



## NFPA Member Case Study

# Getting Involved with PLTW and Turning Students on to Engineering

Article contributed by Tricia Fulton, CFO, Sun Hydraulics.

**N**FPA member company Sun Hydraulics partnered with Riverview High School (RHS) for the 2009-10 school year in an effort to jump start the Project Lead The Way (PLTW) program at the school. Sun's commitment to this project is to collaborate and promote engineering and technology studies to middle and high school children in Sarasota, Florida.

Allen Carlson, Sun's CEO and President, was very familiar with PLTW through his involvement on the Board of the National Fluid Power Association, and was aware that the PLTW program at RHS needed funding to purchase equipment for the computer integrated manufacturing portion of the engineering program. As a Board member of the Sarasota County Education Foundation, Allen approached the Foundation with a request for the needed funding to buy the equipment. The Foundation was able to secure two donors, the Dart Foundation and the Koski Family Education Foundation. A total of \$70,000 was donated to PLTW through the Education Foundation—giving the program the needed funding to move forward.



At the same time, I, as Sun's CFO, was approached by the RHS Foundation through a personal friend to see if Sun was willing to partner with PLTW to further develop the program by adding "real world" examples of manufacturing

engineering. Since my expertise was not in this area, I enlisted help from the manufacturing engineering group to gauge their interest in the project. One manufacturing engineer, Eric Hare, was very excited about the program and volunteered to lead Sun's efforts in partnering with RHS and PLTW. Eric seemed like the perfect choice as he was young and enjoyed the teaching/mentoring aspect of the project. Eric was able to recruit several other engineers to participate in the project as well.

I also requested the assistance of the Sun Human Resources leader, Kirsten Regal. The teachers at RHS were interested in getting information for the PLTW students regarding pay for manufacturing jobs, educational opportunities beyond high school that would help with obtaining a manufacturing job, and Manufacturing Skills Standards Council (MSSC) Certification.

In 2009, Sun had embarked on several training classes for its manufacturing workers in an effort for the employees to obtain MSSC certification and certification through the Banner Center for Manufacturing in Florida aimed at training for manufacturing jobs. RHS wants to incorporate the MSSC curriculum into the PLTW classes so that the students can sit for the MSSC exam and obtain certification upon graduation—enabling them to receive 15 college credit hours toward an Associate's Degree in Industrial Management. The PLTW team at RHS feels this would be a great benefit to the students and would help to bring more students into the program.

Kirsten participates on the PLTW Business Advisory Committee at RHS and co-facilitates Sun's role in the development of the program. In November 2009, Kirsten and Eric joined the RHS PLTW team on a visit to George Jenkins High School in Polk County, Florida, to see their PLTW engineering classes and learn best practices. After the visit, Kirsten, Eric and the PLTW team shared observations, developed a marketing plan to attract and retain students in the RHS PLTW program, and developed an action plan for the 2009-2010 school year. The team recognized that their goals must be to attract and retain qualified students. To achieve this goal, the PLTW program must:

- obtain Honors level certification for the classes to attract high performing students prior to completing eighth grade,
- include a designated school counsel to steer students with technical focus toward the PLTW engineering curriculum,
- ensure the program is lead by high energy, action-oriented and charismatic teachers;
- and develop a broad and active business advisory committee to provide enhanced student experiences and funding.

There was still work to be done to make the PLTW program what the RHS administrators wanted. In December 2009, the RHS PLTW team and Sun established an action plan, objectives and activities for the remainder of the 2009-2010 school year and made preparations for the PLTW certification audit. On January 15, 2010, the RHS PLTW program earned national certification from Project Lead the Way. Once the planning for the program was complete, Eric Hare began planning for classroom visits with the PLTW students. He played a pivotal role with the PLTW students at RHS throughout the 2009-10 school year by acting as both mentor and adjunct teacher in the classroom.

