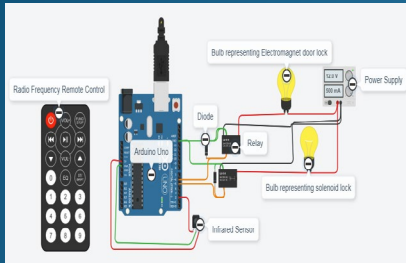


Re-Design of the Electromagnetic Door Lock System With RF Remote Control

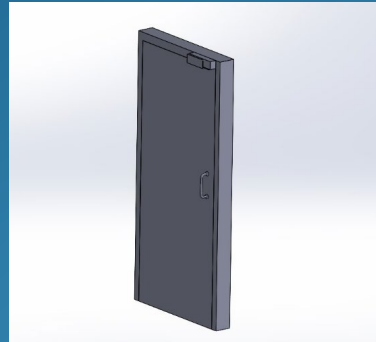
Daniel Paxton
BEng (Hons) Mechanical Engineering

Tinker CAD simulation



Tinker CAD was used to build and simulate the circuit for the RF remote control

Solidworks simulation



Using Solidworks the final design could be simulated to demonstrate the new electromagnetic lock.

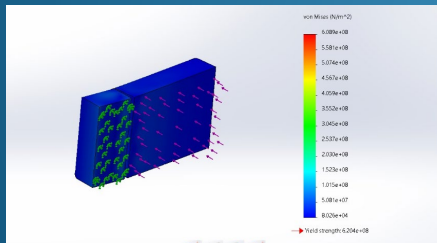
Problem

- 10 mm gap malfunction
- Cannot lock or unlock door from outside building
- Need additional security

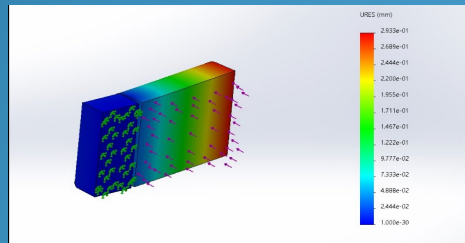
Aims and Objectives:

- Re-design the electromagnetic door lock
- RF remote control for unlocking and locking outside of the building
- Provide added security

Results from FEA Factor of Safety



Solidworks was used to test the Deadbolt lock for the doors additional security.



Stress Displacement from FEA test on Solidworks

```

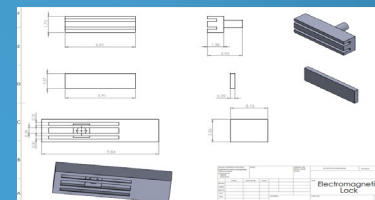
1 #include<RFremote.h>
2
3 #define irpin 2
4
5 IRrecv recvIn(irpin);
6
7 decode_result result;
8
9 void setup()
10 {
11   Serial.begin(9600);
12   recvIn.enableIRIn();
13   pinMode(5,OUTPUT); //relay for solenoid output
14   pinMode(6,OUTPUT); //relay for electromagnetic lock
15 }
16
17 void loop()
18 {
19   if(recvIn.decode(result)){
20     switch(result.value){
21       case 16593103 : digitalWrite(5,LOW); // if off switch is on, write relay pin OFF
22                     digitalWrite(6,LOW);
23                     break;
24       case 16593303 : digitalWrite(5,HIGH); // if on switch is on, Write relay pin to HIGH
25                     delay(1000);
26                     digitalWrite(6,HIGH);

```

Code:

The code used to program the Arduino UNO.

Re-Design of the electromagnetic door lock



Solidworks was used to design and build the re-design electromagnetic lock.