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VOLUME 28 - NUMBER 6

THE GLOBAL HI-TECH ELECTRONICS PUBLICATION

June, 2013

## New Products for EMS and OEMs



Specialized wiring from Cicoil specifically for clean rooms, food, and medical environments in this month's New Products section, starting on . . .

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## Production Gains in France and Onshoring Gains in U.S.

France's Hager security upgraded its production facilities with Cogiscan/Juki intelligent feeder system; and a new look at onshoring, a trend that's gaining momentum.

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## This Month's Focus: Components and Distribution

Counterfeits are top of the list again, with new efforts by DoD to sort them out, the facts about DNA marking, and more efforts at the distributor level to safeguard manufacturers against bogus chips.

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# Robotics Program Prepares Students for Life

By Jim Jackson, PE

Camdenton, MO — American students still lag alarmingly behind students in China and Western Europe, reports several student testing services. While there has been a small improvement in U.S. high school student

performance, there's still a great deal of work ahead if the U.S.A. is to continue to dominate in new technology and patents. One program designed to help by giving high school students some extraordinary incentives is an afterschool program known as

FIRST® (For Inspiration and Recognition of Science and Technology) Robotics — a program that has been making progress in the advancement of Science, Technology, Engineering and Mathematics (STEM) courses and STEM careers with America's youth.

The FIRST Robotics program consists of more than 2500 high school teams from 16 countries. Nihon Superior is one of many companies in the electronics industry and in local communities that support this program. "Nihon Superior is proud to support the Camdenton RI-II Afterschool LASER Robotics program," stated Tetsuro Nishimura, President of Nihon Superior. "Supporting such a program matches well with Nihon Superior's philosophy of "Global Collaboration" from supporting research at universities to the sponsorship of FIRST Robotics. We strongly agree with the goal of inspiring students to enjoy science and technology."

In being a mentor to the LASER team, Keith Howell, Technical Director of Nihon Superior USA, said, "The students work long hours on the design, assembly, and programming of the robot, which is an extracurricular activity so it all takes place after normal school hours and on weekends. It is rewarding as well as enjoy-

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Senior and Dean's List finalist Kyle Gulshen (left), senior and First Laser President Jacob Harmon (center) operate robot during competition, while FRC Coach Mitch Comer (right) looks on.

## Mirtec: Exclusive AOI Deal with Bosch

Plymouth, UK — Mirtec Europe has been chosen as the exclusive AOI partner for Bosch for the next five years. The multi-million dollar agreement, signed on March 20, 2013, calls for Mirtec to be exclusive supplier for multiple MV-9 2D/3D AOI systems.

"We are very pleased to enter this new partnership with Mirtec in the field of automated optical inspection. The combination of 2D/3D tech-

nology will help us to further develop our high-quality standards for the future," said Markus Jung, Ph.D.,



Mirtec CEO Chanwha Pak, and Markus Jung for the Bosch Group.

Corporate Lead Buyer for machinery and equipment for the Bosch Group.

Mirtec was selected from a large number of competitors from

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## Leading Indicators: Optimism for PCB Sales

Bannockburn, IL — While North American manufacturing begins another slow recovery and leading indicators point to modest business expansion in the coming months, the PCB industry has not yet felt the effects of this turnaround, according to the latest edition of IPC North American PCB Market Report.

The report shows what market segments underlie the disappointing 10 percent contraction in February PCB sales versus February of last year.

The flexible circuit segment was particularly hard hit in February af-

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## Robotics Program Prepares Students for Life

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able to see the enthusiasm that the students have in undertaking the design challenges learning the attributes of teamwork and the excitement generated by the matches."

### Hands-On Educational Experience

FIRST Robotics offers a complete, hands-on educational experience. The program is not just about having the students build a robot; it is about building confidence and self-esteem in the students — while having the students build an interest in STEM activities. They are not only responsible for designing, fabricating, building and testing the robot but also Web page design, generating a business plan, creating a bill of materials, creating and maintaining a budget, safety, marketing, fundraising and community service. FIRST Robotics mission is to motivate young people to be science and technology leaders by engaging them in exciting mentor-based programs that build science, engineering and technology skills, inspire innovation and foster well-rounded life capabilities including self confidence, communication, and leadership (First vision).

