Mechanical Archer

Requirements

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# 1 Revision History

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| **Revision** | **Description** | **Date** |
| 0.1 | Created Document | 22APR2012 |

# 2 Background

The Mechanical Archer project is an effort to engineer and construct a device which will mechanically fire a bow and arrow at a designated target.

# 3 Scope

## 3.1 In scope

1. Control Box
   1. Box design
   2. Wiring
   3. Construction
2. Frame
   1. Design
   2. Construction
3. Firing mechanism
   1. Bow
   2. Drawing mechanism
   3. Release/trigger

## 3.2 Out of Scope

1. “Hands-off” reloading
2. Aiming (beyond pointing the frame itself)

# 4 Functional Requirements

1. System must mechanically fire bow
   1. Manually load arrow
   2. Mechanically pull bowstring to rear
   3. Mechanically release bowstring
   4. Mechanically return mechanism & re-attach to bowstring
2. System must be safely and remotely controlled
   1. Control box
   2. “Dead man’s” switch
   3. Locking/arming key
   4. Sensor to disable drawing/firing when unloaded
3. Riser Attachment System
   1. Cast dragon skin silicone “glove”
   2. Anti-torque structure

# 5 Non-Functional Requirements

1. Bow limb shall be safe and have useful life
   1. Mounting considerations
   2. Winch movement safeguards
2. Frame shall be reliable within tolerances
3. Frame shall be roughly aimable

# 6 Constraints

1. Project budget is $1000
2. Functional & tested by May 2013

# 7 Assumptions

1. Bow draw strength of 50 lbs
2. Available 120V AC outlet