

T Level Technical Qualification in Engineering, Manufacturing, Processing and Control (8730-13)

**8730-034 Employer-Set Project
Exemplar – A Grade
Summer 2023**

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Introduction

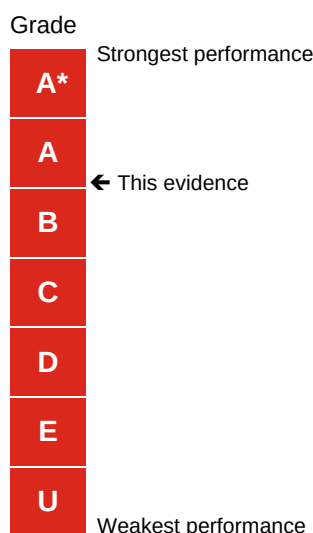
Summer 2023 Results

This document is aimed at providers and learners to help understand the standard that was required in the summer 2023 assessment series to achieve an A grade for the 8730-034 Engineering, Manufacturing, Processing and Control Employer-Set Project (ESP).

Providers and learners may wish to use it to benchmark the performance in formative assessment against this to help understand a potential grade that may be achieved if a learner was to attempt the next summative assessment series.

The Employer-Set Project is graded A* to E and Unclassified.

The exemplar evidence provided for the A grade displays the holistic standard required across the tasks to achieve the A grade boundary for the summer 2023 series.



The Employer-Set Project brief and tasks can be downloaded from [here](#).

Important things to note:

- We discussed the approach to standard setting/maintaining with Ofqual and the other awarding organisations before awarding this year. We have agreed to take account of the newness of qualifications in how we award this year to recognise that students and teachers are less familiar with the assessments (Vocational and technical qualifications grading in 2023 – Ofqual blog), whilst also recognising the standards required for these qualifications.
- The exemplar evidence presented, as a whole, was sufficient to achieve the A grade. However, performance across the tasks may vary (i.e. some tasks completed to a higher/lower standard than an A grade).

Marking of this Employer-Set Project is by task and Assessment Objective, below is a summary of these along with the mark achieved by the evidence presented and the maximum mark available for each aspect.

Task	Assessment Objectives	Mark achieved	Max mark available
Task 1 Research	- AO1 Plan their approach to meeting the project brief - AO2a Apply core knowledge - AO3 Select relevant techniques and resources to meet the brief	7	9
	- AO2b Application of core skills	4	6
Task 2 Report	- AO1 Plan their approach to meeting the project brief - AO3 Select relevant techniques and resources to meet the brief	4	6
	- AO2a Apply core knowledge	4	6
	- AO2b Application of core skills	4	6
Task 3 Design	- AO1 Plan their approach to meeting the project brief - AO3 Select relevant techniques and resources to meet the brief	3	6
	- AO2a Apply core knowledge	4	6
	- AO2b Application of core skills	4	6
	- AO5a Realise a project outcome – was the right outcome achieved - AO5b Review how well the outcome meets the brief, how well the brief was met, the quality of the outcome in relation to the brief	5	6
Task 4 Present	- AO1 Plan their approach to meeting the project brief - AO3 Select relevant techniques and resources to meet the brief	4	6

	- AO2a Apply core knowledge	5	6
	- AO2b Application of core skills	4	6
	- AO5a Realise a project outcome – was the right outcome achieved - AO5b Review how well the outcome meets the brief, how well the brief was met, the quality of the outcome in relation to the brief	4	6
Maths	- AO4a Use of Maths skills	1	3
English	- AO4b Use of English skills	2	3
Digital skills	- AO4c Use of digital skills	3	3

What evidence was being assessed for the maths, English and digital skills:

Maths:

- Volume calculations and initial design sketches (Task 1 & 2)
- Assembly drawings – dimensions and scaling (Task 3)
- Design calculations (Task 3)

English:

- Research notes (Task 1)
- Report (Task 2)
- Assembly drawings and supporting notes (Task 3)
- Presentation delivery (orally) and materials to support presentation (e.g. slides etc) (Task 4)

Digital:

- Types of sources used for Research (Task 1)
- Assembly drawings (Task 3)
- Presentation materials (slides, handouts, notes etc) (Task 4)

Task 1 Research

Assessment number (eg 1234-033)	8730-034
Assessment title	Employer-Set Project

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	1
Evidence title / description	Evidence expected for marking: Research notes (typically 1500 words) List of references/sources Evidence submitted for marking: Research notes (typically 1500 words) List of references/sources
Date submitted by candidate	DD/MM/YY

Task 1

research

Heat treatment currently being used

- The heat treat that's being used at the moment is through another company and the parts that are quenched in house are quenched in water.
- The problem with using water to quench pieces of material is that it produces embrittlement, distortion and cracking.
- Oil is preferred since it is a more effective cooling agent but has a reduced cooling rate which does reduce the embrittlement and cracking.
- The reason that the metal bucket cannot be used to hold the oil is that it needs to be air tight so that the harmful fumes cannot escape into the surroundings.



The commercially available oil quenching tanks

- The oil quenching tanks that are currently being used in this practice have either expensive feature or simple.
- The features being used that are expensive and not needed are cooling and plc controller with a touchscreen.
- The simple ones available are a box or cylindrical shape container with oil and some with lids.



The features asked to be added to the oil quenching tank

- The features that have been asked to be added are a wire mesh basket similar to a chip basket and a spout so that the oil can be drained out and cleaned.
- The basket needs to be thick enough so that it does not melt and withstand high temperatures without being damaged and what is used in some current oil quench tanks are a piece of metal with some holes in and others are a more chip basket design.
- The spout needs to have a large enough diameter so that debris and sludge can pass through with no blockages and for the simplicity to do this simply Turn a lever ball valve as shown.

trade
rates



TESLA LEVER BALL VALVE YELLOW
28MM (32447)

★★★★☆ 4.1 (5) [Write a review](#) [Ask a question](#)

Suitable for water, natural gas and LPG.