Eric has been in the hydraulics industry for 10+ years with many layers of experience, including, research and development, customer service, and manufacturing engineering. Eric's favorite part of his job throughout his career has been teaching others how to remedy problems. This love of teaching made him a perfect candidate for helping and mentoring students in the PLTW classrooms. Eric commented, "My experience with PLTW, RHS and Sarasota Middle School (SMS) can be summarized as...rewarding. Giving the kids some insight into where the book work meets the industry is the duty of our industry. I personally would have benefitted greatly from having a mentor that could put the practical and class work into perspective."

Eric met with the PLTW teacher team at RHS to determine what they would like to get out of their partnership with Sun. The teachers' main focus was getting the students some real world examples of what they were learning in the classroom. To this end, the Sun team (Eric, Kirsten, and I) met with the PLTW teachers, student representatives, and RHS administrators to determine the best method of reaching these students. It was determined by the group that Sun would provide tours of our two manufacturing facilities in Sarasota, as well as provide three visits to the classroom to teach specific disciplines of manufacturing engineering. Eric and several engineers from Sun taught classes for PLTW on subjects such as Design Engineering, Robotics and Automation, and Manufacturing Engineering. (Sun and the Sarasota Area Manufacturer's Association provided funding for transportation related to the tours of Sun's facilities.)

Eric continued, "The Sun team attempted to tie real life applications into the student's curriculum; this coupled with tours of Sun Hydraulics seemed to drive it home. In asking the students what made them want to be engineers, I received many different responses. The response that hit home with me was that of Chris. Chris said he wanted to be an engineer because his mother is an engineer in 3 different disciplines. Others in the class said they liked to tinker with things and some just signed up for the program because they had a friend involved. Chris' story was interesting to me because if you aren't exposed to engineering through a family member or someone close to your family as a child, how do you know engineering is even a profession? Sun's participation not only influenced the students that were committed to being engineers, it also helped the ones that were on the fence. The Sun Team's involvement seemed to bring a buzz to the school."

The next step was to bring awareness about the PLTW program to middle school students at SMS and introduce concepts of engineering. Sun developed a project (marshmallow and spaghetti towers) that could be completed by SMS students during their science class and was meant to be a "teaser" to get them interested in engineering and the PLTW program once they enter high school. First, Eric and the other Sun engineers introduced the marshmallow and spaghetti tower project to the PLTW students that would be part of the outreach teams for the middle school. The PLTW students built their towers and tested them for overall height and strength. In the following weeks, the PLTW students, along with the Sun engineers, visited SMS and had each of the science classes work in teams to build their own spaghetti towers. This was the first introduction of the PLTW program to the SMS students and a fun way to get more students involved.



Eric concluded, "The SMS visit was very interesting. There was a lot of enthusiasm for visitors and "hands on" competition. Due to time constraints of the science periods at the school, it was agreed that we would build spaghetti towers using spaghetti as the building material and marshmallows for the joints. This project seemed very easy and I didn't

believe that it would be challenging enough for the middle school students. Boy, was I wrong! The kids loved the competition and this opened the door to many questions by the students about engineering. The best part was watching the leaders in the group try to get the team organized so they didn't fall short in the competition. The challenge was to build the tallest tower in 25 minutes with 7 of those minutes being allotted for planning. The SUN/PLTW team discussed planning, constraints and teamwork, then the kids went to work on their towers."

Sun has committed to partnering with PLTW for the 2010-11 school year. Additionally, Sun presented a scholarship to

a PLTW teacher at RHS to obtain teacher certification for the MSSC program. Certification will be obtained in the Summer of 2010 and senior level students will be eligible to sit for the MSSC certification exam at the end of the 2011 school year at RHS. Sun is excited to get students involved with engineering and hopes that our involvement with PLTW has contributed to the success of the program at RHS.

Your company can reap these same rewards by getting involved with PLTW in your community. Contact Carrie Tatman Schwartz at (414) 778-3347 or [ctschwartz@nfpa.com](mailto:ctschwartz@nfpa.com) to learn how.