


Beauty in Simplicity At Applied Thermal Sciences we're engineering cost effective solutions everyday, for this world and beyond.




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Applied Thermal Sciences
research and development



HYBRID LASER WELDING RESEARCH

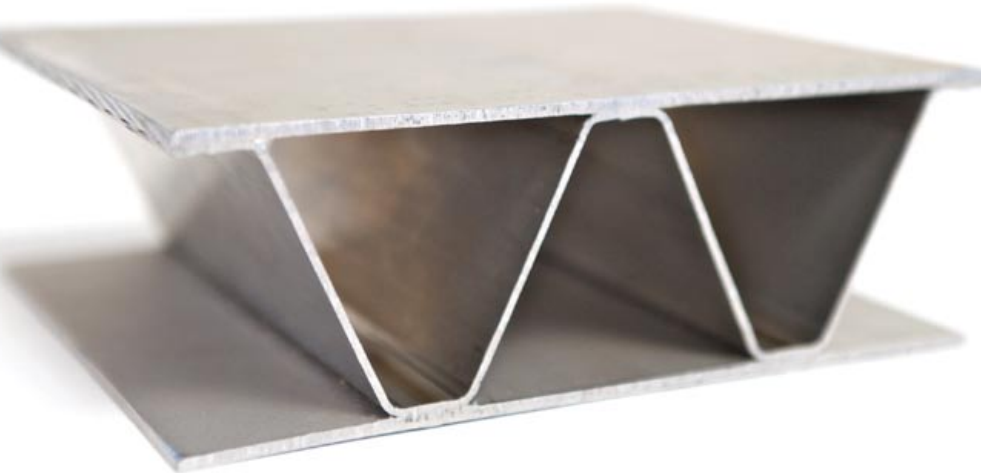


HYBRID LASER WELDING

High-Performance Structural Components Save Weight, & Cost

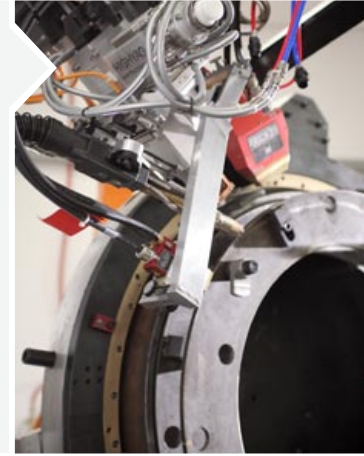
ATS originally began research into hybrid laser welding to provide affordable, lightweight, precision structural shapes for shipbuilding. Our patented system combines laser welding with a gas-metal arc welding (GMAW) system, greatly reducing thermal distortion. The ATS hybrid system provides superior travel speeds, improved metallurgical properties, better tolerance to fit-up variations (especially gaps), reduced distortion, better final weld contour, and improved structural fatigue life. We also developed a unique process control and quality assurance (PC/QA) system to adapt process weld parameters and perform on-the-fly inspections of weld size, porosity, undercut, and other quality attributes.

Our innovative, semi-automated system uses a series of cameras to both guide the welding process and inspect the weld during and after completion. This capability enables the user to manufacture products at higher speeds and with greater reliability and repeatability than previously possible. ATS has participated in multiple weld qualifications for the HLAW process from the U.S. Navy, ABS, API, and AWS.



OIL PIPELINES

Oil and gas pipeline research for the **USDOT** - In an effort to reduce the overall cost of in-the-field pipeline installations, ATS Hybrid Welding Technology has reduced the number of welding stations by 66%. Producing the same number of high quality joints each day at 1/3 the effort.



RAIL CAR SAFETY x10

NGRTC Next Generation Rail Tank Car, an industry consortium led by The Dow Chemical Company is responding to issues of safety by working with ATS's Engineered Metallic Structures Team to develop the materials necessary to increase the level of safety by a factor of 5 to 10 times. Testing and design are ongoing.



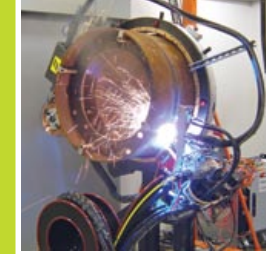
To see a complete program history please refer to our online video interview archive.
www.appliedthermalsciences.com/blog

SHIP BUILDING

Same Strength & Performance with upto 50% less weight

ATS, part of a team honored for developing the laser welding corrugated-core (LASCOR) metallic sandwich panel technology, currently being implemented on the **DDG 1000 class** of guided missile destroyer ships, saving the Navy considerable acquisition costs. The NMC led responsibilities for advancing LASCOR technology: specifically to establish a lightweight, stiff and modular steel structural system, reducing weight, and improving

performance. The project was recognized for optimizing the LASCOR design for materials, manufacturability, joining, structural and protection performance and costs, as well as successfully manufacturing large (78" x 240") LASCOR panels of CRES 2003, a lean duplex stainless steel from Allegheny Ludlum testing has shown that these panels provided enhanced strength, protection and corrosion resistance.



Defense Manufacturing Technology Achievement Award 2008

With the Navy Metalworking Center, and Bath Iron Works, Applied Thermal Sciences received the 2008 Defense Manufacturing Technology Achievement Award, an honor given by the Department of Defense Joint Defense Manufacturing Technology Panel (JDMTP).

