

3D MODEL DESIGN OF

MAC-11 SMG



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INTRODUCTION

The MAC-11 (Military Armament Corporation Model 11) is a machine pistol/submachine gun developed by American firearm designer Gordon Ingram at the Military Armament Corporation (MAC) during the 1970s. The MAC-11 is a high-fire submachine gun with a cyclic rate of 1,200-1,600 rounds per minute, or 25 rounds per second, one of the fastest firing gun in the segment which allows the user to empty the magazine in a mere two seconds. However, the rate of fire can be varied by using differently weighted bullets in the weapon.



OBJECTIVES

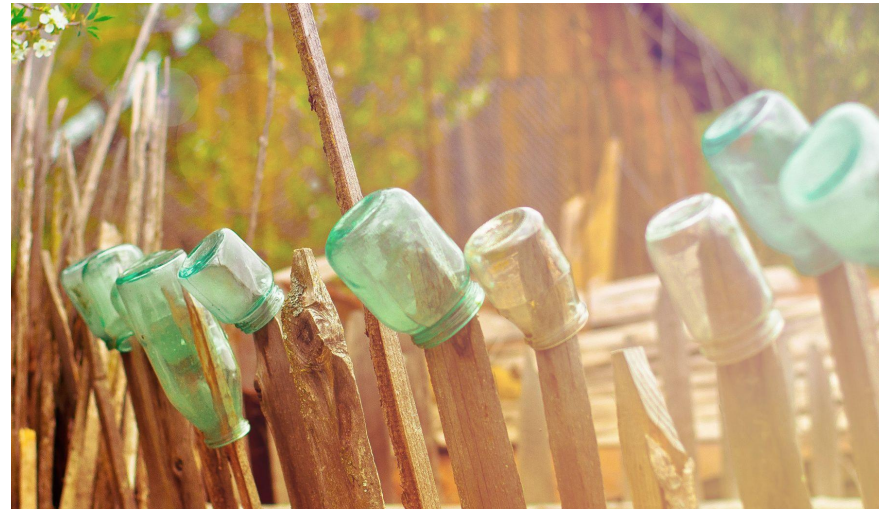
- Design different parts of the gun with accurate dimensions
 - Assemble each part with suitable mates
 - Render output to create high quality images of the gun
 - Draft the design into a drawing sheet with different views
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DESIGN INTRODUCTION

3D MODELLING SOFTWARE

Software used; SolidWorks 2021

Solidworks ins one of the most efficient software to work with product designing and it's a leading tool used by designers of various industries.Used best practices and techniques for efficiently creating and working with complex assembly of this design.



CONCEPT

Details:

Length:9.76 in.

Weight:3.5 lbs.

Holds:25 round magazine

Chambered:9mm

Rate of Fire:1200 rounds/min



CONCEPT



DETAILED DESIGN

COMPONENTS

The assembly consists of 56 different parts designed with accurate dimensions. Components include Upper and Lower receivers, Bolt, Grip, Trigger assembly, Stock assembly, Magwell, Sights etc are designed separately with suitable materials and appearances.

