**Battle Bots / Robot Wars Competition Robot**

**Design Requirements**

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**Mission Requirements:**

1. To build a robot to compete in the 2017 International RoboGames in the 100kg Combat event.
2. To build a robot to compete in the 2017 Battle Bots summer season.

**I/O and External Interface Requirements**

* Will be controlled with a standard RF controller.
* Must be started and stopped remotely.
* Must stop if controller signal is lost.
* Must have a master shutoff switch for the weapon system and another for the movement system.

**Functional, Technological, and System Wide Requirements**

* Must be less than or equal to 100kg to qualify for competition.
* Must automatically disarm itself within one minute of the match length time.
* Must be able to operate for the full 3 minute match time without draining the batteries.
* Must not take more than 30 seconds to start up or shut down.
* Must shut down if RF signal is lost.
* Spinning parts must stop within 1 minute of the shutdown command.
* Should be designed around the BK-BKT120 platform for compatibility with existing components.
* Should be designed to be manufactured using a CNC router.
* Should be able to quickly right itself if flipped over.

**“Wish List” Requirements**

* Should have a modular weapon system that can quickly be swapped between robot bases.
* Should be cheap enough to build multiple identical robot bases in order to test weapon systems.
* Should win the competitions.

**Conceptual Designs**

High mass spinning weapons were chosen for their mechanical simplicity and physical robustness. Cutting weapons become worthless if the teeth break or get dull, while a large heavy piece of metal is unlikely to break. Spinning weapons are preferable to hammers or other mechanical systems because all they require is a single motor, and are always ready to hit the opponent. Different types of spinning weapon have been proposed and will be tested and evaluated against each other.

**Concept 1**

* Spinning outer drum weapon with armored top.

**Concept 2**

* Spinning outer drum with exposed top.

**Concept 3**

* Horizontally spinning weapon mounted to frame.

**Concept 4**

* Vertical spinning drum weapon mounted to frame.