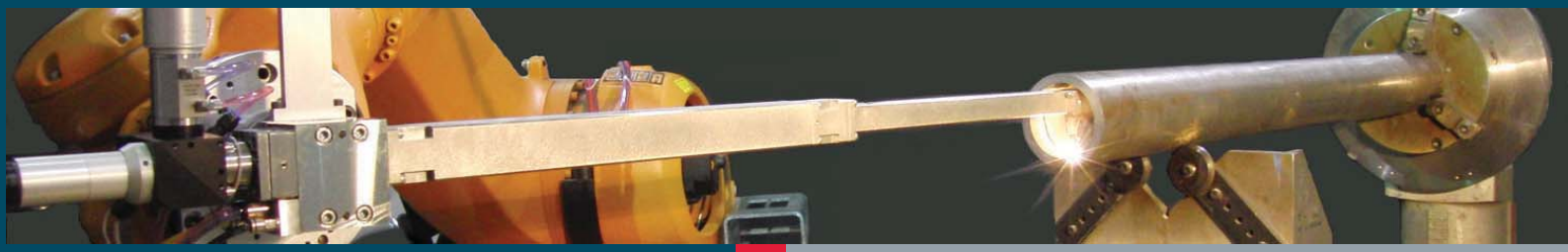

# CORPORATE MEMBER PROFILE

# FRAUNHOFER USA CENTER FOR COATINGS & LASER APPLICATIONS

LIA Corporate Member Fraunhofer USA Center for Coatings and Laser Applications (CCL) provides innovative research and development services based on its expertise in coating technologies and laser applications.

Fraunhofer, a non-profit organization and LIA member since 1999, provides research services to its customers who include federal and state governments, multinational corporations and small- to medium-sized companies. The overall aim of the entire Fraunhofer organization is to bridge the gap between research and industry by providing top-notch applied research services to its customers, helping to enhance their competitive edge.

## FRAUNHOFER ORGANIZATION

Fraunhofer USA is a wholly owned subsidiary of Fraunhofer-Gesellschaft which has over 80 research units, including 60 Fraunhofer Institutes at different locations in Germany. Fraunhofer Gesellschaft has an annual research budget of 1.66 billion euros. The majority of the 18,000 staff are qualified scientists and engineers.

Fraunhofer CCL, located in Plymouth, MI, has a close partnership with its parent institute Fraunhofer IWS, which is located in Dresden, Germany. Fraunhofer also networks with companies that provide state-of-the-art technology in the field of coating and laser technologies.

Fraunhofer USA
Center for Coatings and Laser Applications

Since its inception in the USA over 15 years ago, Fraunhofer CCL has been working in a wide range of industries in the U.S. including automotive, alternative energy, aerospace, and oil and gas. During this time, Fraunhofer has helped to develop and transfer laser technology into production for a wide range of applications and industries such as:

- Automotive roof welding (Fraunhofer CCL received the Henry Ford Technology Achievement Award in 2007 for work on the F150 Truck program).
- Lithium ion battery welding (now in volume production at a major li-ion battery manufacturer in Michigan).
- Automotive powertrain welding (various production installations).
- Laser cladding (now in volume production at various customer facilities throughout the USA and Canada)

## APPLICATIONS

The Laser Applications Division carries out research and prototype applications development in the field of laser materials processing. The division has a wide range of expertise in laser processing technology, including laser hybrid welding technology, remote welding, laser cutting, laser cladding and laser heat treatment.

In the field of laser cladding, Fraunhofer CCL works together with Fraunhofer IWS to develop novel powder nozzle technology for both precision fine cladding and high deposition rate cladding.

"Our new 'induction assisted laser cladding' process enables significantly higher deposition rates to be achieved whilst improving clad deposit quality, which is of particular interest to the oil and gas industry and for remanufacturing applications where higher productivity rates are demanded. A wide range of specialist nozzles have been developed for applications such as laser cladding inside of tubes and pipes (ID cladding) and for aerospace applications such as turbine build up cladding (direct metal deposition) applications," said Fraunhofer CCL's Laser Applications Division Director Craig Bratt.

## KEEPING CURRENT

Asked where he's seen the most growth in recent years, Bratt responded, "In terms of demand for laser applications and technology, all industrial sectors have grown significantly over the last five years, in particular automotive, alternative energy and oil and gas have seen a rapid increase in adoption of new laser technology with many new production applications being implemented."

"The major change over the years that has been made at Fraunhofer CCL has been the advancement of solid-state laser technology, enabling more efficient high-power fiber delivered lasers, which are now beginning to replace $CO_2$ lasers for many applications. If you took a walk around our lab 10 years ago, you would have seen predominantly $CO_2$ lasers, whereas today you would see mostly state-of-the-art solid-state lasers from companies such as IPG, Laserline, Rofin Sinar and TRUMPF. These lasers range from 5 to 10 kW power, and are enabling a whole new range of applications to open up from high speed remote cutting and welding through to high deposition rate cladding. High power lasers today are cheaper and more efficient than ever before and this is leading to ever increasing industrial demand for both laser technology and our laser applications development expertise," said Bratt.

Fraunhofer CCL sees great value in being an LIA Corporate Member. "The LIA provides a unique forum for networking, training and promotion opportunities for the American laser industry and we have found it invaluable over the years," he said.

For more information, visit **www.ccl.fraunhofer.org/**. ■

**Laser cladding and nozzle development are part of CCL's activities.**