FIRST Robotics was founded by Dean Kamen, the inventor of the Segway, 20 years ago when he saw the United States was ranked in the lower half of the developed nations in science and technology. The purpose of FIRST Robotics is to promote science and math to secondary

level students and inspire more students to pursue STEM-related careers while building self-confidence, knowledge and life skills. FIRST Robotics strives to create a world where students desire to become science, engineering, and technology leaders (First vision).

### Combining Science and Math

Science class teaches students about science. Math class teaches



Engineer Mentor Julie Howell (left) and Senior Connor Brady make adjustments on robot.

students about mathematics. By combining science and math, FIRST Robotics integrates what students already have learned in these classes and teaches them how to apply that knowledge in an afterschool setting. "When you're learning in the classroom, you're learning these mathematical formulas over here and scientific theorems over there and it never really comes together," Kyle Gulshen, a junior at Camdenton R-III High School, Camdenton, Missouri, and lead programmer of the FIRST Robotics team explains. "So, with FIRST you get to work on all these different aspects all at once and a single, real world problem."

Although the robot that the students build will compete against other robots, the program is much more than just about building a robot. The team is broken up into different segments of a business-like environment. The students decide which portion of the business they want to participate in based upon their own interests. All the students then work together on their own portion of the business model. FIRST Robotics challenges students to raise funds, design a team brand and hone teamwork skills.

### Real-World Applications

The program teaches students how to apply what they have learned in the classroom to real world problems. In the afterschool setting, the students are teamed with mentors from the community who volunteer their time to show the students how

*Continued on next page*



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# Robotics Program Prepares Students for Life

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to apply what they have learned in school. While in the classroom, many students ask the age-old question, "When will I ever use this?" FIRST Robotics answers that question by teaching them how to apply mechanics, force and motion, coupled with computer programming to solve everyday problems. The result: 89 percent indicate that they have achieved a better understanding of the role of science and technology in everyday life.

While competing companies rarely volunteer to help each other, FIRST Robotics teaches a much different lesson — including its princi-



*Junior Mitch Woodside fine-tunes computer program.*

pal themes of "gracious professionalism" and "cooptertition". Gracious professionalism encourages high-quality work, but emphasizes the value of others, and respects individuals and the community.

The second theme, cooptertition, is a philosophy that FIRST teams can and should help and cooperate with each other even as they compete against each other. During the competitions, teams loan tools, technical expertise and parts to one another even though they will be competing against each other. The teams openly share design ideas and how to overcome technical challenges with other teams. While winning is a goal, it is not everything. It is more important to help other teams win as well. During competitions, opposing robots will turn over an upside-down opponent all in the name of gracious professionalism.

With companies competing on a global scale, teamwork is now more important than ever. The participating students learn the importance of teamwork; every person has a job on the robotics team that is crucial to the success of the team. Whether the student works on design, fabrication or programming of the robot, Web page design, game field construction, or brochure construction to get the word out, the success of the entire team depends on them. According to 95 percent of participants, students say that FIRST Robotics has given them a better understanding of the importance of teamwork.

Eighty-nine percent of the students say they had real responsibilities and 74 percent indicated that students made the important decisions. With the success of the entire team riding on the shoulders of each team member, the students willingly give up their Saturdays to ensure the success of the team. They learn very early the importance of time manage-

ment as during the build season, students regularly log 20 to 40 hours a week working on the robot in the afterschool setting. This is in addition to the time they spend in class and doing homework. They learn that other people count on them to accomplish their task, just like in a real job.

## Dealing with Crises

Everyone dreads the phone call at 4:50 p.m. on a Friday. People in the workplace spend part, if not most, of their day with one crisis after another. The students learn the importance of problem-solving. With the robot, there are components that interfere with each other, items that just do not work as expected, and there are unforeseen problems that arise. Every student has input on how to overcome challenging issues. The result: 93 percent of the participating students indicate that they have learned how to solve unexpected problems or how to find a new or better way of doing things, and 94 percent have learned to weigh issues and options before making decisions.

Participating students build confidence by learning how to apply what they know to real world situations. At the end of the season, they are able to look at a robot that they designed, fabricated, constructed, tested and then used in competition. Eighty-nine percent of FIRST students say that the program has increased their self confidence.

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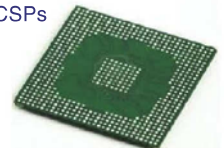
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