Connecting STEM with Real-Life Manufacturing Jobs

written by Lauri Moon | July 12, 2016

How small and medium-sized companies on Long Island are trying to bridge the disconnect between what's learned in school and the diverse tech opportunities out there.

(IW – Laura Putre: 6-30-16) Joe Spinosa grew up around his parents' aircraft equipment business on Long Island, doing everything from sweeping the floor to putting things together. Give him thirty seconds, and he can recollect the names of all the hamlets and villages that the company moved to as it grew: Bellmore, Syosset, Farmingdale, then Hauppauge, then Ronkonkoma.

The company, East West Industries, that began 45 years ago with Mom and Dad's kitchen table conversation—"Why are we doing for other guys what we can do ourselves?"—is now a finely tuned 50-person operation. Lockheed Martin, Boeing, and Grumman are among the clients for its military aircraft ejection seats and oxygen support systems. Last year, East West was one of only 100 of 13,000 suppliers that received Boeing's Performance Excellence Gold Award.

The place is a wonderland of machinery and problem-solving. Four or five different kinds of engineers work on the small staff, and the range of equipment is vast, from tiny reducers with valves and poppets in them, machined to ten thousandths of an inch, to portable floor cranes that service aircraft and weigh thousands of pounds.

Spinosa, who inherited the business with his sister, Teresa, recently started conducting plant tours with sixth through twelfth graders from the local school district, hoping to give kids a little piece of his own manufacturing immersion experience. Recently, 25 students, from sixth to twelfth grade, hand-picked by their teachers, got to poke around in every corner of the place: the sheet metal shop, the military sewing shop, the oxygen test lab. They learned about (and in some cases, witnessed) the product cycle, from conversations with the customer to mock-ups on a 3-D printer to prototyping and then low-rate initial manufacturing.

"When it finally comes together from these little parts that come off the machine, that's where you see their interest pique up," says Spinosa. "'Wow, this is pretty cool.' That's the kind of

stuff that was going around. ‘Take a picture of me in the seat. Can we see the oxygen lab?’”

Spinosa is a supporter of a new initiative through the Long Island Workforce Development Institute (WDI) to connect schools and manufacturers. In New York, he says, schools have a mandate to teach technology, “but there’s a disconnect in terms of what the careers are and what to teach the children other than ‘Here’s how you take a CAD design and put it into a 3-D printer and print it out.’ What’s the use of that? what’s the utility of that? How does it knit into the whole picture?”

Another challenge is that without a huge manufacturing corporation to bring it all together, the 3,000 small to midsize manufacturing companies on the island tend to keep a low profile.

“We have a wonderful pipeline of manufacturers out here,” says Spinosa. “And I don’t think anyone really realizes it. They think that when Grumman and Republic moved off the island, things kind of died, but it’s not that way.

Last month, Long Island WDI made its first attempt to bring everyone together with a Manufacturing Innovation Institute that included manufacturing employers, teachers, guidance counselors, workforce development people and parents. Participants could try out a virtual reality welding simulator and listen to a panel of manufacturing leaders talk about tech careers.

The idea was to “chip away at the industry perception that we all struggle with, and educate the educators about what’s happening in the industry,” says Rosalie Drago, WDI’s Long Island regional director.

Drago’s group took a look at job postings from 200 manufacturers on Long Island over a 12-month period. All told, there were 2,300 tech jobs posted, and 81% of those jobs paid a salary of $80,000 or more.

Spinosa says one of the goals of the effort is to help teachers come up with more challenging curriculum. For instance, with 3-D printing, a typical classroom project is to make a very simple cellphone holder. But a creative kid who likes tinkering, might quickly be asking what’s next, and at school, there is no next. A stronger partnership between manufacturing companies and the schools can help answer that question.

Spinosa and others are starting to work with teachers on more advanced projects. For 3-D

printing, it might be designing and creating everyday things with between 5 and 7 parts—like a tape dispenser, for instance.

“It teaches them the assembly and how do you look at something and make it manufacturable. What’s the cost at the end? Now they’re thinking on multi-levels.”