

**2005-2006 Learning Technologies Grants Proposal**  
(COVER PAGE)

**Project Information**

Rotokinetics RK5450 Rotocaster

Project Title

Michael Oliveri

Project Director

Lammar Dodd School of Art

Requesting Department

\$33,158.00

Amount Requested Year 1

Amount Requested Year 2

Project Director's Signature

**Proposal Endorsement Signatures**

Department Head

Dean

Proposal Abstract (100-word maximum)

The Digital Media, Interior Design and Sculpture departments would like to collectively purchase a Rotocaster RK5450 as a cost effective way to cast hollow three dimensional parts. Currently we are developing a rapid prototype 3 step process, which begins in the computer and ends with a large scale three dimensional hollow object. The integration of this technology, which uses inexpensive materials creating hollow forms, would allow students to fabricate large scale objects at an affordable price. We are convinced that this technology will inspire our student's creativity, provide current practical skills and further enhance the collaboration of our departments.

## **Section I. Project Description**

The Rotocaster RK5450 provides students the opportunity to produce 3D physical objects out of inexpensive materials such as polyurethane plastics and plaster. This ability to use a wide variety of inexpensive materials encourages experimentation and research.

We are currently in the process in developing a 3 step cost effective process, using state of the art technology. The process fuses computer generated designs with current prototype casting methods. This process is currently not found on this campus.

The first of the 3 step process is to design the object using Rhino3D CAD software, which is taught in Digital Media ARST4810 in the spring and maymester. The second step is to create a negative part out of polystyrene foam on our "Camtech CNC Router," which we received from a learning technology grant in 2001. The final step is to take the negative routed parts and create molds to cast them using the Rotocaster RK5450.

Note\* we recently received a donation of about \$30,000.00 of polyurethane material.

The RK5450 provides high production capacity, with built-in safety features, and programmable configurations. Here are some key features.

- 54 x 50 inch capacity provides room for large or multiple molds with total weights to 500 lbs.
- "Power Load" offers effortless transfer of molds to and from machine
- Configurable direction, speed, time delays, of both major and minor axis; as well as our unique Rock n' Roll feature provide the ability to tackle those difficult to make parts
- Remote operator station allows safe, rapid loading and unloading while providing excellent visibility of the process.
- Store off programs for individual parts as well as monitor run program status, safety interlocks and overload detection.

The Digital Media, Interior Design, and Sculpture Departments would like to further enhance our interdisciplinary efforts with the use of this Rotocaster RK5450. I have supplied supporting documentation showing the success of our current inter departmental collaborations that was made possible from the Learning Technology Gant we received in 2001.

## Section II. Budget

| Item                      | Quantity | Total Cost       | Requested from LTG | Provided by other sources |
|---------------------------|----------|------------------|--------------------|---------------------------|
| Rotocaster RK5450         | 1        | 29,900.00        | 29,900.00          | 0                         |
| RK5450MC Mold Carrier     | 2        | 1,398.00         | 1,398.00           | 0                         |
| RK5450T Transporter       | 2        | 798.00           | 798.00             | 0                         |
| Mounting Hardware         | 204      | 1,062.00         | 1,062.00           | 0                         |
| Delivery, installation    |          | 0                | 0                  | 0                         |
| Training                  |          | 0                | 0                  | 0                         |
| Warranties                |          | 0                | 0                  | 0                         |
| Casting Material Donation | approx   | 30,000.00        | 0                  | 30,000.00                 |
| <b>Total</b>              |          | <b>63,158.00</b> | <b>33,158.00</b>   | <b>30,000.00</b>          |

### Budget Justification Narration

All of the above parts are necessary for the machine to operate. The reason we are ordering two mold carriers and two transporters is so that we can have more than one person at a time working with the system. \* We have already received the casting material.

|                                     |                    |
|-------------------------------------|--------------------|
| <b>Total Requested Budget Total</b> | <b>\$33,158.00</b> |
|-------------------------------------|--------------------|

### Timeline

| Date    | Objective              | Persons Responsible |
|---------|------------------------|---------------------|
| 08/2006 | Functioning in courses | Michael Oliveri     |

## Section III. Learning Outcomes:

Adding this tool to our already state of the art equipment sets our program apart from all others like it. We will be able to carry out professional large scale prototypes in design and large scale sculptures in art at an affordable price to the students and program. Students will learn a conceptual and physical process from idea through fabrication. They will gain experience with the technology currently used in modern industry and therefore properly preparing them for a future. The success of this grant will be measured by the work created and utilized in student portfolios using this technology.

### *Enhanced areas of learning in Digital Media*

- Inspire innovative applications for virtual design
- Evolve keener sense of proportion and, greater understanding and mastery of scale
- Distinguish between virtual and actual perspective
- Understand and experience the ramifications of materials on design
- Encourage a professional completion in products produced.
- Promote curiosity and comfort with various machinery, tools, and software.

## ***Class schedule and possible student numbers***

### Digital Media

| COURSE    | TITLE               | ENROLLMENT |
|-----------|---------------------|------------|
| ARST 4810 | CAD and Fabrication | 35         |

### Interior Design

| COURSE              | TITLE   | ENROLLMENT |
|---------------------|---|------------|
| ARID 2110           | Studio I: Single Family Residential Design      | 35         |
| ARID 3110           | Studio II: Documenting Interior Design Projects | 20         |
| ARID 3120           | Studio III: Space Programming and Office Design | 20         |
| ARID 3130           | Studio IV: Design for Special Populations       | 20         |
| ARID 3310           | Building Systems                                | 20         |
| ARID 3340           | Furniture Design                                | 20         |
| ARID 3410           | Computer-aided Design for Interiors             | 20         |
| ARID 4110           | Studio V: Large-scale Nonresidential Design     | 20         |
| ARID 4620           | Senior Treatise II                              | 10         |
| <i>Graduate use</i> |   | 06         |

### Sculpture

| COURSE              | TITLE                                      | ENROLLMENT |
|---------------------|--|------------|
| ARST 2400           | Beginning Sculpture                        | 45         |
| ARST 2410           | Portrait and Figure Sculpture              | 15         |
| ARST 3420           | Sculpture: The Subtractive Process         | 15         |
| ARST 3460           | Intermediate Portrait and Figure Sculpture | 15         |
| ARST 4410           | Advanced Portrait and Figure Sculpture     | 15         |
| ARST 4420           | Sculpture and Spatial Context              | 15         |
| <i>Graduate use</i> |  | 06         |

### **Other Departments**

The Art department has sixty faculty, and well over one thousand students. It is therefore difficult to quantify the expected influence this project will have on the department. However, it is safe to anticipate that there will be a contagious excitement that will inspire a great many faculty and students to experiment with this technology.

### **Section IV. Support Plan**

Since this device is not a complicated piece of machinery, the continued support, after the initial one-year warranty and training, would be minimal. The key faculty within the Digital Media, Interior Design, and Sculpture departments will sustain the general maintenance. The various department budgets and student lab fees would provide for extra parts and accessories.

## **ASSETS OF THIS SPECIFIC PIECE OF EQUIPMENT**

- Ease of use
- Mold carrier frame
- Frame transporter and lifting system.
- Built in safety features with integrated machine guarding
- Diverse applications with a variety of molds and materials
- Pendant programmable control and memory for specific castings
- Compatibility with all currently used software and CNC machinery.
- Low running costs
- Nothing on the market like it