FMEA – Battle Bots Team 3

1)

* Battle Bot system
  1. Controls System
     1. Battery
     2. Microcontroller
     3. Wiring
     4. Remote,
     5. Code
  2. Weapon System
     1. Motor: Must remain intact to chassis, maintain contact to controller/power, and maintain contact with roller component.
     2. Roller: Must take abuse without losing alignment or becoming heavily deformed, must not rotate at assembly’s natural frequency.
     3. Axle: Must support roller and take hits without becoming bent or sheared
     4. Gearbox: Must (if utilized) transmit and increase torque from motor to roller components.
  3. Drive System
     1. Wheels
     2. Axles
     3. Motors
     4. Bearings
  4. Assembly
     1. Electronic housing: Must fix/protect electronic components such as micro controller, battery, wiring and motors without retaining too much heat.
     2. Manufacturing/tolerances
     3. Armor/Body: Must be weighted appropriately to reduce risk of flip due to roller, must be strong enough to resist attack and shield electronic housing inside, must have enough internal space to house all components

2)Physics of problems, research, analyze

3) Possible Causes of Possible Failure:

* Battle Bot system
  1. Controls System
     1. Battery
     2. Microcontroller
     3. Wiring
     4. Remote,
     5. Code
  2. Weapon System
     1. Motor: Could burn out due to overloading speed or torque, could be damaged if placed poorly or not properly shielded by chassis
     2. Roller: Could become deformed enough to cause binding, could lose alignment and cause binding, could impact opponent hard enough to cause us to flip, could rotate at natural frequency and cause uncontrollable vibration.
     3. Axle: Could become bent and cause binding or damage to motor
     4. Gearbox: Could lose mesh if not properly protected by chassis
  3. Drive Assembly
     1. Wheels
     2. Axles
     3. Motors
     4. Bearings
  4. Assembly
     1. Electronic housing: Microcontroller or battery could be jolted hard enough to be damaged or disconnected, constant motor operation could cause overheating.
     2. Armor/Body: If too soft, could result in electrical component damage, if too bulky could result in excessive heat retention or disqualification due to weight violation.

4) Potential effects of failure

* Battle Bot system
  1. Controls System
     1. Battery
     2. Microcontroller
     3. Wiring
     4. Remote,
     5. Code
  2. Weapon System
     1. Motor: Could burn out due to overloading speed or torque, could be damaged if placed poorly or not properly shielded by chassis
     2. Roller: Could become deformed enough to cause binding, could lose alignment and cause binding, could impact opponent hard enough to cause us to flip, could rotate at natural frequency and cause uncontrollable vibration.
     3. Axle: Could become bent and cause binding or damage to motor
     4. Gearbox: Could lose mesh if not properly protected by chassis
  3. Drive Assembly
     1. Wheels
     2. Axles
     3. Motors
     4. Bearings
  4. Assembly
     1. Electronic housing: Microcontroller or battery could be jolted hard enough to be damaged or disconnected, constant motor operation could cause overheating.
     2. Armor/Body: If too soft, could result in electrical component damage, if too bulky could result in excessive heat retention or disqualification due to weight violation.

5)

6)

7)

8)

9)

10)