- 28mm Compression
- Nickel-Plated Brass Construction
- 1/4 Turn Operation

[More info](#)

View all: [Tesla Ball Valves](#)

The shape and lid for the tank

- The shape of the tank that I have seen and what I think is best for heat distribution since what I can see the oil needs to be cool so I thought a rectangular shaped box would be a good shape and not so tall so that the heat distribution and so larger objects can be submerged in the tank.
- The tank would need to be air tight but a lid that does not require to fit on perfectly so what I've seen is that lids that sit on top and the weight of the lid should be enough to stop the fumes from escaping.
- The handle for this will be fixed to the lid securely and also heat resistant or can withstand high temperature environments. For this I have researched a cheap and secure handle for this which is a brass handle as shown in screenshot its cheap and effective in lifting the lid.



CARLISLE BRASS HOTBED PULL HANDLE 152MM (2019)

★★★★★ 4.9 (8) Write a review Ask a question

Hand-forged hotbed pull handle with an antique black finish. 4 x fixing points for strength.

- For Internal & External Use
- Traditional Style & Finish

[More Info](#)

[View all Carlisle Brass Door Handles](#)

Basket

- The basket would be able to cover the whole of the bottom of the tank so that any size part can be placed into the oil to be heat treated.
- the material would have to be able to hold the materials it pulling out of the oil tank and be able to withstand the high temperature it may face for this reason I have located a fully customizable basket from a company that has had many years making these baskets .
- The parts either side of the basket lets removable handles be attached and easily removed again I will have to design this as there is not anything online that I can find that is what I'm thinking of.



The material best for the tank and price

- I have done research and found that the two materials that quenching tanks are made from is aluminium and steel and its made through the fabrication process which is cost efficient.
- I have decided to use stainless steel and folding and welding to make the tank the welding can be for any seams that are showing once folded such as down the sides.
- The thickness of the steel will be about 2mm thick and although this will mean it be heavy its meant to be long lasting and be able to withstand the high temperatures of its environment and the oil its containing.
- 2mm steel at a width and length of 500x500mm at a price of £188.98p/m².

2mm Stainless Steel Sheet 2B

£188.98p/m² £226.78 p/m² inc VAT

Fast Delivery

Despatched within 1-3 working days

Most orders are delivered next working day but please allow up to 4 working days for delivery. For more information about delivery [click here](#).

Product Information SKU 100730

Length	Unit Price (ex VAT)	Unit Price (inc VAT)	Qty
500mm x 500mm	£60.96	£73.15	- 0
1000mm x 1000mm	£243.84	£292.61	- 0
2500mm x 1250mm	£762.00	£914.40	- 0

FREE Custom Cutting

Length: Width: mm

How will the design of the tank be cut out of the steel and folded

- I have seen a process for steel fabrication in my work placement that will fit perfectly with the process needed to fabricate this tank.
- A laser cutter can be used and is the most efficient piece of equipment as it can do it quick and easily.
- Once the steel design has been cut out it will go to be folded in the order that has been set.
- Once folded the seams get welded by either hand or laser or robot welder.
- The welds get grinded down and is sprayed with a coating to be protected.

Calculations

- The calculation that I am going to need is for volume which is:
- $\text{volume} = \text{length} \times \text{height} \times \text{width}$.
- And for that to be litres instead of cm^3 the calculation needed is:
- $1000\text{cm}^3 = 1\text{L}$

Bibliography

- <https://nabertherm.com/en/products/industry/thermal-process/processes-under-protective/compact-quenching/quench-tanks#gallery-1>
- Kellogg & Sons' Blacksmith Shop: Blacksmiths' method to Harden and Temper a Spring. (kelloggblacksmithshop.blogspot.com)
- Carlisle Brass Hotbed Pull Handle 152mm – Screwfix
- Heat Treating Baskets - AMECO USA (ameco-usa.com)

Task 2 Report

Assessment number (eg 1234-033)	8730-034
Assessment title	Employer-Set Project

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	2
Evidence title / description	Evidence expected for marking: Written report (typically 2000 words) Evidence submitted for marking: Written report (typically 2000 words)
Date submitted by candidate	DD/MM/YY

Task 2-report

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Introduction

RZY engineering has decided that they would need an oil quenching tank for doing more in-house heat treatments. At this moment they use water for the heat treatment they do in house and the other option for them is to send it of to a company to heat treat. This is also a costly thing to do and so by doing there own in house oil heat treatment it would save them lots of money in the long term.

RZY Engineering would also not only be able to heat treat their own components, but they could do heat treatments for other companies. The reason that is if they have a few days with low orders, they can fill that by doing heat treatments for other companies.

Which basket have I chosen to be sourced?

the basket I have chosen to be sourced is shown down below I have chosen this basket because that the company that makes them have experience in making them and because they make these themselves, they can fabricate a basket to whichever size is needed. Another reason why I chose this basket over another basket is because of the metal wire mesh. The wire mesh on the basket is strong and thick and sturdy with metal bars for support the metal used is heat resistant enough so that a metal part can be dropped into the tank without any worry of if the basket will change form or begin to melt where as other baskets are thin wire mesh or hasn't got metal supports and can't be fabricated to a certain size of tank. The other great feature is that there are loops on either sides of the basket in such a way that a removable handles can be used to pull it out of the oil. The wire mesh may be a thick wire, but oil can still easily drain through when lifting out of the tank.



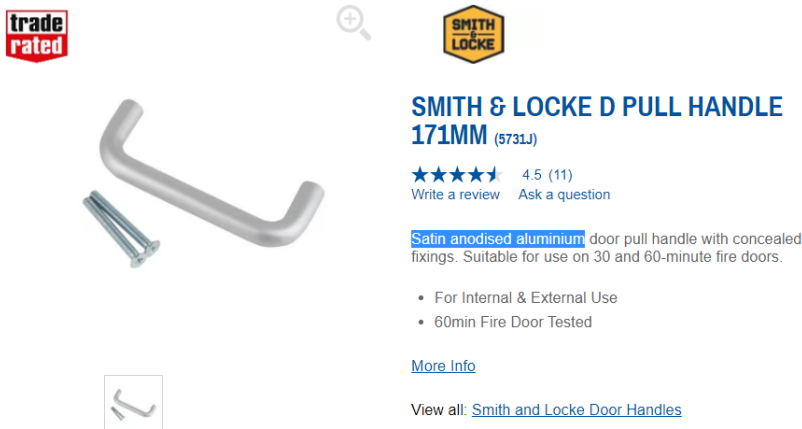
Drain tap/plug.

