

Final Abstract
IPRO 323 – Spring 2006
Laser & Waterjet Technology Capability

Goals & Tasks

- Gather information regarding the detailed specifications of how lasers and waterjets work.
- Examine the roles that lasers and waterjets currently have in the manufacturing industry. This includes learning how lasers and waterjets are used in applications such as welding, cutting, and stamping of materials.
- Decide which machinery is better suited for a particular task. (ie are lasers or waterjets more efficient at cutting a particular type of metal or ceramic)
- Determine areas of industry that currently employ the use of laser and waterjet technology.
- Examine additional industries that could benefit from this technology that do not currently utilize it.
- View firsthand a laser and waterjet machine in action to gain knowledge of how they work.
- Evaluate current costs of buying and owning laser and waterjet machinery. Find current pricing scales for such machines and recommend their purchase if feasible.

Organization

The team was divided into two sub-teams to work more efficiently on gathering information. Half of the team worked on researching lasers, while the other half worked on researching waterjets. Upon gathering enough material to draw conclusions, the two teams merged together to compare and contrast data. Once this was complete the team was able to draw final conclusions and make recommendations.

Findings and Achievements

- The team successfully gained firsthand knowledge of both technologies by seeing live demonstrations of each. A trip to a cutting facility was performed to view a waterjet, and a laser was viewed in Engineering 1 laboratories.
- Comparisons between both technologies were made. It was found that both machines are comparable to each other in terms of cutting speed and accuracy.
- Lasers and waterjets are very versatile instruments that are able to cut through many materials ordinary stamping cannot achieve. It was found that if a particular material cannot be successfully cut by one machine, the other is better suited to do the job.
- While initial costs of purchasing these machines is high, lasers and waterjets have surprisingly low maintenance and operating costs. The revenue generated from using these machines can quickly pay back the initial capital investment.
- Both large and small companies can benefit from these technologies due to the time saving ability of rapid prototyping and ease of operation.

Future Work

- Discover which industry sectors could best utilize lasers and waterjets and identify companies that are currently not employing them.
- Future plans include informing companies of the capabilities of these machines.
- Convince companies not using these machines to consider purchasing them in order to save production time and increase revenue.
- Conduct further research on laser and waterjet technology advancements including but not limited to the combination of both lasers and waterjets in a single machine.

Team Members

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