University of Massachusetts – Dartmouth

ARCTIC Company Spec. Sheet

Team: IDEA Club - *ARCTIC*
School: University of Massachusetts Dartmouth
Location: Massachusetts, United States
Travel Distance: . 3 miles
Team History: UMASS Dartmouth's I.D.E.A. Club has participated in the International M.A.T.E. R.O.V. Competition three times before as members of the Explorer class. We have competed in Houston, Texas; Orlando, Florida; and Alpena, Michigan. While a few of our members are returning competitors, this will be an incredible first experiences for others.

Steven Brown – **Mentor**
Brandon MacDonald (President) – **Lead Mechanical Engineer** (senior)
Stacy Correia (Vice President) – **Lead Electrical Engineer** (senior)
Eddie Purtell (Treasurer) – **Chief Financial Officer** (sophomore)
Nicole Gregory (Secretary) – **Chief Executive Officer** (freshman)
Michael Benson – **Electrical Engineer** (freshman)
Steven Kolvek – **Mechanical Engineer** (freshman)
Aaron Jesus – **Computer Engineer** (freshman)
Joseph Hazel – **Electrical Engineer** (freshman)
Marc Carreira – **Design Engineer** (sophomore)
Adam York – **Mechanical Engineer** (junior)
Diarny Fernandes – **Mechanical Engineer** (junior)

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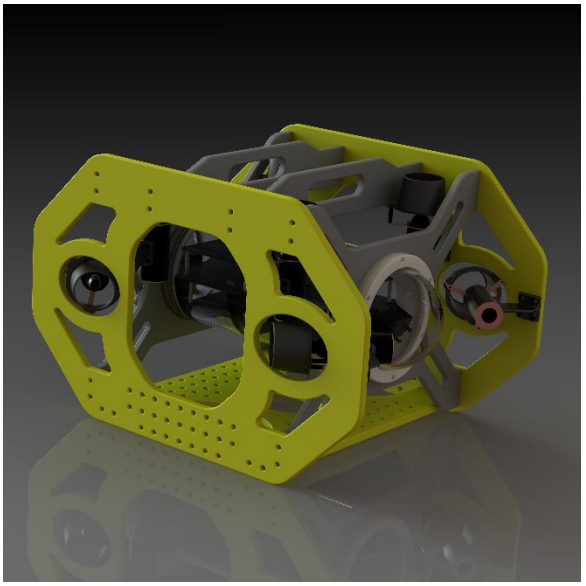
ROV Name: ARCTIC (*A*dvanced *R*econnaissance *C*ompetitive *T*echnology *I*nvades *C*anada)

Total Cost: ~$13,000 including donations
Primary Materials Used In Construction:

- Acrylic Tube
- Vero Black Plus 3-D Printer Plastic
- ABS
- Delryn
- Stainless Steel
- High Density Polyethylene (HDPE)

Approximate Dimensions: 64 cm x 46 cm x 41 cm
Weight: ~ 45 kg
Safety Features:

- Custom waterproof connectors to ensure tight sealed wire connections.
- Thruster shrouds
- Current, temperature, and pressure sensors in box alert pilot to problems
- Double o-ring seal
- Three layers of fuses, including the required 40A, a 30A and a 25A
    - Each one of our DC voltage regulators is redundant and cannot back-feed
- Full bridge rectifier board to avoid the disastrous error of reversed DC power polarity



Special Features:

- 4 vertical thrusters for lifting heavy loads to the surface, as well as 4 vector thrusters
- Expansion for up to 8 separate high-current tools (Speed and direction controlled)
- Compact size for tight spaces