I have decided on tank that a drain off tap would be used instead of a drain plug. The reason I have thought this is that a tap is easy to open and is far more cleaner to operate when draining oil. When using a bolt or otherwise known as a drain plug the reason I have decided it be a bad idea is that when undoing a drain plug a spanner needs to be used and it also takes time to do and oil will most definitely spill onto the spanner. Where as a lever ball valve it just needs to be turned ¼ turn and its open no tools required and no spills. The tap can be fitted to the tank via a threaded section as can be seen down below and be screwed on to the bottom of the tank section of the tank.



Handle for lid

The handle for the lid I have seen many online, but I decided a 171mm aluminum handle will be fitted for the lid of the tank. The reason I have chosen this aluminum handle is because it is best suited for the heat of the environment and can be purchased from screw fix and can be fitted securely to the lid in either side from the underneath of the lid. The aluminum door handle is also used on fire doors so that it does not conduct heat as well as another door handle would. As shown below the aluminum used is Satin anodised aluminium which is good at not conducting heat which for this purpose is great. Originally I had chosen a brass handle but I soon realised that brass conducts heat very well so that would not be an option.



Materials for tank and lid

my experience I have gained with my work placement I have seen many different steel types and on the internet but for folding and fabrication works stainless steel 304 is most commonly used stainless steel there is. I have chosen stainless steel 304 because its cheap and is great for welding and rust resistant and resistant to oxidizing this steel is also great at being folded into shape and the gaps down the side if the tank once folded can be welded so that it's a sealed tank. The price of the stainless steel I have chosen is £188.98 p/m² or £60.96 for 500x500mm.

2mm Stainless Steel Sheet 2B
£188.98 p/m² (£225.78 p/m² inc VAT)

Fast Delivery
Despatched within 1-3 working days

Most orders are delivered next working day but please allow up to 4 working days for delivery. For more information about delivery [click here](#).

Product Information SKU 100738

Length	Unit Price (ex VAT)	Unit Price (inc VAT)	Qty
500mm x 500mm	£60.96	£73.15	
1000mm x 1000mm	£243.84	£292.61	
2500mm x 1250mm	£762.00	£914.40	

FREE Custom Cutting

Length: Width: mm

Allowances for boiling, part being quenched and localized heating.

The allowances so that the user will know how much oil to put into the tank will be shown with markings on the side it will be up to a 45L mark with more than 5L of space in the tank so that when the tank is significantly heated there is room for the oil to expand and for displacement. The brief said that no more than 50L so I've decided the best option is to leave 5L and set a mark for 45L but the tank having 50L of actual capacity for when displacement or expansion of the oil which may occur to the environment which is hot already or due to the component which is being dipped into the oil heats the oil.

Setting the mark of don't fill beyond this point will be engraved using the same 3D printer that will cut out the tank. If one side of the tank has more heat exposer than another the 2mm steel should slow the process of conduction to decrease however though if the heat does make its way through to the oil the heat would be dissipated through out and the oil would experience expansion when it is exposed to the heat. Another thing is that I will be making the bottom length of the tank larger than the height so that the surface area of the bottom on to possible a cooler surface. If the tank was sat on a cooler surface the heat from the surrounding or the oil will be transferred into the steel of the tank and if the bottoms cooler than any other area of the tank it will cool the oil down faster.

Health and safety

Being around a quenching tank can be dangerous or it can be safe and fine. An example of when it may be dangerous is if the lid isn't on as it should be the fumes from the oil and component can be inhaled by the user causing long term illness. Another risk is when it's a hot environment or the oil is still hot from cooling component down and this can cause serious burns on there user. Examples of when the quenching tank is safe is when there's no oil in there this means that it is not hot, and no oil means no nasty fumes. Another example is when the environment or oil in the tank is cold which does not pose a risk.

Calculations

I have calculated that just under 50L the length will be 50cm and the width will be 30cm and with the height at 33.3cm making this into a flat rectangular tub for the maximum line it will be 3.3cm away from the top so the height will be 30cm and the minimum line will be 45L.

Conclusion

My conclusion for this is that my design for the quenching tank is for a rectangular tub like tank filled with the quenching oil and for it to be fitted with a ¼ turn tap and a custom basket as well as the edges to be either hand or laser welded or robot welded. The health and safety aspect of this design is important so that's why I've take that into conclusion when thinking about the deign and how the heat dissipated and how to get the tank cool as quick as possible by using the design of the tank.

Bibliography

Some photos are from my research task.

https://www.bing.com/images/search?view=detailV2&ccid=D1352RSy&id=60E03103C21B0F044AF706B7260F4136F05FC862&thid=OIP.D1352RSySspU1eATrqowMgAAAA&mediaurl=https%3A%2F%2Fth.bing.com%2Fth%2Fid%2FR.0f5df9d914b24aca54d5e013aeaa3032%3Frik%3DYshf8DZBDya3Bg%26riu%3Dhttp%253a%252f%252fsc02.alicdn.com%252fkf%252fHTB1D.1wliMnBKNjSZFzq6A_qVXaY%252f310S-stainless-steel-wire-mesh-heat-treat.jpg_350x350.jpg%26ehk%3DYG8kgHPD3%252fYymJPDG7KqlggeWuQfTU9vIweLJIYzWhc%253d%26risl%3D%26pid%3DImgRaw%26r%3D0&exph=350&expw=350&q=wire+mesh+basket+for+oil+heat+treatment&simid=608012257002934531&form=IRPRST&ck=D47E9D40E642DCC42EC1EACD6DDE3214&selectedindex=11&ajaxhist=0&ajaxserp=0&vt=0&sim=11

