatever we do that affects the environment affects us in return. Unfortunately, in the last few decades we have depleted the earth’s natural resources, and are facing dangerous consequences as a result. If this problem



Naima Raza. Sarnia, Ontario student

is left unattended, the state of earth and humans can only decline. Therefore, it is a priority to contribute towards solving this issue.”

Encouraged by her father Samar, a mechanical engineer at Lanxess, and mother Shiba, an occupational therapist, Naima completes a large part of her science fair projects at home. Her parents immigrated to Canada from Pakistan before Naima was born.

She is planning to dedicate some of her summer vacation to working on a new project. The process of selecting a topic is typically a challenge. Ultimately it requires reading various magazines articles and visiting websites on interesting themes. After finding a few topics of interest, she starts background reading and builds awareness of what scientists are doing in the field by reading scientific journals. At this point, she selects a topic and then a specific question according to the practicality and originality of the project.

In the future, Naima hopes to have the opportunity to interact with and learn from the vast array of environmental expertise present in the Sarnia-Lambton region. “Interacting with industry and institutional contacts will be a great opportunity for me, since it provides exposure to active research and science in the community. It hope to possibly be offered opportunities to work on projects of my interest and even perhaps try to solve actual scientific problems in industry in Sarnia-Lambton - this would be beneficial to both industry and myself. I hope to potentially develop this project into my next science fair project. Alternatively, I hope to have the opportunity of having a mentorship with a scientist specialized in my area of interest to develop the next project. Any opportunity to work in a laboratory, to use scientific equipment/materials, or simply any suggestions or guidance would be appreciated as well.”

Although she has a variety of interests, Naima is seriously considering a science-related career path. “I’m very much interested in chemistry and biology and their applications in environmental science. In the future, I aspire to become a researcher at a university.”

Sustainable Chemistry Alliance
Growing the future naturally

The Sustainable Chemistry Alliance is a not-for-profit organization established in 2008 to promote growth and prosperity by fostering and supporting innovation, development, commercialization and related business activities and projects in the area of green and sustainable chemistry. SCA is supported by the Bioindustrial Innovation Centre, a Centre of Excellence for Commercialization of Research with funding from the Government of Canada.
www.suschemalliance.ca