

# SPELLMAN HIGH VOLTAGE ELECTRONICS CLEAN TECH COMPETITION | 2018

## Executive Summary

### Introduction

The emphasis on STEM education focuses on helping young people see the relevancy of STEM in their world. The



Clean Tech Competition was developed as a way to excite students by engaging them in STEM innovation. The Clean Tech Competition, or “Clean Tech” as it’s informally known, began in 2012 with the **“Solar Solutions”** challenge. High School students from California and Singapore were challenged to design a solar-powered solution to a human need in the aftermath of a natural disaster. In 2013 the competition was opened to students worldwide and the theme was **“Clean Water for All”**; students identified one of the world’s critical clean water access problems and designed a clean energy technology solution. 2014 saw the students come up with a **“Solution to Pollution”** and in 2015 the competition challenged the students to **“Feed the World”**. In 2016 the students demonstrated their ideas and solutions to **“Make An Impact”** on the world with problems associated with plastics and the need for cheap, clean energy. 2017’s challenge was to **“Create A Greener Future”**, specifically to identify a specific problem associated with buildings or homes, building materials, problems associated with efficiency, damage mitigation, “sick buildings” and indoor environmental quality. 2017 was also the year Spellman High Voltage Electronics Corp. became the title sponsor for the Competition. Now known as the **Spellman High Voltage Electronics Clean Tech Competition** (SHVE CTC), the 2017 Final was held at [Stony Brook University](http://Stony Brook University), drawing international attention from all corners of the globe. The 2018 Competition will focus on **“Solving Climate Change”**, with Stony Brook University once again serving as host.

### The Competition and Project Based Learning

It is critical that students understand how to develop solutions collaboratively. Termed “project based learning,” (PBL) educators are now learning how to implement ways to present STEM (Science, Technology, Engineering and Math) in a way that more closely mirrors what they will find in the workplace-collaborative thinking and project implementation. The SHVE CTC serves as a relevant way to help students and their teachers experience PBL, seeing and understanding how innovations can help others.

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The SHVE CTC is a worldwide competition to challenge international High School students to come up with a clean technology solution to the challenges put forth by the Competition committee. Students are invited to work in groups to come up with clean technology solution to solve the yearly challenge. These solutions are prototyped and brought to market and be put into practice in real-world settings, student finalists are mentored by professionals. The Final event brings together the 10 top teams. In 2017, Finalists came from the United States, the Philippines and Singapore with over 730 total students participating in the first two rounds. In total, 26 countries participated and over 500 papers were submitted for judging. Teams also had the opportunity to work with mentors and a patent attorney to help turn their ideas into reality.

## How it Works

After a theme is created, the SHVE CTC begins with outreach to over 25,000 teachers, administrators and schools around the globe before the registration of teams via the website and the eventual submission of papers from each team. After being submitted, each paper is judged a minimum of three times by a volunteer professionals in the STEM fields. From the hundreds of submissions from around the world, 30 semi-finalists are selected. Based upon number of points, 10 finalists are identified from the 30 semi-finalists. All 10 finalist teams are brought together and given the opportunity to present their paper and prototype design to the judges. Prizes are awarded and the winning team is awarded a partnership with a mentor, who will assist the winning team in taking their prototype to the next level such as acquiring a patent. That mentor will also help the winning team figure out what the next steps are and guide them through the process of improving upon their project prototype.

## Engaging the Community

Each year, the competition final is hosted in a different city. This is an opportunity for the students and teachers in the area to experience these innovations and speak to the Finalist teams directly. The competition is also open to the public and it is always gratifying to see so many people come to see the student projects and engage in STEM workshops we conduct during this time. Employees can help during this day by presenting workshops, and highlighting how they are involved in STEM.

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The competition can have an area of focus so that we immerse ourselves in particular states, countries, or communities. This includes professional development for educators and a focus on engaging schools in participating in the Spellman High Voltage Electronics Clean Tech Competition. Our sponsor will have the ability to help select focus cities or states (or countries) as well as host the final competition. Hosting is also an opportunity to invite the community to see the impressive feats and ideas that our Finalists have come up with, all while sharing their passion and knowledge with the next generation of young minds.

## Opportunities for Employees

Employees have a vast wealth of knowledge which should be tapped into and there are a variety of ways to get these dedicated employees excited and participating: serve as a local liaison to schools in their community, serve as a mentor for Final-round teams, help to pick the theme, serve as a local host for the final, be a guide for facility tours or serve as a judge in either first or Final rounds. There's no limit on how to get involved!