The Complete AUTOMATION Guide

Bridget White, Editorial Director
(847) 391-1004
bwhite@sgcmail.com

Welcome to *GPN*'s first "Complete Automation Guide." This is a project that has been in the works for several years and one that we hope to bring you at least twice each year. Over the next 16 pages you'll be able to read about some of the emerging trends in automation, learn more about fillers (probably the most common piece of automation in the United States), see some of the best new products on the market and investigate financing alternatives.

Automation. The word alone strikes fear into the hearts of many U.S. growers. You start imagining something that has to be fixed constantly, costs a fortune, is hard to use and, most importantly, is un-necessary.

I used to feel the same way. After my first trip to Hortifair in The Netherlands, I thought, "This is all neat, but do we really have a need for this in the U.S.?" Our systems of production are radically different, our labor is affordable, our industry is so seasonal...does it really make sense to automate?

Ten, maybe even five, years ago it didn't make sense to waste the money or the aggravation. The equipment was imported from Europe and adapted to U.S. production; it broke often, with repairs taking forever; and industry margins were much better. My, how times have changed. As we fight for every penny with steadily shrinking margins and endure the rising costs of labor, worker's comp and insurances, automation is looking like a pretty good option, especially when you consider the fact that today's generation of automation has been designed for the U.S. grower and is more reliable and easier to use.

Over the past couple of years, I've completely changed my opinion about the place of automation in the U.S. market. Instead of staring wide-eyed at robotic arms in The Netherlands or crane systems in Germany, I now wonder about how the individual components could work in facilities back home. And I've found many more possibilities than I would have ever thought possible. In fact, there are very few greenhouses that wouldn't benefit from a little more automation. Environmental controls, conveyors, transplanters? There's something for almost everyone.

I'm not suggesting that every operation invest a half million dollars in automation. It's not necessary and not smart. But I do invite you to look over the next 16 pages for ideas. Read the case studies. Think about your specific needs and whether or not you would benefit from a little high-tech help.

If you find something you would like to know more about, I invite you to log onto our Web site, www.gpnmag.com, and check out the Automation Zone. There you will find more information about some of the featured products, more articles on automation and a listing of the best suppliers in the industry.

Bridget C. White

INTEGRATING AUTOMATION

From transplanters to environmental controls to shade systems, the benefits multiply when it works together.

By Mackenzie Gaffney

Integrating automation into the total plan of your greenhouse sounds like a laborous process, especially if you don't have the means, mode or time to think about it.

Think about it, though. If the main reason for making an automation addition is saving time and labor, you can't do that without a plan. Putting off total integration only leaves you farther behind with less time to catch up. Fortunately, it's never too late to create an integrated greenhouse automation plan.

WHY INTEGRATE?

Mike Porter, president of Nexus Corporation, Northglenn, Colo., described automation to a tee in the "Automation vs. Mechanization" article in *the* March 2002 issue of *GPN*. "Mechanization is normally

1. Filler

The VTF Template Pot and Tray Filling Machine features interchangeable templates that, when placed over the incoming empty pots, keeps excess soil from dropping into the tray. The template can quickly and easily be changed for different size pots and trays or for variable filling density. The filling capacity is up to 600 trays per hour, and the soil hopper can hold approximately 35 cu.ft. Nexus Corporation. (800) 228-9639. ***Write in 1439***

2. Hanging basket

The new Rapid Wire is a semi-automated machine designed to speed the attachment of wire hangers to plastic hanging basket pots. It crimps the end of the wire after it's inserted into the basket by the user. The crimp is very strong, and the baskets will hang uniformly no matter who installs the wires. Rapid Automated Systems. (616) 662-0954. ***Write in 1441***

defined as the replacement of a human task with a machine. Automatic transplanters are an example of mechanization. But, true automation encompasses more than mechanization. Automation involves the entire process, including bringing material to and from the mechanized equipment. It normally involves integrating several operations and ensuring that the different pieces of equipment talk to one another to ensure smooth operation. Many times, true automation requires re-evaluating and changing current processes rather than simply mechanizing them."

For example, you might have stuck your filling machine in the back corner of the headhouse to keep it from disrupting traffic flow. Sounds like a good idea, but is it easy to load? Is it close to your media storage area? What about your potting area? Examination of all processes from start to finish might lead you to move the filler to another location to more fully automate the planting process and take full advantage of the machinery.

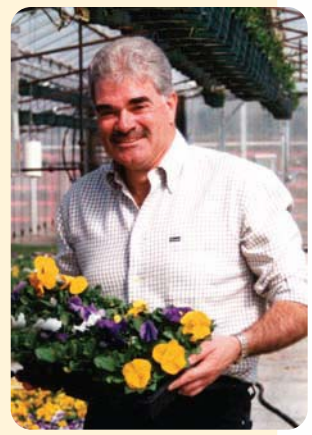
Bozeman, Mont.-based WTC, Inc. is an environmental controls company whose purpose is to help create one system that integrates many of the machine functions within a greenhouse. Kathi Swingle, vice president of WTC, helped explain some of the benefits of moving to a computerized system. "We make a hardware system that we configure for each greenhouse customer," said Swingle. "It has everything in it and allows the customer real-time viewing of all their parameters that they have set. Also, controlling such items stabilizes the greenhouse at the most cost effective way."

