Epoxy Heat Curing Research:

Options:

1. Heat oven
2. Custom enclosure
3. Heat lamp/blankets
4. Furnace

Potential issues:

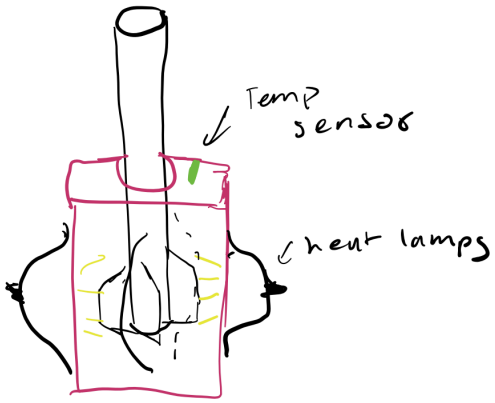
- Too big to fit in heat oven/furnace
- Can't reach required temperature
- Manufacturing of enclosure too difficult
- Space??
- Money

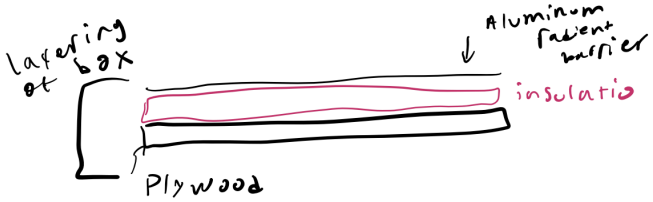
Most viable option atm: Custom enclosure/ heat lamp combo

Sources for reference:

- UV Curing Enclosure Example - Basic design of enclosure is transferable to our custom enclosure; heat lamp type will need to be modified to a much more powerful model for our use and inner layers may require more insulation to in turn be equipped to handle higher temperatures
- Cure Box For Composite Builds - Only currently utilizes on lamp, proportions need to be scaled up for our use and to include heat lamps on four faces to perform consistent curing

Concept Sketch:





Type of epoxy: System 40600 Spec Sheet

Curing Temperatures and Times:

Tips
- Allow material to gel completely prior to removal from mold.
- Post Cure Schedule: 150°(F) for 3-4 hours, 250°(F) for 3-4 hours, 300°(F) for 8 hours (or 375° (F) for 4-6 hours)

Ideal Time and Temp:

To Build Oven

Parts Needed:

1. Insulation board
    a. 2 layers?
2. Insulation Aluminum Tape
3. Regular insulation
4. Plywood
5. 2x4s
6. Silver heat reflective foil
7. Fans for circulation
8. PID controller?
9. Heat Lamp Controller x2
    a. Bulb
    b. Mounts x2

Cost of Parts (assuming RT does not have anything)

Part	Amount	Cost per Unit	Total Cost
PID Controller	1	37	37
Heat Lamp	2	6	12
Lamp holder	2	17	34
Aluminum Foil Tape	1	6	6
Insulation	1	50	50

Aluminum Foil Wrap	1	24	24
Carbon Steel Plate	6	18.47	111
Total			274

Insulation Board Specs:

Thermal Performance

ASTM C680 (Type 703)

THICKNESS		OPERATING TEMPERATURE, °F (°C)									
		250 (121)		300 (149)		350 (177)		400 (204)		450 (232)	
IN	(MM)	HL	ST	HL	ST	HL	ST	HL	ST	HL	ST
1.0	(25)	27	98	42	106	57	114	75	123	95	133
1.5	(38)	19	93	29	99	40	105	52	112	66	119
2.0	(51)	15	90	22	95	31	100	40	105	50	111
2.5	(64)	12	88	18	92	25	196	32	101	41	106
3.0	(76)	10	87	15	91	21	194	27	198	34	102
3.5	(89)	9	86	13	89	18	192	23	196	30	199
4.0	(102)	8	86	11	88	16	191	21	194	26	197

Insulation Option