



# TECHNOLOGY SYSTEMS, INC.

## LASER FABRICATION FOR SHIP STRUCTURES

Laser PC/QA System

### About the Technology

Technology Systems, Inc. (TSI), along with its partner Applied Thermal Sciences (ATS), has developed a laser-welding process control system, using both autogenous laser and hybrid (laser and gas metal arc) welding technology, that provides for high-speed, precision, low-distortion, and affordable fabricated structures. The application of industrial lasers in producing structural shapes for shipbuilding creates enormous savings and results in higher-quality products than those produced by present methods. Components fabricated from plate steel are inherently more precise and of lower weight than those produced from traditional rolled steel.

The process control system is designed to automate categorization, nesting, and handling of steel plates used in the fabrication of structural shapes such as I-beams and T-beams. The system includes a quality-assurance capability that provides in-process weld pool monitoring and after-weld inspection. The controller is referred to as the Process Control/Quality Assurance system. Initially developed to fabricate stiffeners for ship construction, the technology has allowed for the development of high strength-to-weight ratio sandwich panels, which is appropriate for a number of shipboard applications such as decks, bulkheads, and system platforms. The technology is going through certification of applications on the CVN and DDG 1000 platforms.

### Military and Commercial Significance

The TSI/ATS program has enabled the Navy and shipbuilders to produce better ships at substantially lower cost. In addition, leveraging federal funding with state and private investments has enabled Precision Light Systems, a joint venture between TSI and ATS, to achieve world-wide recognition as a leader in laser fabrication development, both in the military shipbuilding community and in commercial markets as well.

45

Topic Number: N99-141  
(NAVSEA)

SBIR Investment: \$60K  
Project Revenue: \$14M

Technology Systems, Inc.

14 Maine Street  
Brunswick, ME 04011  
(207) 798-4646

[www.technologysystemsinc.com](http://www.technologysystemsinc.com)  
[cbenton@technologysystemsinc.com](mailto:cbenton@technologysystemsinc.com)  
Charles Benton

### APPLICATIONS

- ▶ NAVSEA: PEO Carriers, PEO Ships, DDG 1000, CVN-78, stiffeners, bulkheads, decks, and system platforms
- ▶ Commercial construction – Walls, ceilings, floors and roofs, stadium and parking lot decks, bridges, truck trailers, rail cars, ships and off-shore oil rigs

### About the Company

Since 1981, Technology Systems, Inc. has been a pioneer in a variety of technology areas. The company helped launch the PC industry, broke new ground in the development of network protocols, and has fueled technical innovations. TSI received the initial SBIR, and partnered with ATS to develop the control system to affordably manufacture steel shapes and structures. In 2005, TSI and ATS created a spin-off company, Precision Light Systems, dedicated to commercializing laser manufacturing capability. Precision Light Systems ([www.plsystems.us](http://www.plsystems.us)) has now grown to 4 full-time and 6 part-time employees.