Using California's six-fold energy increases in 2001/2002 as an example, Peter Styut, vice president of Total Energy Solutions, Summerland, Calif., said another important reason people should integrate is because of the energy savings. Energy prices were bad everywhere in 2001/2002, but in California they were unbearable. Styut agrees that a fully integrated greenhouse can really pay off in times like these. He believes that utilizing automation systems with an energy-efficient means is a profitable way to growing business and cutting costs. "Energy has become quite an issue," said Styut. "I think that it should drive people's investment decisions now and for the future."

"It was so bad in California," continued Styut, "that people sold property, money poured out of businesses and no one invested because there was simply no money available. Since then people have been investing, and the gas companies, through state programs, have been supportive by handing out incentive money to growers ➧

CASE STUDY

Besides producing great plants, Center Greenhouse, Denver, Colo., is widely known for running a smooth, fully integrated operation. Frank Yantarno, president, will be the first to say that it is a continuing process.



Frank Yantarno

"The deciding factor [to start implementing automation] was labor costs, and the second was consistency of product quality," explained Yantarno. "But we definitely did it in steps."

First, Center bought an automatic seeder so they could get good quality plugs. That was about 20 years ago. The company has always had conveyor belts, but about five years ago, it moved to a drum seeder and added a Visser transplanter and watering booms with high-pressure sodium nitrate lights. This summer Center will be building a new production building where all of this equipment will be located.

"To those who have not gotten into automation yet," advised Yantarno, "I would say look at your labor costs and then add in all the extra benefit costs for each person. We are not really trying to eliminate people; we are trying to hire a little bit better caliber person — increase production quality with the same amount of people."

"There are other benefits that are going to come into it," concluded Yantarno. "Every tray is exactly the same; every pot is exactly the same. I don't think we could do it manually and hit the standard of quality we can hit with the machines. And that is the reason we are [building the] production house — we want better quality so we can drive our costs down so we can compete in the market. We can't compete in the market if our costs are higher than someone else." ***— Mackenzie Gaffney***

3. Seeding line

This cylinder seeder is a truly different drum-type seeder. A unique design permits up to four hole sizes in one cylinder head, permitting seed size changes without changing hardware. It is highly accurate, seeding raw petunia and marigold seeds, and can accommodate small or large seed inventories and multi-sow or direct sow options. The in-line format allows for easy connection of conveyors and watering tunnels. Blackmore. (800) 874-8660. ***Write in 1438***

4. Transplanter

The Multiplanter plants virtually any plug tray and can operate at a rate of up to 23,360 plugs per hour. It has a reach of approximately 39 inches in flats or pots and can plant even or odd rows for pots or hanging baskets. The Multiplanter can be fully automated with conveyors for continuous operation or connected to manual belts, allowing employees to control the speed. Agronomix. (440) 774-2981. ***Write in 1437***

5. Irrigation Controls

The Rain Command irrigation controller is a multi-function irrigation computer that can control up to 40 separate valves. Programming is easy — no dip switches or internal controls to fumble with. A unique feature of the Rain Command is its ability to function as both a misting controller and irrigation controller at the same time. It has up to 42 individual, programmable start times/days per valve and has been designed for upgradability. Dramm Corp. (800) 258-0848. ***Write in 1440***

6. Controller

This is a new option for Cherry Creek's later version NIC boom controllers. The adaptor kit comes with a handheld remote and up to eight receivers to control up to eight booms. It allows the user to move greenhouse booms in either direction with adjustable speed. Cherry Creek Systems. (877) 558-3246. ***Write in 1442***

continued on page 34

who are doing energy-related investments; it has been good. And I feel for right now that energy bills should be looked at and responded to by energy-efficient investments, because I don't see the energy prices coming down."

STARTER PACKAGES

Let's say you wanted to take Styut's suggestion, your first question might be, "What do energy-efficient systems look like?" Well, Styut explained, "More efficient heating systems would be a good example. You can further integrate with carbon dioxide and heat storage. Carbon dioxide, well applied, in all kinds of different crops, can increase your production from 10-25 percent. If you can squeeze that out of the same space as you are trying to heat right now, those are increases that make your investment only more valuable and spread your cost down to over more units produced."

In Porter's article from *GPN*, he used an example of a fully integrated transplanting line. "A typical line would consist of automatic destackers for trays and automatic dispensers for pots. These two machines would be connected by means of a conveyor to a flat filling machine that fills the destination trays with soil and levels of the soil. The flat filler would be connected by conveyor to an automatic transplanter. A second conveyor could be used to feed source trays into the transplanter. After transplanting, the destination trays would move onto another conveyor, which could feed an automatic tagging machine and then go through a watering tunnel before being placed onto a final conveyor to be staged for delivery to the greenhouse, a process that can be automated as well."

With new pot printing technology and automatic taggers, even labeling can be part of an integrated automation system.

As you can see, you can integrate most every process in the greenhouse — from heating to irrigation — into your automation plan. Obviously, the best place to start is with the processes that will save you the most money and/or make the biggest impact on your efficiency. For one greenhouse it might be a conveyor system to transport flats from headhouse to greenhouse and back. For another greenhouse it might be an environmental control system to monitor temperatures and open and close greenhouse vents. There are literally packages to fit every greenhouse and every need. The key is sitting down and plotting your space and needs with an experienced consultant or advisor.

There are things you should consider before going to someone to design a system for your production...partially, because the system should be about utilizing what you have, and partially because you want it to be cost-effective. "The main thing," explained Swingle, "is [to know] the parameters that they [the customer] want monitored and controlled, and what their ultimate goal is. The parameters might be solar, outside and/or inside temperature, rain gauges, wind speed, wind direction, which will help decide if they want vents or not. Also, controlling wet walls, heaters, fans, blowers, misters, lights...we can monitor soil ➧