MATERIALS

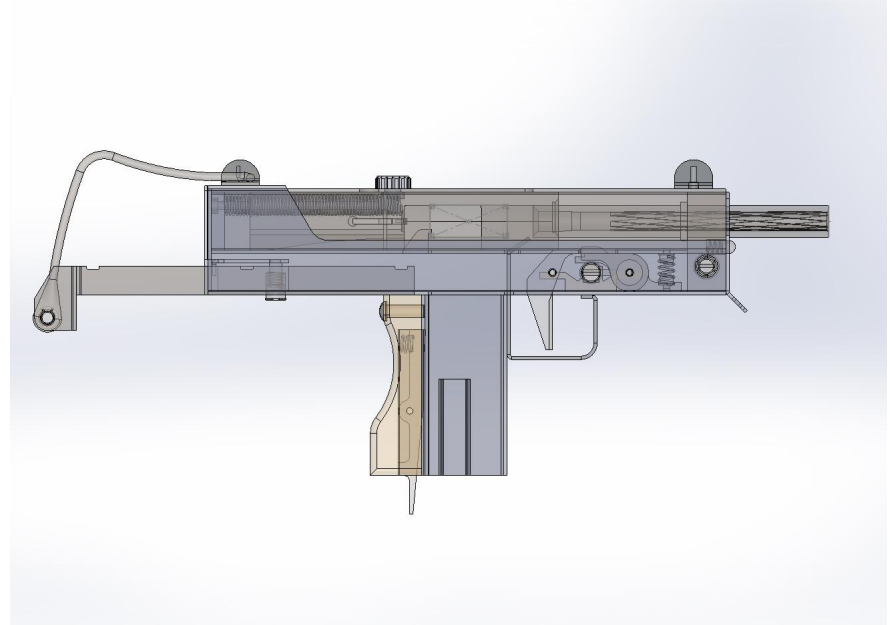
Materials including different types of Steels(Plain Carbon Steel,Alloy Steel etc),Woods,Plastic etc with different properties are used to make the model as accurate as the original product.Appearance features like paints,metallic finishes were also made in relation with the actual firearm.

