

Requirements

1 Operation Requirements

- 1.1 The mower must be battery powered.
 - 1.1.1 The battery must be rechargeable.
- 1.2 The mower must be autonomous as outlined in requirement 3.
- 1.3 A home base will be provided for the mower.

2 User Interaction Requirements

- 2.1 The user may issue the following commands to the mower.
 - 2.1.1 Begin mowing operations, as specified in requirement 3.4.
 - 2.1.2 Stop immediately, as specified in requirement 3.3.
 - 2.1.3 Return to base, as specified in requirement 3.2.
- 2.2 The following state information will be provided to the user.
 - 2.2.1 Current battery level.
 - 2.2.2 Battery is charging.
 - 2.2.3 Battery has completed charging.
 - 2.2.4 Mowing operation is in progress.
 - 2.2.5 Desired grass height.
 - 2.2.6 Days of week the mower is scheduled to run.
 - 2.2.7 Time of each day the mower is scheduled to run.
 - 2.2.8 Mower operation has been forcefully stopped because of a violation in requirements outlined in 4 and 5.

3 Autonomous Functions Requirements

- 3.1 The mower must return to base when it detects low battery level.
- 3.2 Return to base on command from interface.
- 3.3 Stop immediately on command from interface.
- 3.4 Begin mowing on command from interface.
- 3.5 Begin mowing on schedule.

4 Operating Environment Requirements

- 4.1 The product's components must be able to operate normally within an environment that
 - 4.1.1 is above 25 degrees Fahrenheit
 - 4.1.2 is below 115 degrees Fahrenheit
 - 4.1.3 Max wind ???
- 4.2 The product's components must not become inoperable due to constant exposure to conditions within the limits specified in requirement 4.
- 4.3 The mower will only traverse ground which it detects is less than 33% incline.

- 4.4 The product's electrical components must be protected by a NEMA Type 3R enclosure.
- 4.5 The product's components must comply with International Protection Marketing Code 25 (IP25).

5 Safety Requirements

- 5.1 The mower must stop immediately (requirement 3.3) when...
 - 5.1.1 it senses an foreign object in its path.
 - 5.1.2 an emergency kill switch is pressed.
- 5.2 The mower will sound an alarm when removed from its configured boundaries.
- 5.3 The mower will cease to function when removed from its configured boundaries.

6 Product Configuration Requirements

- 6.1 All of the below must be configurable one or more times.
 - 6.1.1 The user can set operating boundaries for the mower.
 - 6.1.2 The user can set desired height of grass.
 - 6.1.3 The days of week the mower will run.
 - 6.1.3.1 Multiple days may be selected.
 - 6.1.4 The time of day the mower will run.
 - 6.1.4.1 One time must be selected for each day.

7 Budget Requirements

- 7.1 The total cost of the project including, but not limited to, the following shall not exceed \$2,500.
 - 7.1.1 Labor.
 - 7.1.2 Prototypes.
 - 7.1.3 Final product.
 - 7.1.4 Unforeseen costs.