Completion of the Brake Press Project
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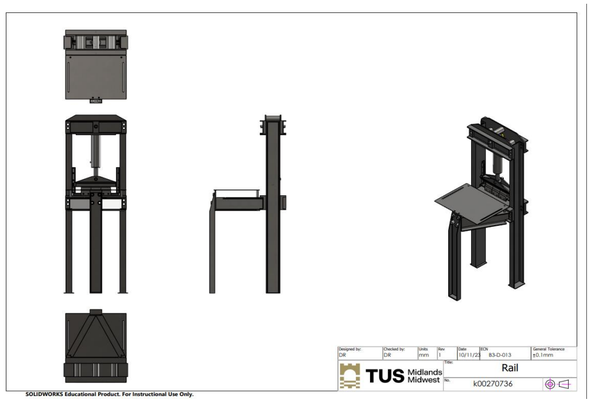
Aim of the Project

The aim of the project is to complete the manufacturing of the brake press project. The intention of the project is to manufacture a fully functional press that has the ability to bend metal sheeting.

Background

A hydraulic brake press is a machine used in industry to bend sheet metal. It usually comes in three forms: manual, pneumatic, and hydraulic. Each uses a form that uses pressure to push a punch into a die and forms the sheet to the desired angle. Hydraulic systems operate based on Pascal's Law. Pascal's Law states that pressure applied to a fluid in a closed system will be dispersed equally in all directions. This allows for the transmission of force and energy through fluids, which then allows for mechanical operations to happen, such as pushing, pulling, lifting, and pressing. The project will mostly be manufactured by welding.

Design



Inspiration

Manufacturing

It was decided to pack the press to take it home for manufacturing. The welding of the press brake took nine days in total. Then, the surface rust was stripped off, and primer, followed by paint, was sprayed onto the press. Moving parts were painted red for danger, and the rest was painted blue. These two colours complement each other well. According to Solid Works the press weighs about 250kg but it weighs more than that.

Assembly

Safety

When designing this project, safety was number one. As the project would be producing so much pressure, it was decided to make it as strong as possible. The ram is able to produce 5 tons of pressure, but the frame was built to withstand a pressure of 20 tons. Another safety feature that was added was a colouring system. Red paint indicates a moving part. The blue indicates a non-moving part. Another safety feature is the hydraulic rig. The user won't be near the press as it is operated from the rig

Conclusion

The main focus of this individual project was to complete the press brake. This has been completed. The structure of the press is very sound as it has a Factor of Safety of 4. The ram is able to produce a pressure of 5 tons, but the frame of the press is able to withstand a pressure of 20 tons. Unfortunately, the hydraulic powerpack could not be bought, but this was quickly resolved with the hydraulic rig.

Results

Just look at the press.

References

https://selmach.com/products/new-machinery/sheet-plate-machinery/pressbrakes/