Smith & Locke D Pull Handle 171mm - Screwfix

[Stainless steel sheet 2mm 2B | metals4U](#)

Task 3 Design

Assessment number (eg 1234-033)	8730-034
Assessment title	Employer-Set Project

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

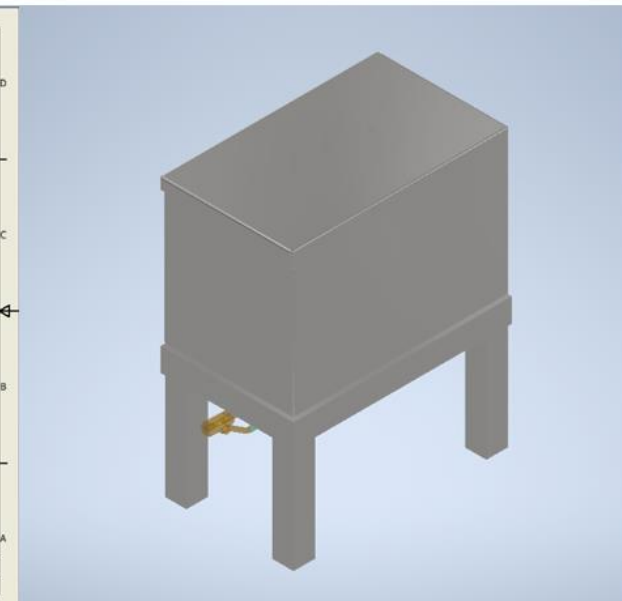
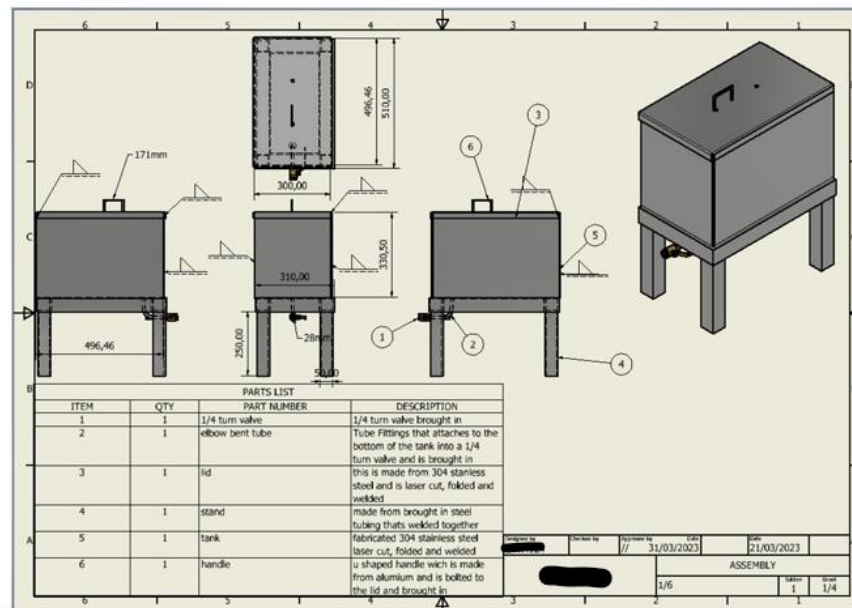
Task(s)	3
Evidence title / description	Evidence expected for marking: Drawings (typically to A3 drawings) Supporting design calculations and reflection notes (typically two sides of A4) Evidence submitted for marking: Drawings (typically to A3 drawings) Supporting design calculations and reflection notes (typically two sides of A4)
Date submitted by candidate	DD/MM/YY

DESIGN – TASK 3

2

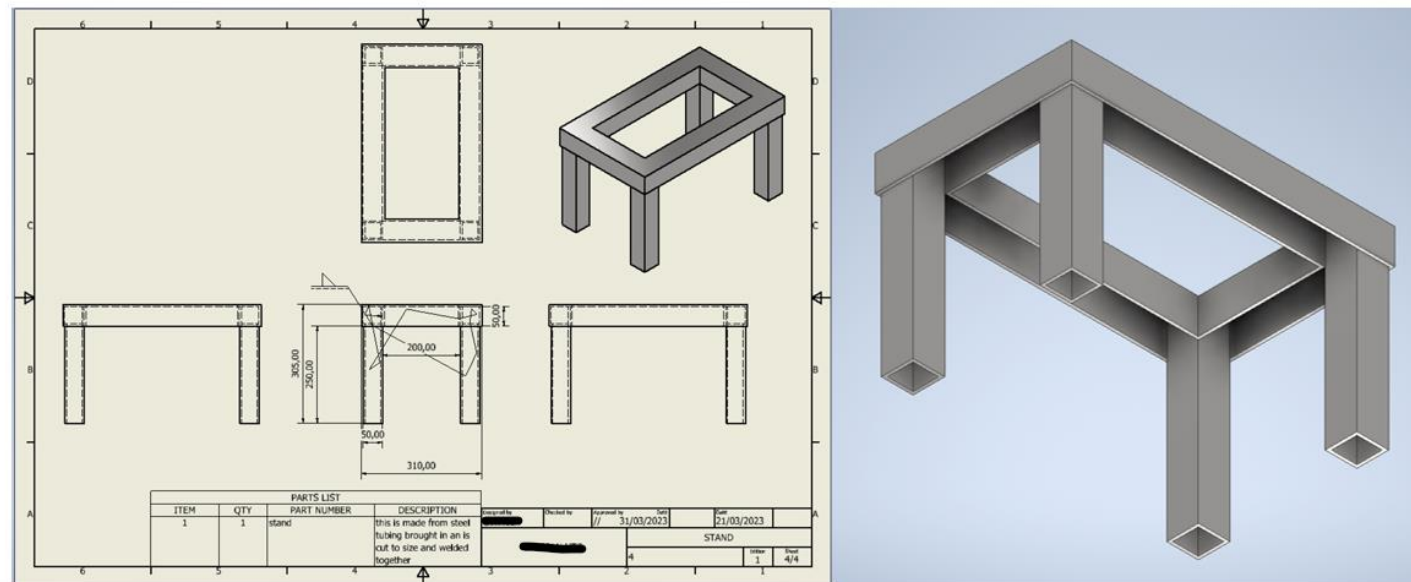
Assemble

This is the assemble which includes the $\frac{1}{4}$ turn valve and extension pipe which both are 28mm. The stand which the tank sits on and lid on the tank as well as holes for the handle. Most of the quenching tank is from stainless steel but with the $\frac{1}{4}$ turn valve its not 100% stainless steel. The tank and lid as well as the stand are fabricated and can be made and put together easily if the equipment is available and to hand. As can be seen from the drawing the parts of the whole assemble has been listed with a description of each one as well as dimensions for parts.



