

Keep 'em Hoppin'



A favorite treat for reptiles: Bugco's crickets

Minnesota native Gordon "Gordy" Vadis has a passion for bugs. His interest dates from his youth when his father taught him the family business. "The minnow business" was hard work and lessons of life were learned, such as; "life comes from life" and "you get what you give." Knowing how to trap, maintain, and sell a wide variety of live goods became as natural to Gordy as video games are to kids today.

In the mid-1980s, while negotiating a joint venture with English insect breeders, Gordy realized the great untapped potential of the U.S. pet market. Believing the industry was ready for change, Gordy began the process of redefining his business. The natural ability gained from a lifetime of working with live products made raising crickets relatively easy. By combining his passion for success with a retailer's eye, Gordy conceived the next great innovation for insect eating pets: pre-packaged live crickets. Bugco was born. Most domestic cricket growers are in the

southern U.S., and for good reason. The year-round warmer temperatures and higher humidity make regulating the environment much simpler than it is in Minnesota, where Bugco is based. With Gordy's knowledge and experience, he was able to maintain the temperature in his main growing room at 78 degrees, with variations between room locations at +/- 5 degrees. Humidity was generally uncontrolled. The most difficult times of the year were months during seasonal changes from hot Minnesota summer to frigid winter and back, when addition labor and re-



sources were required to maintain the cricket growing atmosphere.

AN OPPORTUNITY TO INNOVATE

When Bugco outgrew its location and prepared to move its operations to a larger facility in Ham Lake, MN, Gordy saw an opportunity to increase company efficiency by automating control of the environment. Bugco partnered with BOSS Control Systems, Inc. of nearby Coon Rapids to design and implement the solution.

BOSS President Mark Antczak, who handled project management responsibilities on the Bugco automation plan, said, "At BOSS, we specialize in providing turnkey automation solutions, so the project was a good fit for us, but working in a building with millions of crickets was a new experience for everyone on the team. Luckily, none of us suffers from entomophobia (fear of insects.)

"The goal of the project was to improve on the temperature variation of the old control system and add humidity-control capability data logging of Remote access. The Bugco cricket production process is superficially very simple. The crickets enter the world in the hatchery, a small room with a constant temperature of 78 degrees and humidity at a sticky 80-90 percent. Inside it feels like a tornado watch during the dog days of summer. After several weeks in the hatchery, the bugs are transferred to the main room, a large open space with a 13-foot ceiling. Rows of plastic bins about the size of laundry baskets are stacked 5-7 high on shelves. Each open-topped bin is teaming with crickets; the room contains millions of them at various stages of the growth.

Interestingly, the oppressive environment of the hatchery would rapidly kill the crickets were they not moved to the more temperate main room, where it is also 78 degrees, but humidity runs a much more comfortable 40-50 percent. Crickets are "harvested" at various sizes, from pinhead to one inch, depending on customer needs, then moved to the packaging and shipping area, where they leave the building in boxes and bags of various shapes and sizes.

A POWERFUL, EASY-TO-USE SYSTEM

The BOSS team divided the Bugco facility into two zones based on environmental requirements and went to work. At the heart of the new automated system is a Siemens S7-200 family PLC and expansion modules including analog input, analog output and digital I/O. The PLC monitors conditions in the zones and, as needed, adjusts each zone independently based on parameters set via the HMI screen. The system uses a network of overhead heaters, intake and exhaust vents, dampers, circulating fans, and miles

of Pex tubing and copper piping to sustain the optimum conditions.

All temperature and relative humidity information is logged, allowing historical data to be used for planning as well as evaluating the system's effect on cricket growth and overall yield. In the event of a breakdown in the process, an autodialer/alarm function notifies the appropriate people, alerting them to the nature of the problem. The entire system is web enabled to allow monitoring from anywhere in the world.

AUTOMATION PAYS OFF

The results have been impressive. The new system is able to hold the temperature dead-on, with variations inside the room of less than one degree from floor to ceiling, and humidity is stable as set. Says Gordy, "We were able to easily identify and track the return on this investment. Stocking density doubled. Production requirements dropped, and the climatic seesaw caused by the seasonal changes was totally eliminated." "The ideal environment allows us to grow bigger, more nutritious crickets, and that makes everyone happy," after a pause he adds, "except the crickets, of course." 🌐

Gordon Vadis presents his "goodies"



Pictures: Cliff Thompson



"The new system is able to hold the temperature dead-on, with variations inside the room at less than one degree from floor to ceiling, and humidity is stable as set." (left to right) Gordon Vadis (BugCo), Mark Antczak (BOSS Control Systems)