



SP.777

WATER JET TECHNOLOGY

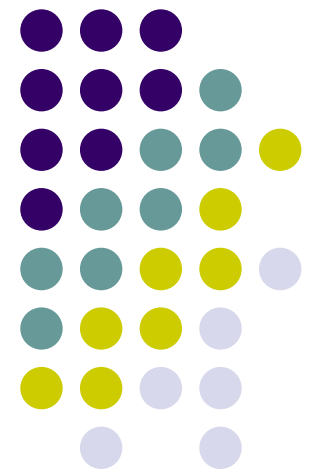
Wednesday, May 4th

Presentation by:

Greg Schroll ~ Ariel Rideout ~ Mike Short ~ Matt Zedler

Class Instructors:

Ken Stone ~ Alea Teeters

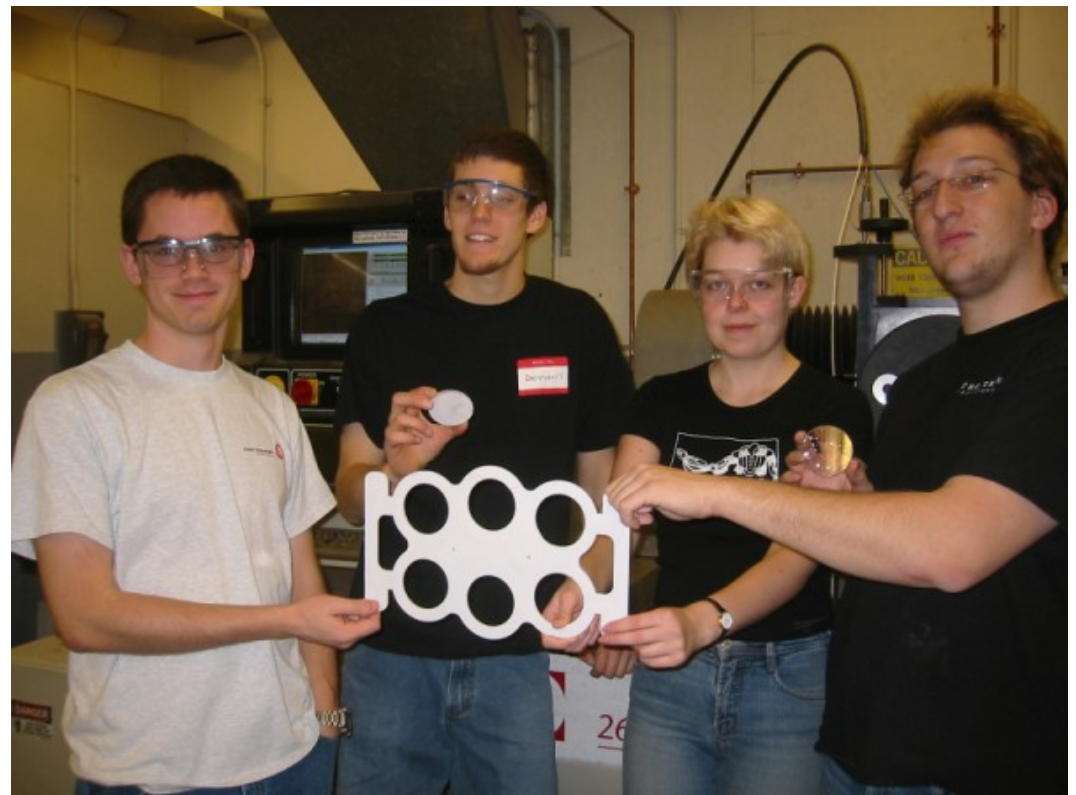


MIT
PUBLIC SERVICE CENTER



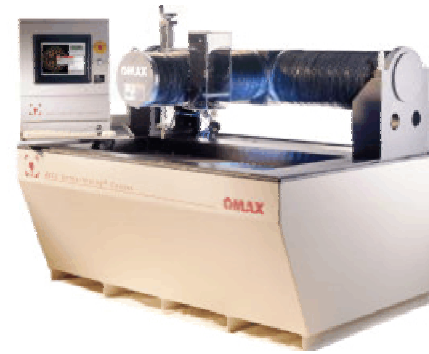
Introduction

- Teaches water jet through service learning
- Combines **design** and **rapid prototyping**
- In third year



Freshly cut coffee tray base
emerges from water jet
(3.02.05)

OMAX Water Jet

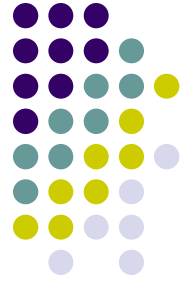


- Uses high pressure water and abrasive to cut
- Works on metals, plastics, woods, etc.
- Has associated computer-aided drafting program