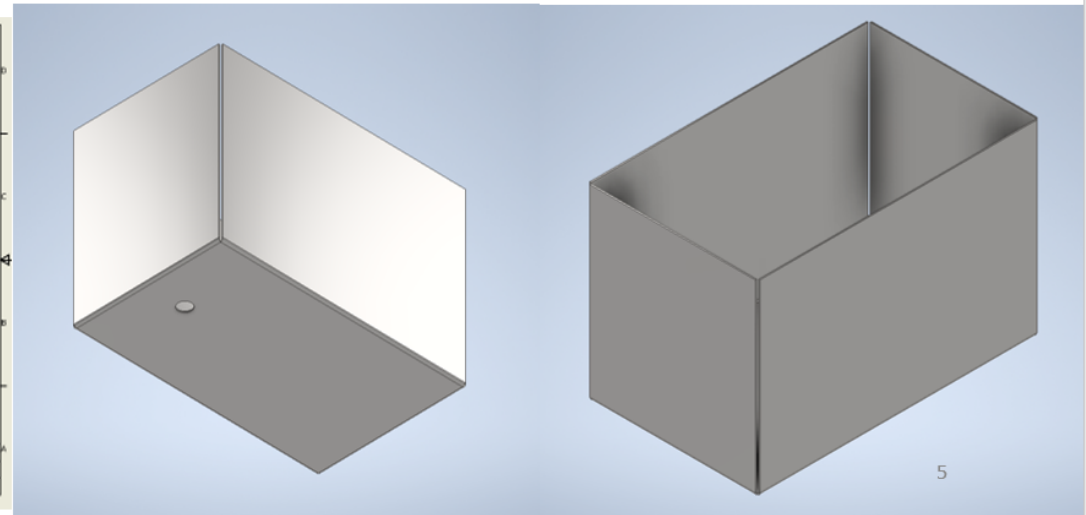
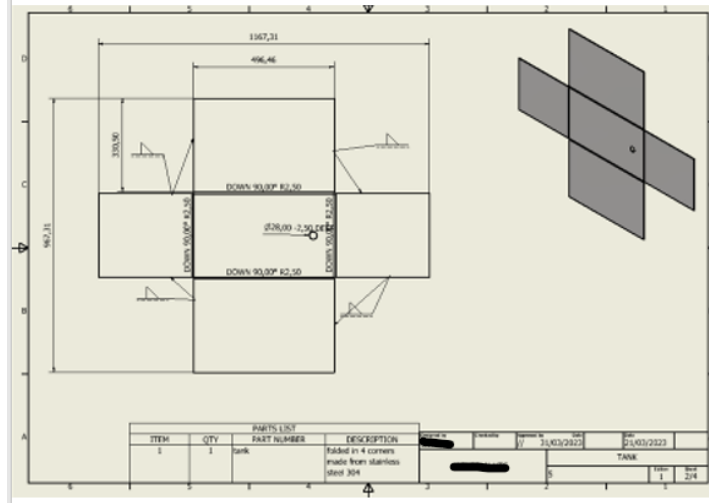
Stand

This stand on which the quenching tank is placed on to is welded together and is made from stainless steel the whole frame can be brought in as metal tubing. There are a lot of man hours involved in the welding process of the assemble but since this a one off and is the most effecient and long lasting ways of assembling this stand. The stand also provides height and for the tank to be drained easier with the $\frac{1}{4}$ turn valve at the bottom.



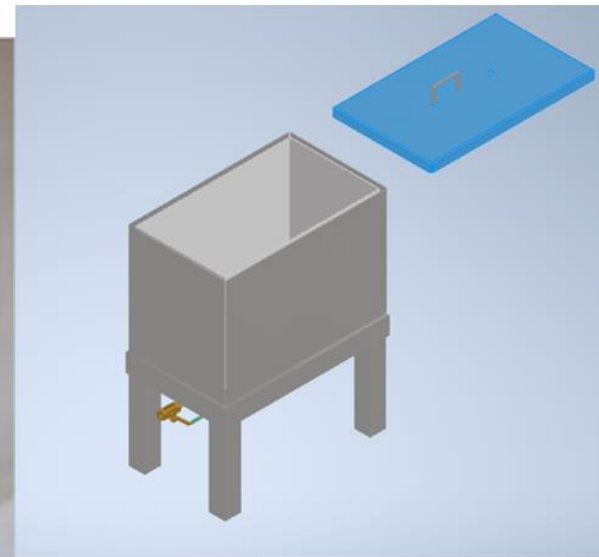
Tank

The tank is made from stainless steel 304 a popular and common steel used. The sheet of steel is cut using a machine such as a laser cutter which would cut out a piece of steel such as the one shown in the drawing below. It would also be able to cut out the hole which is necessary for the draining of the tank via the $\frac{1}{4}$ turn valve. Once the steel is cut out it is folded into shape. The edges and down the seems are welded to prevent any leaks of oil as well as being powder coated for protection against erosion. The line to indicate 45L will be added by a spot welder by measuring 300mm on the wall of the tank and so that it can be seem and lasts a long time it needs to be done by the welder.



