
Engineering Design Challenge 3

Mars Colonization

Safety regulations

In order to have a fun and safe competition, and minimize the possibility of accidents, all teams are expected to abide by the following.

Safety regulations provided by the AUB Environmental Health, Safety and Risk Management Office.

General safety

- Follow safe work practices, including safe use of all tools and protective equipment (safety glasses, shoes, gloves, hearing protection, etc.).
- Keep full control of robot at all times.
- Be especially careful around high-speed rotating components, both on and off the robot. If you are putting a high-speed rotating component on the robot, make sure the component is designed to be used the way you are using it.
- Be sure to wear proper protective equipment and use safe lifting practices.
- Gasoline use is prohibited.
- Don't use any highly flammable materials, such as cleaning solutions, at the event.

Electrical safety

- Make sure that cords and plugs are free of broken insulation, exposed wiring, and provided with grounded connections, or double insulated.
- DO NOT overload electrical fixtures and/or receptacles.
- DO NOT "daisy chain" – plug a power strip into another power strip.
- Avoid the following electrical power supply setups to prevent overloading:
 - o Extension cord plugged into another extension cord.
 - o Extension cord plugged into a power strip.
 - o Multi-device receptacle plugged into a power strip or extension cord.

Battery safety

- Place your battery charger in an area where cooling air can freely circulate around the charger. Battery chargers can fail without proper ventilation.
- Do not short out the battery terminals. If metal tools/parts contact the terminals simultaneously, it will create a direct short circuit. This may cause high heat to develop in the battery terminal/part/tool area and the battery could explode.
- Do not charge battery at greater than the manufacturer's maximum recommended rate.
- Periodically inspect your battery for any evidence of damage, such as a cracked case or leaking electrolyte.
- Bent terminals can also be a potential leak source.
- Inspect the battery before and after each round of competition.

Recommended Safety Materials

It is recommended that teams keep the following items readily available whenever working with batteries:

1. A box of sodium bicarbonate (baking soda) to neutralize any exposed acid electrolyte.
2. A pair of acid-resistant rubber or plastic leak-proof gloves to wear when handling a leaking battery.
3. A suitable non-metallic leak-proof container in which to place the defective battery.

When an electrolyte leak occurs:

- Neutralize it by pouring the sodium bicarbonate on all wetted surfaces. The bicarbonate of soda itself is not dangerous, and will react with the acid in the electrolyte leaving a safe residue that can be disposed of in a conventional manner such as rinsing with water.
- Follow emergency handling instructions of the MSDS (Material Safety Data Sheets), and notify organizers.
- Put on the gloves before handling the battery.
- Place the battery in a leak-proof container for removal.
- Be sure to neutralize any acid on the gloves before removing and storing them
- Seek medical attention if skin came into contact with any chemicals.
- Properly dispose of the battery, which is now a hazardous material.

For any questions and concerns, please contact the EDC organizers at edc@aubrobotics.com.