ABSTRACT

Paint stripping formulations and methods used today result in emissions of Volatile Organic Compounds (VOCs), toxic air contaminants, particulate matter and various metals. The techniques also lead to generation of a substantial amount of hazardous waste. Water use and contamination and high energy use for controls can also result from use of some of the methods.

An alternative method of stripping paint that minimizes air emissions, waste, water pollution and energy use has been developed by Laser Strip. The company assembled a portable hand-held carbon dioxide laser stripping device. Laser Strip partnered with the Institute for Research and Technical Assistance (IRTA), a small nonprofit technical environmental organization, and Southern California Edison, a large electric utility, to conduct an Innovative Clean Air Technology (ICAT) project. This project involved conducting four demonstrations of the laser stripping device in applications where it might offer an environmental and cost advantage. The applications included aircraft and aircraft parts stripping, water storage tank stripping, ground vehicle stripping and Navy parts and hull paint stripping.

The laser prototype device had low power and was designed to demonstrate the feasibility of the concept. Laser Strip is building two larger lasers, one a portable laser and the other a fixed laser which will have a much higher strip rate. The cost of stripping with one of these larger laser stripping devices was compared with the cost of stripping with the method that is used conventionally in the four applications where the prototype was demonstrated. The results indicate that the cost of using a laser for stripping is lower than the cost of using alternative technologies except in cases where a substantial amount of surface area must be stripped or the coating to be stripped is very thick. The laser offers a number of advantages over conventional stripping methods. It has lower energy requirements, it is easy to use, it minimizes air emissions of VOCs, toxics and particulate matter and it generates a much lower volume of waste. A conference that involved demonstrating the prototype device was held to communicate the project findings to interested parties.