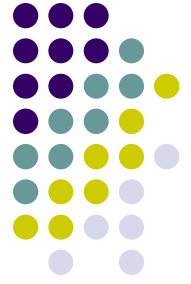
ABOVE: Snowflakes cut on water jet

LEFT: Ken teaches Ariel how to use software



Community Partner

- Protestant Guild for Human Services
 - Waltham, MA
 - “Serves difficult-to-place students between the ages of 6 and 22 years with a primary diagnosis of mild to severe mental retardation, autism, or other developmental disability.”
- Two site visits, including ideas generation session



Design Process

- Ideas development
 - Community partner interaction
 - Brainstorming and sketching
- Research
- Designing and engineering
- Iterative prototyping
- Product testing
- Surveying

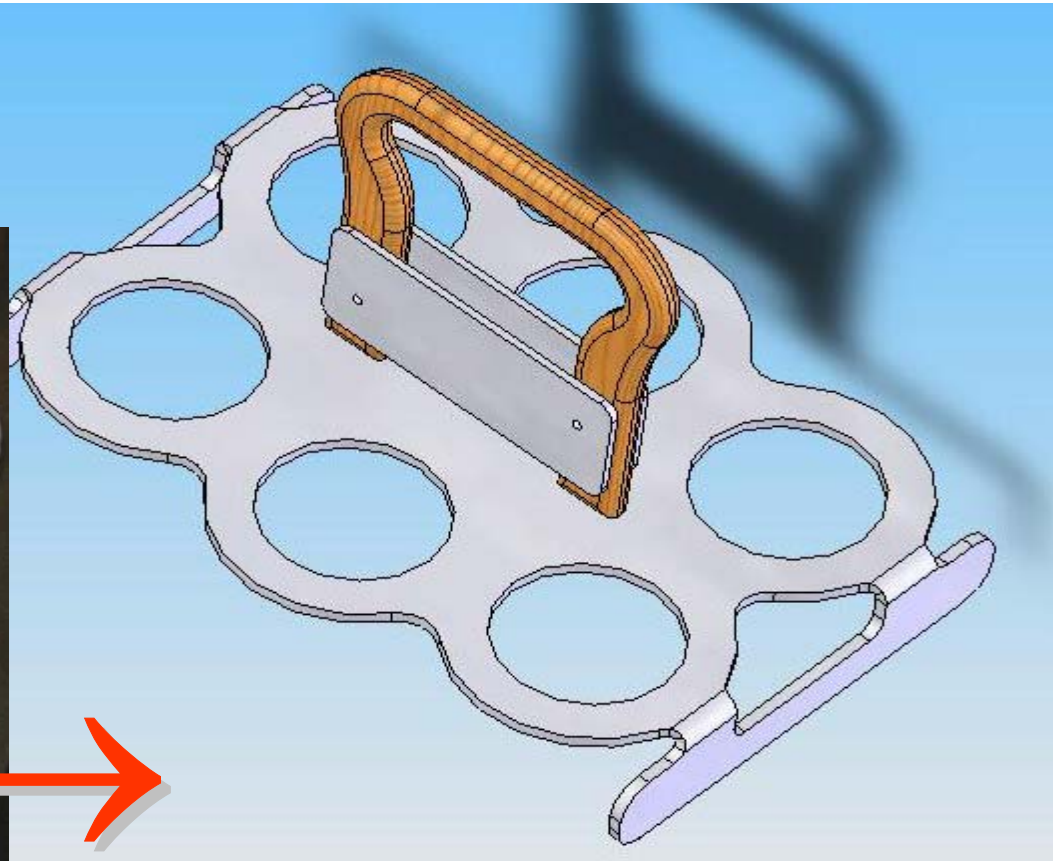
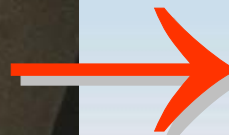
Students use computer aided drafting programs to design products.





Coffee Cup Carrying Tray

- PROBLEM: Dunkin' Donuts holder difficult to hold, subject to spills, and not durable
- SOLUTION:

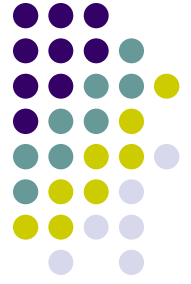




Product Development

- Iterative design process
- General idea developed through several prototypes



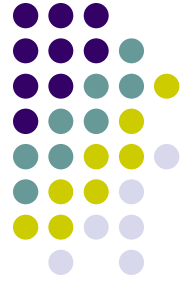


Testing and Deployment

- First tests in mid-March
- No negative feedback received
- More durable model deployed in early May



James, a worker at the Something's Brewin' coffee shop, poses with the new product.



