

Decision 1

The first decision I made was about how to cut the metal. At school we didn't have a guillotine big enough to cut 3mm steel sheet and I tried a hacksaw which was pretty bad and angle grinder was too noisy and not safe at school. I needed to use the plasma cutter. The teacher and I did trials to get the setting and this was by far the easier method.

Decision 2

The second decision that I made was around a suitable and accurate way to construct my frame. The way the teacher and I decided was best was to join the 2 pieces of angle iron together before cutting them. This saved time as I had to do fewer measurements and fewer cuts. Another reason for this decision was accuracy doing it this way was far more accurate. This is important for this part of the safe because it is the frame. The rest of the safe is based off this part so if it is not accurate then the whole safe won't be.

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Decision 3

The third decision I made was about how to join my frame together. After trialling MIG and TIG methods I decided that the best way to do this was to MIG weld it. MIG welding was the best way to join my frame together because it is a full steel project, MIG welding is a strong, easy, and accurate way to join steel together.



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How did the testing during this stage confirm that my project would continue to meet the specifications in the Brief?

Before welding my frame there were some things that I needed to test. I needed to test that my frame was square and parallel. To test these I used a tape measure. I used a tape measure because it is quick, easy and accurate to use for testing. Another thing that I had to test was that I had the right voltage and wire speed coming from the welder. By testing this I was able to set the welder up to join my 3mm angle section material together.

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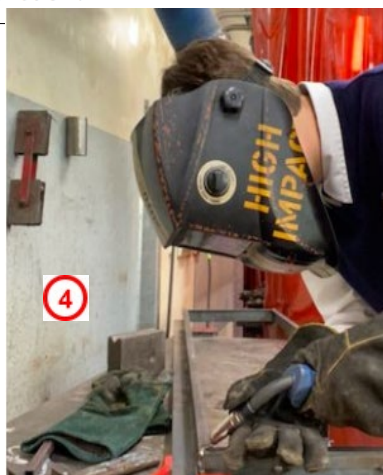
How did the testing during this stage confirm that my project would continue to meet the specifications in the Brief?

During this stage I had to test that I was going to fit the hinges in a place that the door would hinge smoothly and be held on securely by the hinges. To test this I did some calculations and measurements to work out where the hinges would best be fitted and how far apart they should be. I then measured and marked out where they should be before centre punching and drilling the holes into the door and cabinet frame. To measure/test where the hinges were going to be fitted I used a tape measure.

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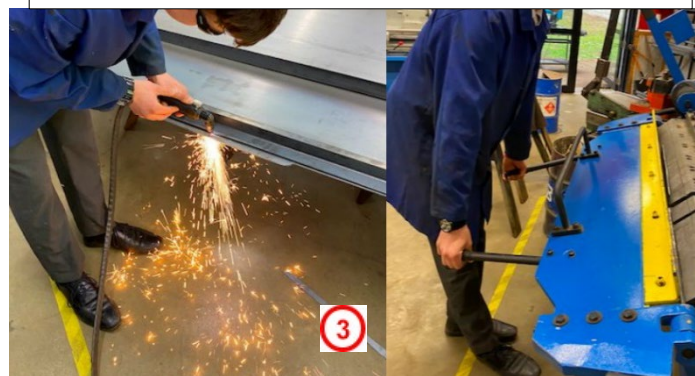
How did I keep myself safe during this construction stage
What PPE did I use ?
What health and safety procedures did I follow ? **4**

During this stage I had to wear/use PPE to keep myself and others safe. When welding I made sure to wear a welding helmet, welding gloves, a jacket and close the welding curtain. A welding helmet protects my head and eyes from the bright light and sparks off the weld. Welding gloves protect my hands from the heat and sparks off the welder. The welding curtain blocks the light out from the rest of the workshop, keeping others in the workshop safe from the bright light, heat, and sparks of the welder. After I had finished using the welder I made sure to tidy the welding bay and put all of the equipment back.



How did the testing during this stage confirm that my project would continue to meet the specifications in the Brief? **5**

During this stage I tested the position of my shelves in the cabinet. I tested that they were parallel from both the top and bottom of the cabinet. I tested this because the shelves need to be in accurately for the safe to function properly with accurate measurements. To test this I used a tape measure because it was quick, easy, and accurate to use. I also tested the shelves for level. I needed to test this because the shelves need to be accurate and level for the storage to work well. I tested this using a level. I used a level because it gives a very accurate gauge for me to go by and it is very easy to use. I also tested that the welder heat and wire speed was set up accurately to weld 3mm steel. I tested/adjusted this using the dial and information on the welder.



EVALUATION AGAINST SPECIFICATIONS AND FINAL DESIGN

Evaluate each specification in your brief against the final project once it was complete. Explain to what extent the project met each specification. **6**

Specifications in my brief:

Height - 1800mm

- This specification met my brief perfectly, my gun safe is 1800mm tall so will fit in its intended location as expected.

Width - 450mm

- My finished safe meets this specification as intended, it is 450mm wide and will have plenty of room to store guns and ammunition.

Depth - 400mm

- The depth of my finished gun safe meets this specification exactly, it is 400mm deep. This allows for maximum storage and a snug fit in its intended location.

3 lockable compartments (one for ammo, one for guns, and one for any other valuables - will be a separate shelf in the ammo compartment and will be accessible by the same door for the ammo compartment)

- The finished safe meets this specification fully. It has 3 storage compartments with 2 lockable doors, this is perfect for what I need and allows for maximum storage space and it meets the NZ police gun storage requirements.

3 locks (one for ammo box, 2 for gun compartment) - will have separate keys for each lock, I like this because it adds extra security.

- My finished safe is complete with 3 locks, one for the ammo compartment and 2 for the gun storage, all of these have separate keys to allow for maximum security.

Hinges - ammo storage door = 2, gun storage door = 3.

- My safe is fitted with a total of 5 hinges. 2 for the ammo box door, and 3 for the gun storage door. This meets my specifications and is ideal as the doors are securely held on and they are nice and strong so breaking in should not be easy to do.

Made from 3mm sheet steel

- My gun safe is made fully of 3mm sheet steel. This is because the NZ police firearms storage guides state that no metal safe can be built with less than 3mm sheet steel.

Frame made of 40x40x3 mm and 20x20x3 mm angle section.

- This specification is met in my finished project as the cabinet frame is constructed of 40x40x3 mm and 20x20x3 mm angle section. These two combined together make for a perfect surface for the door to close up against.

In conclusion my final completed project meets all of my specifications as well as I'd hoped. Through doing this I have gained a great sense of satisfaction by completing this project. I am really looking forward to getting it home, in its intended location and storing guns and ammo. The final test for this safe will be getting it checked over by the NZ police to make sure it meets their firearm safety requirements.