Basket

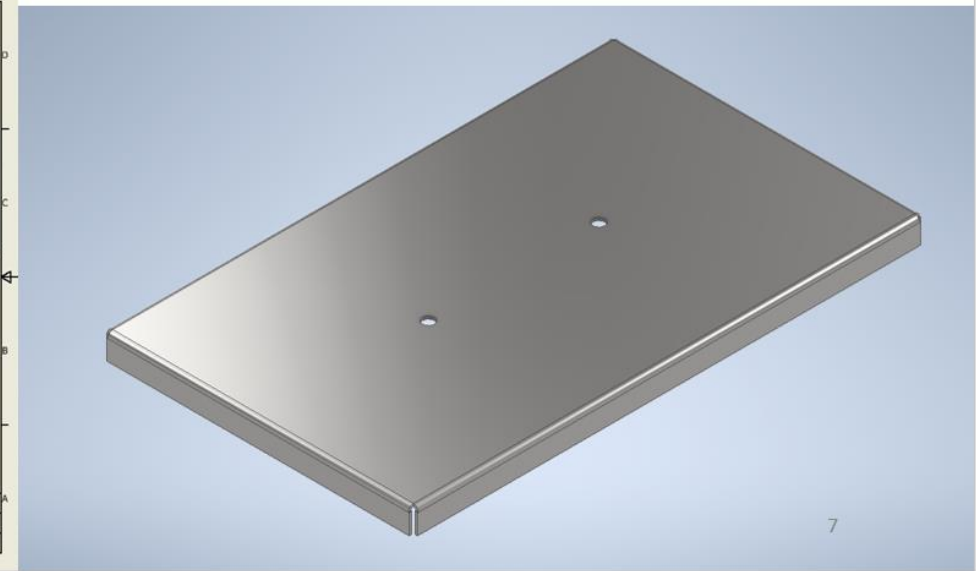
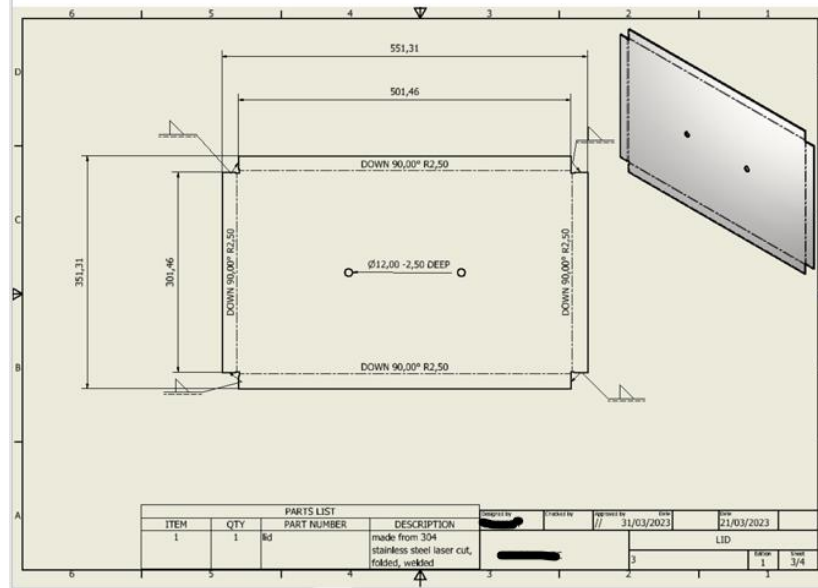
The basket is able to fit into the tank easily and will be 280x480x300 this shows that it fits with no problems into the tank the basket however is pulled out of the tank by there being loops either end of the basket and a handle which clips onto the basket and can be easily removed. The basket which can be brought fully customisable to size is shown below with the loops either ends.



6

Lid

This lid for the tank goes through a similar process to the tank it is cut out using a laser cutter as shown in the drawing below as well as the holes for the handle. The lid is folded in 4 places and is the welded at the edges and the seems to prevent the smoke from leaking out as mentioned in the brief the fumes are toxic or hazards so a lid needs to make sure any fumes do not escape from inside the tank.



Task 4 Present

Assessment number (eg 1234-033)	8730-034
Assessment title	Employer-Set Project

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	4
Evidence title / description	Evidence expected for marking: Presentation materials Evidence submitted for marking: Presentation materials
Date submitted by candidate	DD/MM/YY

Presentation of proposed quenching tank

Introduction

- Hello, RZY Engineering and good morning my name is [REDACTED] and I'm here today before you to present my design for the quenching tank
- The problem with the existing quenching tank is that it's a metal bucket that's small and is filled with water



Problem with the current quenching tank used for internal heat treatments

- Problem with water is that cracking, embrittlement and distortion
- Although the simplest and cheapest option may be to fill the bucket with quenching oil as shown in the photo.
- This is a serious health hazard with the toxicological, fire and slip hazard recognised by RZY Engineering.
- For your company to do heat treatments internally using your own forge a heat treatment is need to be put in place.



Requirements a new Quenching tank needs

Having air flow around the tank gives the tankit's ability to cool components in the oil quickly.

The quenching tank needs to have a lid so that fumes of the oil when a component is placed into the oil is toxic and a lid needs to be able to contain this.

The tank needs to be able to keep cool and have air flow around the tank for this to be possible

The quenching tank in my opinion needs to have clean and easy operation which is difficult when working with oil

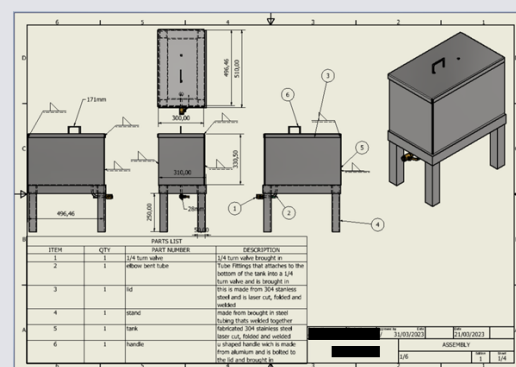
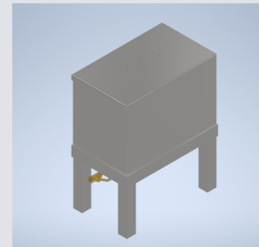
Existing high end quenching tanks