Cafeteria Tray Insert

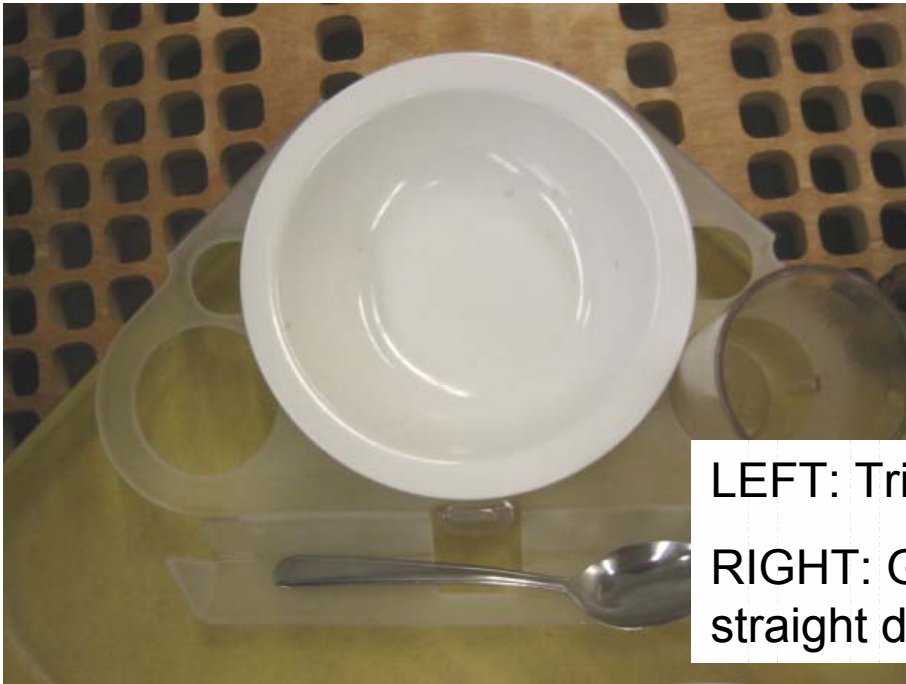
- PROBLEM: Students would often spill liquids from bowls or cups on walk towards table
- SOLUTION:





Product Development

- Competing designs and final evaluation
- Perfecting new techniques such as bending and frosting



