

Lexan* ZigZag* sheet roofing helps the Dutch greenhouse industry move toward energy independence

From consuming fossil fuel to producing solar energy

To support a strategic shift away from consuming large amounts of fossil fuel, the greenhouse industry in the Netherlands is turning to SABIC Innovative Plastics for progressive environmental solutions. Using Lexan ZigZag sheet polycarbonate (PC) roofing material, Hydro Huisman, a leading hydroculture company in Huissen, is constructing the first greenhouse that will produce more energy than it uses. Lexan ZigZag sheet double-wall roofing panels provide higher light transmission than single glass, and insulation similar to multiwall glass or PC sheet. These energy-efficient properties will enable approximately one-third of the heat generated in the greenhouse to be sold as surplus.



SABIC Innovative Plastics and Hydro Huisman

In the Netherlands, greenhouses are currently among the largest consumers of fossil fuel (natural gas).

Concerned about environmental implications and costs, the Dutch greenhouse industry is looking for a way to free itself from energy dependence.

With an experimental widespan greenhouse constructed using Lexan ZigZag sheet double-wall PC roofing panels, Dutch horticulturalist firm Hydro Huisman aims to turn energy consumption into energy production.

Lexan ZigZag sheet roofing, part of SABIC Innovative Plastics' portfolio of environmentally progressive products, raises light transmission levels above those of single glass, especially during non-peak hours/seasons, while ensuring outstanding insulation to retain heat. The award-winning, patent-protected Lexan material also provides lighter weight than glass, excellent flame retardance and easy installation.

Recently, the Dutch greenhouse industry invited builders to create new solutions that can free growers from their historic dependence on fossil fuel. Hydro Huisman, a large hydroculture company, chose to take this challenge one step further and construct a greenhouse that would

not only save energy, but would actually produce a surplus. To achieve this, Hydro Huisman needed a way to collect more energy from sunlight than is used to heat the greenhouse or lost back into the atmosphere. The company sought an innovative material that could raise light transmission levels while providing excellent insulation properties to retain the captured sunlight and heat. Other properties that Hydro Huisman required included UV resistance, flame retardance, recyclability and light weight to enable construction of a large widespan greenhouse - a distance of 12.6 m between vertical supports.

Hydro Huisman learned about Lexan ZigZag sheet roofing at a Dutch trade show, the Horti Fair, where the new material won an award for innovation. The company selected Lexan ZigZag sheet roofing panels for the experimental, energy-producing section of the new greenhouse - an area of 6,000 m² within the 26,000-m² building. The greenhouse will be equipped with special heat exchangers that can either heat or cool water for climate control; the excess energy will be used to heat the conventional areas of the structure and can be sold to nearby greenhouses.

Stef Huisman, General Manager of Hydro Huisman said, "Our industry has a vision of independence from fossil fuels and we believe Lexan ZigZag sheet roofing can make that vision a reality. We want to

Case Study

Lexan* ZigZag* sheet / Huisman

reverse our tradition of being energy consumers so that we can better support the environment and become more competitive through cost reduction. This unique material provides all the attributes required to turn greenhouse energy costs into profits.”

With its double-wall, zigzag configuration designed specifically for greenhouses, Lexan ZigZag sheet roofing offers a number of key properties. First, its angled design enables the capture of light reflected from the sides of the roof surface, thus increasing the total amount of light transmitted into the greenhouse to 90.9 percent – one to two percent higher than with single glass. Further, when the sun is low on the horizon –during winter months and at dawn and dusk – the material’s channels catch more light than flat glass.

Second, Lexan ZigZag sheet offers insulation properties that are similar to those of double-wall glass; the material retains 50 percent more heat than single glass for substantial savings on energy demand: these savings can range from 20 percent

to 45 percent. Further, the Lexan sheet roofing material provides resistance to UV light on the exterior side, and anti-condensation properties. It is more than 50 percent lighter than glass and virtually unbreakable, making it resistant to hail and easy and safe to work with. The experimental greenhouse, located in Huissen, was completed in the latter part of 2005.

Details at
hydrohuisman.nl

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