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## Competition heats up in US cooling biz

By Bill Bregar

PLASTICS NEWS STAFF

BESENVILLE, ILL. — Green Box America Inc. opened in January and for the first time had its own NPE exhibit, at the NPE2009 show in June. But the company's Italian parent company is certainly not a new player in the process cooling business.

Green Box equipment generates chilled water for cooling hydraulic oil on plastics equipment, including injection presses, blow molding machines, extrusion and thermoforming equipment.

Company officials are pushing closed-loop fluid cooling technology as a replacement for traditional evaporative cooling towers.

Green Box srl, a maker of chillers, fluid cooling systems and temperature control units, is based in Piove di Sacco, near Venice. The company also makes dehumidifiers for molds, and can provide clean rooms. The firm launched Green Box America in Bensenville to handle direct sales and service to North America.

The two U.S.-based executives — Jose Garcia-Hernandez, operations director, and Sasha Logan, chief technology officer — lead a seven-employee operation. Later this year, the Bensenville site will include a full-time systems engineer from the parent company.

Green Box America is building a base of manufacturers' representatives, with 12 reps so far in the United States, Canada, Mexico and Puerto Rico.

Garcia-Hernandez said that, during the past six years, about

400 pieces of Green Box equipment have been sold in the U.S., most of them to plastics machinery makers that buy the equipment from Green Box in Italy and incorporate it into complete production lines. Some large multinational plastics firms source Green Box products through their European operations for their U.S. sites, he added.

Worldwide, outside of the United States, about 1,500 pieces of Green Box equipment are running, nearly all of them on Husky PET injection molding machines that make PET preforms, Garcia-Hernandez said. Many of those applications are in Asia and Europe.

Now as a separate U.S. operation, Green Box America is competing directly with Frigel North America Inc. in East Dundee, Ill. — a unit of another Italian parent, Frigel Firenze SpA. Jose Garcia-Hernandez helped establish the U.S. Frigel subsidiary in 2006, before leaving for the same role with Green Box.

Both companies are promoting closed-loop fluid cooling equipment, which uses a series of piping and fans to work like a car radiator. Garcia-Hernandez outlined the process during an interview at Green Box America offices in Bensenville.

Italian companies pioneered the cooling technology as a way to conserve precious water, according to Garcia-Hernandez.

"In the early 1990s, the water wells were drying out. The government decided that whatever water was available had to go for agriculture, because people need to eat. So they basically banned cooling towers, which use a lot of water," he said.

Cooling towers rely on evaporation, which lowers the temperature of the remaining water. Users also must use chemicals to treat water in the cooling towers.

So the Italian plastics companies shifted over to air-cooled chillers, which cut back on water use but jacked up electricity consumption and were expensive to run.

The first roof-mounted radiator-style units came out in the early 1990s, Garcia-Hernandez said. Although they were basic, the principle worked well: Hot process water goes into a coil of tubing, fans draw air over the tubing to remove heat, and then cooler water comes out. All the water stays in the system.

"But there is a problem with this system, and that is, it only works when the weather is very mild," he said.

In cold weather, plastics processors could add glycol to the cooling water to keep it from freezing. But some did not want to add the chemical to their process water. In 1992, Green Box developed self-draining systems that run without glycol, said Garcia-Hernandez. The cooling system is mounted on a slight angle, so when the pump stops, any water left inside will drain back out, back inside the plant.



Plastics News photo by Bill Bregar

Jose Garcia-Hernandez leads operations at 9-month-old Green Box America. The U.S. sales and service outfit, in Bensenville, Ill., promotes the closed-loop fluid cooling equipment, above, made by Italy's

What happens during the hottest days? The answer is something called adiabatic cooling. In the Green Box equipment, atomized water comes out of a series of tiny nozzles, forming a very fine mist, like a cloud. When the fans suck air into the fluid cooling system, the air passes through that humidity, which cools it down.

Green Box calls this its Adiabatic SSS option (for super spray system).

"We can warrantee an 85° F water temperature coming out of the unit, regardless of the ambient temperature outside," Garcia-Hernandez said. That is the temperature required for removing waste heat from machine hydraulic circuits.

During cold months, the Green Box fluid cooling equipment also can handle mold cooling, which requires water at 50° F, he said. The process is called free-cooling, because it produces chilled water without operating the chiller — a major energy savings.