

Technology Outreach Program to expand after early success

Program continues to help innovations become reality

Success stories continue to pour from the Technology Outreach Program, which just wrapped up its first year of operation.

The program, a partnership between JSC and the Clear Lake Area Economic Development Foundation, recently introduced two new medical devices that will help save many lives and benefited from NASA expertise.

With the help of TOP partners, Dr. Alan Ulert and business partner Henry Lang brought to fruition two products they had been struggling with. The two inventors had conceptual ideas and blueprints for both devices but needed technical expertise to finalize development.

The first was a disposable diaphragm system for stethoscopes, which will protect patients from cross-contamination from other patients – a problem that causes 20,000 deaths annually. The men needed help developing an easy way for the doctors to use the device. Northrop Grumman's Gary Doerre and Norman Gabbard stepped in to help design a dispenser for the stethoscope diaphragms.

"It was an idea we had come up with many years ago," explained Lang of the stethoscope diaphragm system. "It was finally modernized with the help of Norm, Gary, and the TOP program. They were essential in development of the dispenser, which was the missing link."

A second device was designed to alert people nearby should the wearer become incapacitated. Called the Emergency Signal Device, it is a 'touchless' medic alert system that sounds an automatic audio message and alerts emergency medical professionals should the wearer become unconscious or incapacitated. The device will be particularly useful to retirement communities and Alzheimer's facilities.

"We had a problem developing a prototype," explained Dr. Ulert. "We needed someone with expertise in electronics to tie all the parts together."



NASA JSC Photos JSC2000-00167 and S99-15878 by James Blair

Bob Arnett, general manager of PSI Automation, discusses the production of his firm's air motors with State Representative John Davis and Technology Outreach Program Executive Director Cathy Kramer. The Disposable Diaphragm for Stethoscopes, photo front, is another recent TOP success story. The device will provide a convenient method for physicians to protect their patients from cross-contamination.

Jerry Erickson and Frank Davis from Hernandez Engineering were able to help the team within just a few months.

"Technically, it was a fun project to work on," said Davis. "We installed a microprocessor to measure the vibration and impact sensitivity, and fine tuned its behavior a bit. It was a neat opportunity to work with some different sensors and other technologies I had read and heard about."

TOP also was able to help another small company that was struggling with loud noise from air motors.

PSI Automation, based in Seabrook, needed assistance diagnosing and reducing the ear-splitting 115-decibel noise from the powerful air motors it manufactures. Through TOP, PSI was matched up with JSC contractor Johnson Engineering. Its parent company, Spacehab Corp., is

responsible for many shuttle payloads and some of the International Space Station truss structures.

Because the standard silencer that PSI Automation had been using to lower noise generated by its air motors was not bringing the decibel level down to within specifications, the firm asked engineers from Johnson Engineering to help them design new mufflers. During the interim, before engineers could visit PSI to test the motors, another company developed a new muffler. So Johnson Engineering did a comparison testing of the two mufflers.

"Because Johnson Engineering is the main contractor for the acoustics for the space station, we took on this responsibility," said Gregory Pilkinton, Johnson Engineering civil engineer who served as the team leader. He and his team used a high-tech sound analyzer and microphones normally used to test sound levels generated by equipment for the space station to run extensive tests on the two mufflers.

The tests showed that the newer design was much more effective at blocking sound, lowering the noise down to 78 decibels. The tests also showed that the motor blades were generating much of the noise. After the testing and analysis, Pilkinton and his team delivered a 13-page report to PSI Automation.

"For our part, we produced a report that PSI employees can use with their mufflers when they go out to market and sell their products," said Pilkinton. "For follow-on work, if PSI were to put a resonator in front of the mufflers, they may be able to decrease the fan-blade tone and drop down the overall spectrum even more."

TOP has just completed its first year in operation and has assisted more than 30 organizations, from tennis court manufacturers to toy companies, overcome technical and design challenges.

"The space program is really the people's program – it belongs to the public," said JSC Director George Abbey, who attended the TOP press conference January 10 at PSI Automation. "The thing that is good about the Technology Outreach Program is that it gives us the opportunity to give back to the public."

All this success from the TOP program is garnering attention from the political arena. Also present at the PSI press conference were U.S. Representative Nick Lampson, State Senator Mike Jackson and State Representative John Davis. In fact, the response to TOP sparked State Representative John Davis to sponsor a bill that would expand the TOP into five neighboring counties. Governor Bush signed the bill in July 1999.

"During the first year of the TOP, we focused solely on serving the Clear Lake area to see if the program would spark interest in the community," said TOP Executive Director Cathy Kramer. "With the passage of House Bill 2992, the program will expand its scope and make NASA resources available to more of our state's entrepreneurs and small businesses."

Kramer added that Houston Mayor Lee Brown has been very supportive of the program and expanding it into Houston.

"Part of our new strategy will be to promote the program to the counties through education of the county judges, commissioners and county economic forums and chambers of commerce," explained Kramer. "We will also concentrate heavily in industrial areas such as the ship channel, Port of Houston, Port of Galveston, Pearland, and Texas City."

For more information on the TOP or to apply for assistance, call Kramer at CLAEF at (281) 486-5535.



NASA JSC Photo S99-15881 by James Blair

More and more businesses and entrepreneurs are reaping the benefits of the Technical Outreach Program. Shown here, left to right, are Jim Reinhartsen, Clear Lake Area Economic Development Foundation president, Cathy Kramer, TOP executive director, and State Representative John Davis pose next to Henry Lang holding a dispenser for disposable stethoscope covers, one of the latest TOP products. To Lang's right are Dr. Alan Ulert, co-designer of the device, and Gary Doerre and Norman Gabbard, consultants from Northrop Grumman.