- Existing quenching tanks such as this one shown here are high end and are expensive.
- They also have unnecessary function and tend to be bigger than what's needed or can be since space is important
- Although they have useful functions such as oil filtration and cooling so the oils kept cool this is not needed for your in house heat treatment



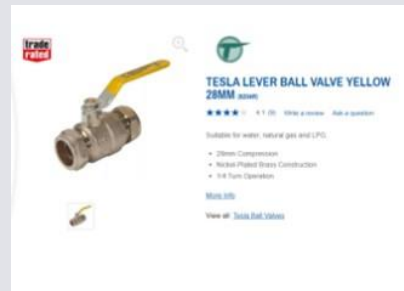
The quenching tank I have designed

- Please see handouts for closer look of the design
- This is the tank I have designed I have brought into account all that was required from your company needs.
- I have also included some features that I decided would be useful an important in your heat treatment process and the up keep
- As can be seen there is a stand to maximise the airflow around the tank and so its easier for an older college to bend down for maintance or operation
- The high is also to allow the tank to be emptied I have fitted a $\frac{1}{4}$ turn valve at the bottom of the tank and is fitted with an elbow bent pipe coming around a hole at the bottom.

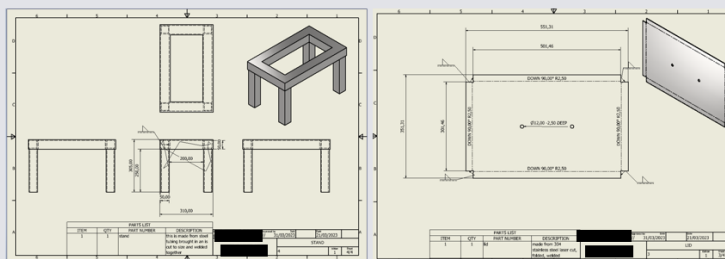
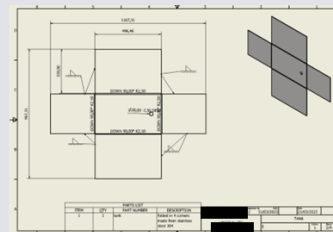


The ¼ turn valve

- The ¼ turn valve is brought in from screw fix
- Its 28mm in diameter which is enough for debris to flow through the valve
- The pipe that is connecting the hole at the bottom of the tank to the ¼ turn valve
- Don't you just hate when oils being changed and when the drain plugs falls either into the collection tray of the oil or somewhere else that's just one reason why this valve is a must have on this tank.
- The other reason I added this is because drain plugs are messy to remove and can leak and oil can come gushing out where you wouldn't expect it to so a simple ¼ turn of this will be simpler and easier
- The company that produces this valve shown in the photo is called Tesla (not the car company)



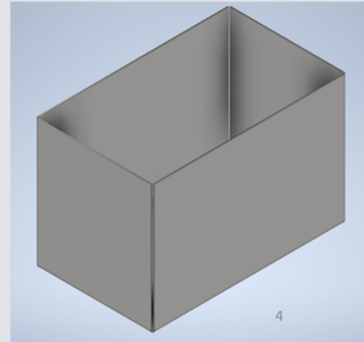
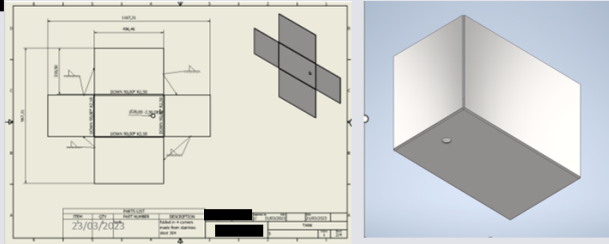
Drawings of the components needed for the whole tank assemble



- These are made from 304 stainless steel
- The lid, tank are laser cut, folded and then welded
- The stand is made from metal brought in square tube that's cut to size and welded together

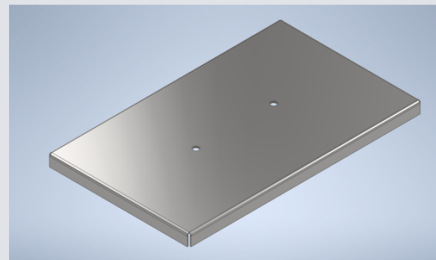
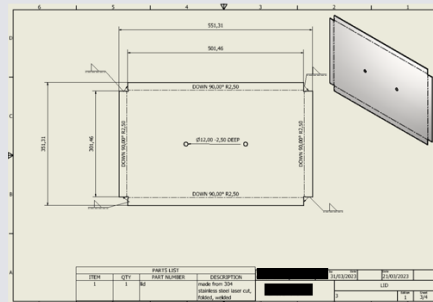
The tank

- The tank has dimensions of length is 50cm, width is 30cm, and height is 33.3cm.
- Its total capacity is under 50L
- So that 50L is not reaches when within the welding process 300mm needs to be measured up so that a piece of steel can be welded in place to show a maximum fill line for the oil which is 45l exact.



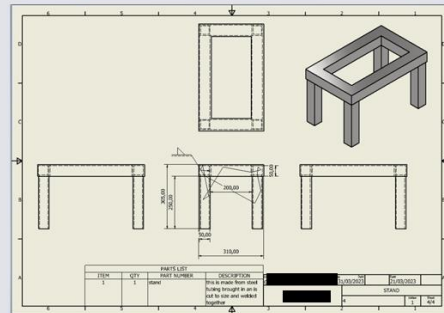
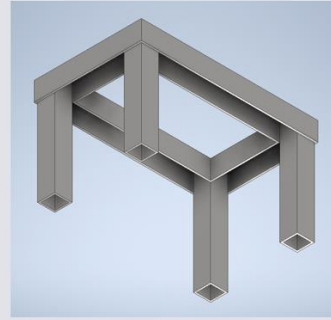
The lid

- This lid is 1 mm bigger than the dimensions on the tank
- This sits on top and keeps an airtight seal by it sitting there and its weight keeps it airtight
- There's two holes for a handle to be placed which can be cut out with the laser cutter
- The sides are folded for secure fitting onto the tank as well as the sedges from the folds are kept together by welds.