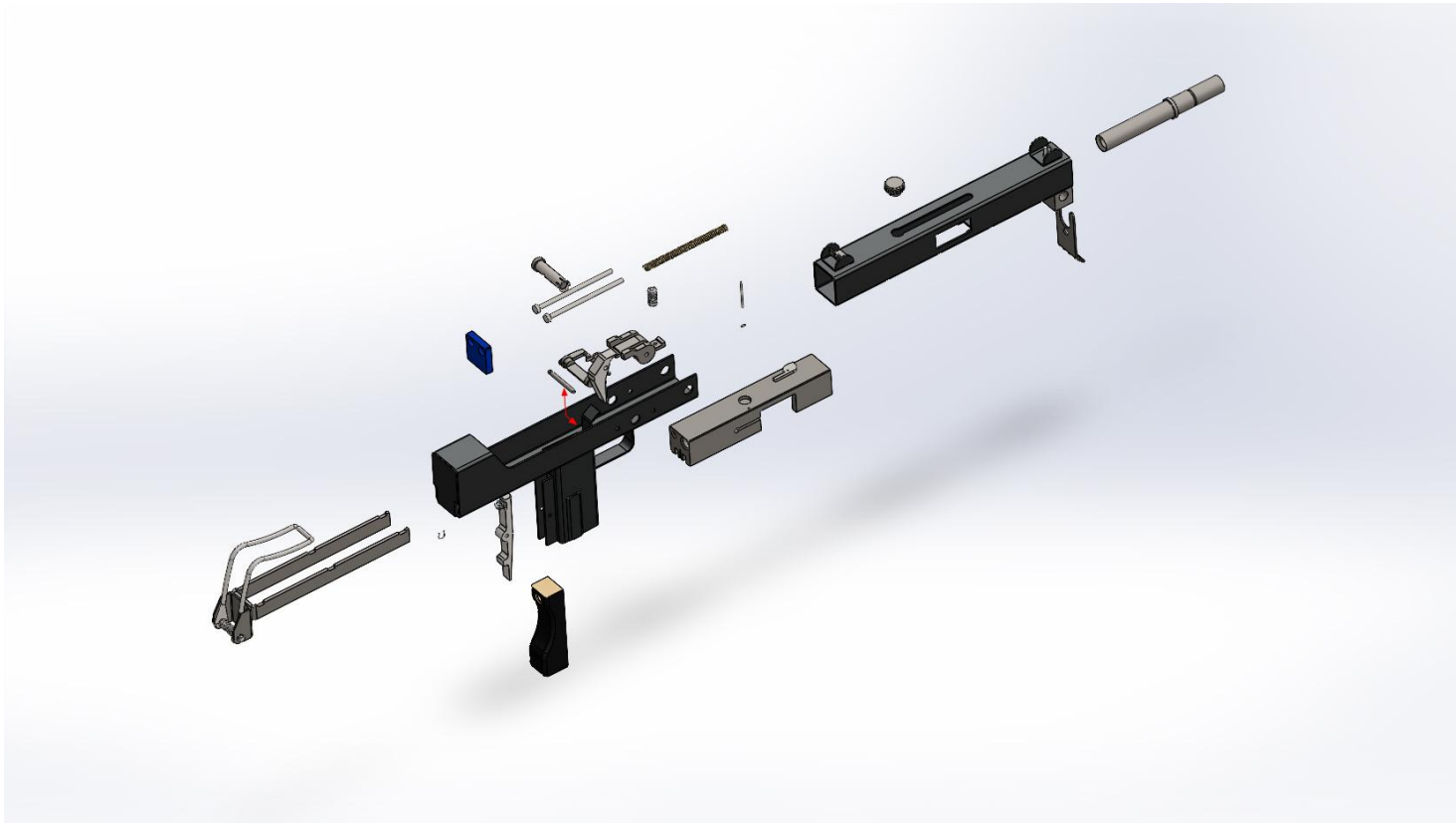
ASSEMBLY

Assembly consists of 150+ mates including various mechanical mates like screw, hinge etc.

Advanced mating techniques like limit distance, limit angles etc are also used.

These provides support to create animations where movements of different parts of the gun are needed.

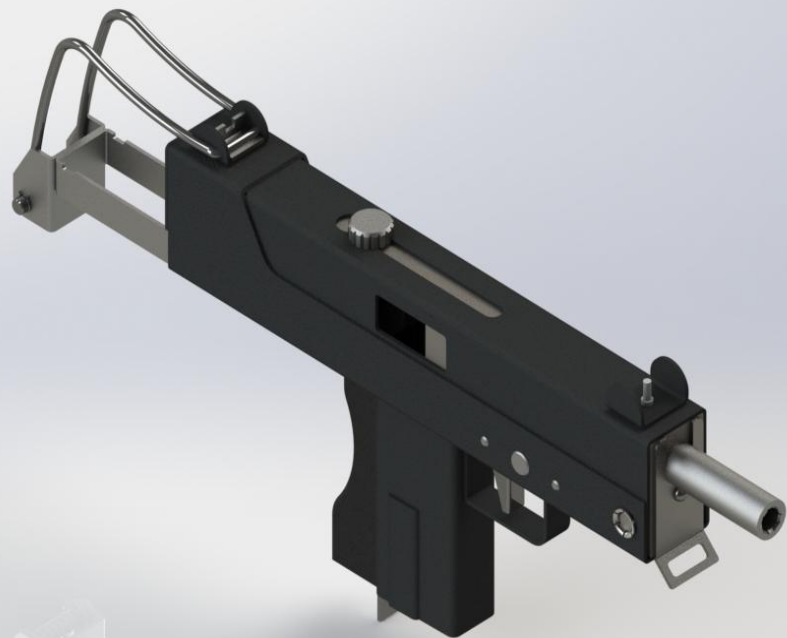




EXPLODED VIEW



RENDERS





DRAFTING

FUTURE UPGRADES OF THE PROJECT

1. Testing and analysis of the firearm to make changes and optimize the design
2. Design models of mags and bullets with legal permission
3. Design of scopes, suppressors and other compatible accessories
4. Creation of animations and animated videos of the assembly
5. Render high quality images of the model using various scenes conditions with the help of external softwares like blender etc

CONCLUSION

In conclusion a complex assembly of one of the most widely used submachine gun is done using various tools of solidworks.

As a learner I have been able to,

- Investigate new techniques used in modeling and dive deep into the design engineering processes
- Check out each and every corner of the software covering most of the tools
- Make plans for future enhancements and upgrades setting the stage for continued innovation.

THANK YOU!