LEFT: Triangular alternate design

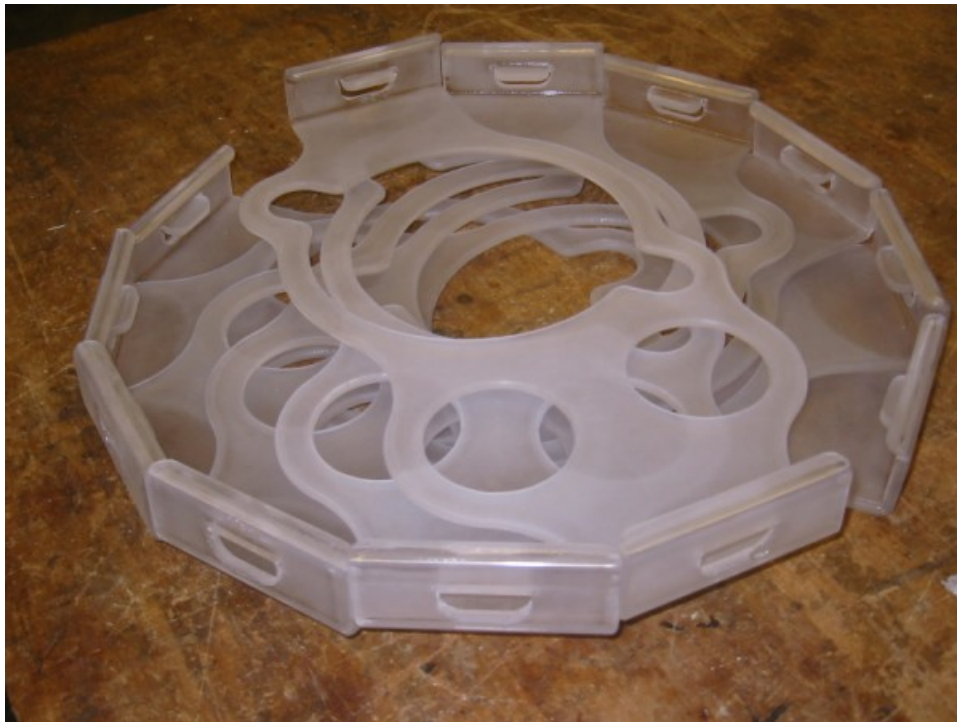


RIGHT: Greg bends tabs on straight design



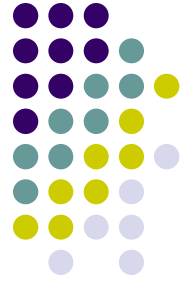
Testing and Deployment

- Multiple copies of final product developed
- Deployed in early May



LEFT: Multiple copies of insert stacked together

RIGHT: Student uses tray in cafeteria line

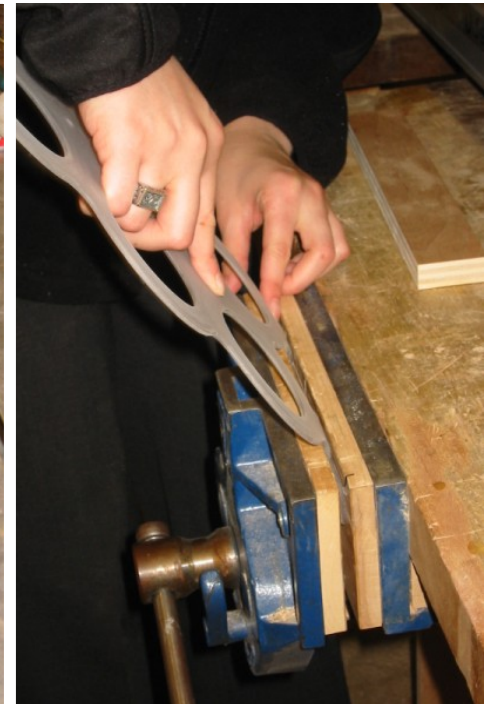
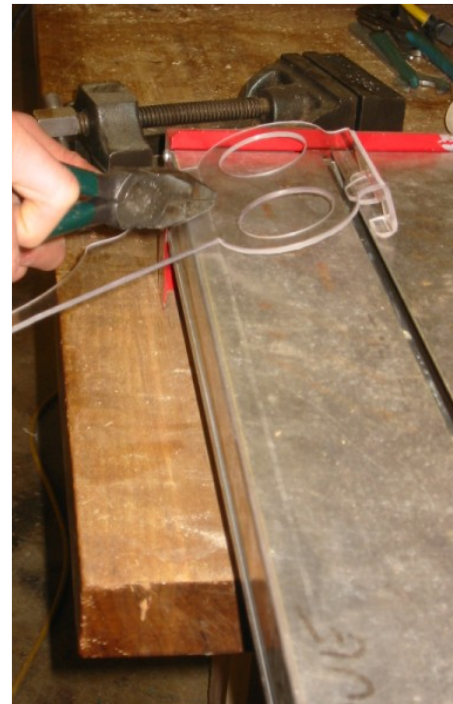


Lessons Learned

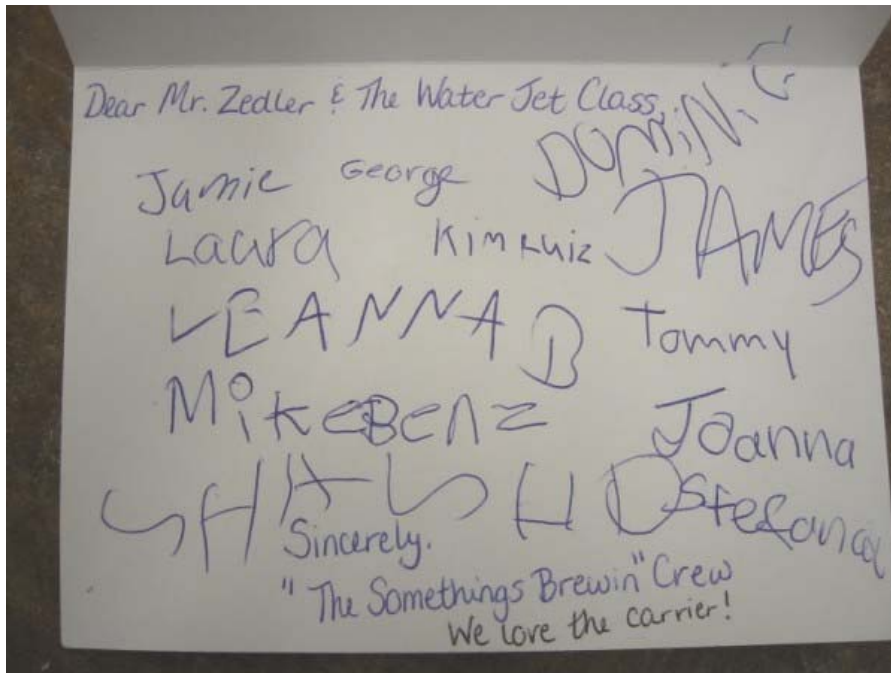
- Using water jet effectively
- Finishing cut polycarbonate
- Bending

BELOW (left to right):

Process of finishing polycarbonate – routing, sanding, heating, bending



Questions?



LEFT: Thank you card from students

RIGHT: Laura uses coffee cup carrying holder

MIT OpenCourseWare
<http://ocw.mit.edu>

EC.S02 Water Jet Technologies
Spring 2005

For information about citing these materials or our Terms of Use, visit: <http://ocw.mit.edu/terms>.