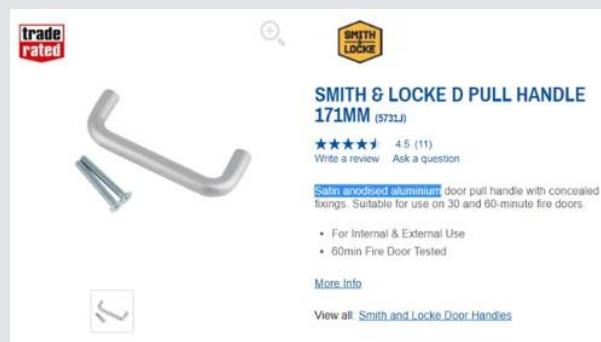
The stand

- The stand is made from stainless steel
- The square metal tubing is brought in or there could be away to manufacture this differently
- Its welded at the top where the legs meets the top frame
- There are a lot of welds but since this is a one of it's the most efficient way



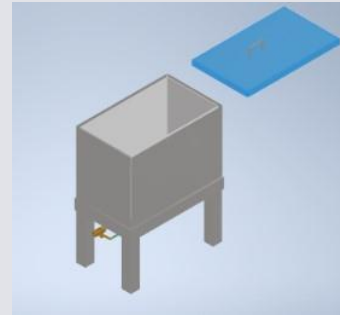
The handle

- This handle is brought from screw fix
- Its 171mm long and is heat resistant
- Its commonly used on fire doors
- For its size and its resistance to heat its perfect for lifting up the lid on the quenching tank
- The handle will also last longer and is more easier than other handles to use due to its size.



The basket

- The basket is made from a company that can customise a quenching basket to whatever size that's needed
- This one I've chosen intertutular has thick mesh that will not melt under any heat and has two loops at each end
- As you can see in the photo it fits perfectly inside the tank at a size of 280x480x300mm
- The company can do any type of quenching basket they have been doing this for many years
- To lift it out of the oil I have thought about either wire just as was mentioned by you in the brief or some removable handles that clip onto the loops



Cost of steel per sheet

- As can be seen in this photo the price for a sheet of steel from this company is at £188.98 p/m²
- and for a 500x500mm sheet of 304 stainless steel its £73.15 with tax
- This is the best steel as its commonly used a lot and is able to withstand the heats and corrosion against the quenching oil it would be holding



2mm Stainless Steel Sheet 2B
£188.98 p/m² £228.78 p/m² inc VAT

Fast Delivery
 Despatched within 1-3 working days

Most orders are delivered next working day please allow up to 4 working days for delivery. For more information about delivery visit [uk33.co.uk](#)

Length	Unit Price (ex VAT)	Unit Price (inc VAT)	Qty
500mm x 500mm	£60.96	£73.15	0
1000mm x 1000mm	£243.84	£292.61	0
2500mm x 1250mm	£762.00	£914.40	0

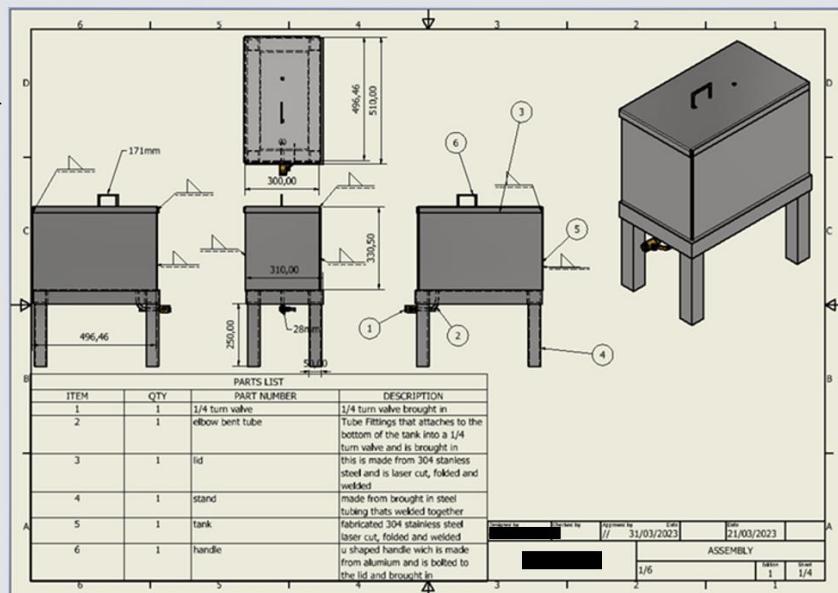
FREE Custom Cutting

Length: Width:

Bibliography

All photos are from previous tasks
and the links for the photos

Handouts



**Thank you very
much for your
time.
Any questions?**



Employer-Set Project – Presentation Q & A Record (Task 4)

8730-12 T Level Technical Qualification in Maintenance, Installation and Repair for Engineering and Manufacturing

8730-033 Employer-Set Project (Summer 2023)

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234
Date	DD/MM/YY

Provider name	<provider name>
City & Guilds Provider No.	999999a

Record observation notes below to inform external marking. **Notes must be detailed, accurate and differentiating.**

Tutor questions to candidate	Candidate responses
What did you find the most challenging aspect of the brief?	A way to keep under 50 L volume.
What are your ideas on how we could keep costs down?	The stand isn't needed as the bent pipe is the valve.
What do you feel is the most challenging of the project specific issues identified in the brief?	There were no issues.

Any other comments

Tutor signature

Date

X _____

DD/MM/YY

If completing electronically, double click next to the 'X' to add an electronic signature once the record is **finalised**.

Get in touch

The City & Guilds Quality team are here to answer any queries you may have regarding your T Level Technical Qualification delivery.

Should you require assistance, please contact us using the details below:

Monday - Friday | 08:30 - 17:00 GMT

T: 0300 303 53 52

E: technicals.quality@cityandguilds.com

W: <http://www.cityandguilds.com/tlevels>

Web chat available [here](#).

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