Set against the picturesque, agrarian landscape of Prince Edward County in Ontario, this 4,200 sq. ft. cheese factory is the vision of a sustainability enthusiast with a passion for all things dairy. The facility holds a Platinum LEED certification due to its myriad of green sustainability initiatives.

Within the heart of Ontario’s dairy community in the picturesque, agrarian landscape of Prince Edward County in Ontario, the Fifth Town Cheese Factory has become a brilliant example of adopting sustainable, green technologies into agricultural construction.

Owned by sustainability enthusiast Petra Cooper, the Fifth Town Cheese Factory is a mixed use facility that has been awarded a Platinum certification under the Leadership in Energy and Environmental Design – New Construction (LEED - NC) rating system.

The Project
Non-residential buildings account for more than a third of all energy use and consume roughly the same percentage of raw materials. These buildings are also responsible for nearly a third of all greenhouse gas emissions. For Ms. Cooper, it was important to demonstrate sustainability by taking a comprehensive systemic approach towards maximizing the use of green technologies and innovations. In an effort to achieve LEED certification, designers of the Fifth Town Cheese Factory, Lapointe Architects, aimed to incorporate building systems that offer optimal, sustainable, economic and environmental value.

One important building consideration was to separate the spaces with extreme climates, that is warm and moist on one side and cold and dry on the other side. Without achieving this, the walls could have been highly susceptible to the risk of condensation and mold growth.

Building Green
Builder K. Knudsen Construction Ltd. and Designer Lapointe Architects reviewed and assessed a variety of eco-friendly building materials that could provide energy efficiency, durability and have very low environmental impact. Additionally, they also assessed products based on payback on investment and their ability to achieve LEED credits. Based on the requirements, the one product that scored highest was Icynene spray foam insulation.

The builder focused on an air tight building design to achieve an energy efficient space with the help of Icynene spray foam insulation. Before the Icynene application, 6 mil poly vapor barrier was used on the studs to provide effective moisture management for a durable building structure and a healthier indoor environment and minimize the potential for moisture and related problems such as mold and mildew.
Following the vapor barrier application, a local licensed Icynene spray foam contractor applied Icynene Classic™ between studs on the exterior walls of the retail area and on the second floor office walls at an R-value of R20; between floor joists separating the office from the cheese production area; on partition walls for sound proofing at R12 and; the floor joists and roof joists at R40.

Applied to the ceiling to separate the production area from the office area upstairs, Icynene acted as an air barrier, reducing air filtration from the warm, moisture-laden production area into the cooler office. This not only helped in minimizing potential condensation but also with sound attenuation.

Further to including Icynene spray foam insulation, the designers included a 12-ton water to water ground pump, a 9.4m² solar PV system, a 30 foot wind turbine as well as a high percentage of recycled building materials. The most recent energy models show reducing the space heating and cooling costs by 84% when compared to a similar building designed in conformance with the Model National Energy Code of Canada (MNECB).

The Result
Installation of Icynene spray foam insulation was completed in February 2008 and construction of the sustainable cheese factory was completed shortly thereafter.

Inclusion of Icynene spray foam insulation noticeably contributed to the Fifth Town Cheese Factory achieving its Platinum LEED certification. By having Icynene spray foam applied throughout the structure, it helped increase the energy efficiency by completely sealing air leaks and reducing the carbon emissions of the building. In total, Icynene helped achieve credits in four out of six categories of LEED Certification Program namely Innovation and Design process, Energy and Atmosphere, Materials and Resources and Indoor Environmental Quality.

Icynene greatly contributed to the green design of the Fifth Town facility. It complemented other systems in reducing the carbon footprint of the facility as well as offered a healthier indoor environment ensuring that we would meet Platinum LEED certification levels.

Francis Lapointe, Lapointe Architects

It is believed that the Fifth Town Cheese Factory is the only LEED certified dairy in Canada and the first Platinum LEED manufacturing facility in Canada across all industries.

Sources & Footnotes:
1. Azure magazine (June 2006), writer Pamela Young
2. http://www.fifthtown.ca/artisan_cheese/initiatives/our_platinum_leed_facility
4. Icynene Inc. would like to thank Lapointe Architects, Fifth Town Cheese Factory and K. Knudsen Construction Ltd. for their assistance with this document.