

MEMORANDUM FOR HQ AFMC/LGP-EV
LGP
IN TURN

SUBJECT: Trip Report

1. **PURPOSE:** To attend a 1-week training session on Clean Laser (CL120Q) System
2. **TRAVELERS:** Mr. Gerard Mongelli (CTC) HQ AFMC/LGP-EV
Mr. Randall Straw (CTC) AFRL/MLSC
3. **ITINERARY:** Clean Laser Corporation, Aachen Germany, 2-9 Nov 02
Selective Laser Coating Removal System (SLCR), Duren Germany, 7 Nov 02
4. **ATTENDEES:** Dr. Jorn Birkel (Clean Laser)
Mr. Edwin Buchter (Clean Laser)
Mr. Olav Schultz (SLCR)
5. **DISCUSSION:** The purpose of the trip was to continue our education and training on the use of the Neodymium: Yttrium Aluminum Garnet (Nd:Yag) laser manufactured by Clean Laser of Germany.

a. Our training began with the basic theory of lasers which covered issues on laser beam parameters, beam deflection, process and/or handling parameters. Practical application was also part of the training. We used test coupons that emulated the coating systems that are used on DoD weapon systems.

b. Using both robotic and hand held systems, we accomplished several test trials on our sample coupons. By making adjustments in scan speed and laser frequency, we were able to remove coatings from most of our test coupons. It should be noted that the removal of Chemical Agent Resistance Coating (CARC) was extremely difficult. We decided that further work on optimizing the laser to remove this coating would best be accomplished when we returned to Wright-Patterson. However, we used Clean Laser's 100-watt continuous wave CO² system which removed the coating with less difficulty.

c. A day was spent by Mr. Mongelli at SLCR to work on their CO² system which provided a better understanding of the CO² and the parameter work that was conducted. The CO² system used by SLCR is a short pulse versus continuous wave, therefore, removal of the CARC coating was also very difficult. Mr. Straw continued work with Clean Laser on stripping some specialty coating panels he had provided.

d. Maintenance training on the CL120Q system was also conducted. We disassembled and reassembled the main components of the system. We discussed how each component worked, its function and cleaning needs, some troubleshooting procedures, and removal and replacement of the laser lamp. The technicians at Clean Laser stated that other than them, Mr. Straw and I are the only people certified to perform this type of maintenance.

6. ACTION ITEMS:

None

7. CONCLUSIONS/ RECOMMENDATIONS:

We should attempt to continue this type of training with other laser manufacturers as our project progresses. Further investigation into the continuous wave CO² system would also be extremely beneficial.

HQ AFMC/LGP-EV

AFRL/MLSC