Year 11 into KS5 Bridging Activity - Task 1 - 5 hours

This task is designed to target **Learning Aim a from Unit 2** of the BTEC Level 3 course at KS5

More information about this can be found in the attached ***course specification***, where you should see that Units 1-3 are mandatory, with a selection of Units to choose from for the 4th Unit.

If you are viewing this document digitally, you can view the course spec in the SharePoint here

For this task, you must complete a product investigation on the compressed air mounting bracket shown. More information is laid out in below. You also have access to an example of some sample student work including feedback notes for you to use as a reference of what this Report should look like and how much text/imagery should be used.

All documentation should be researched to support your discussion.

Scenario:

You are working as a final year apprentice in a small engineering company. You have been using some engineering processes to manufacture the compressed air mounting bracket shown as part of a team; your manager is pleased with your work and has decided that you should be given some more responsibility. He wants you to look at whether the company is using the most appropriate engineering processes when manufacturing these air compressors mounting brackets. Your manager has asked you to examine a the manufacture of the bracket and to report back on the engineering processes that can be used to make it, including health and safety factors, and how human factors could affect the performance of these processes. The report will impact up on company investment decisions in the future.

Your Task:

You are going to ***evaluate the effectiveness of engineering processes used in the part's manufacture and how human factors affect them***. In doing this, you should **compile a report** on its manufacture. The report should be a minimum of 4 pages long, text should be no larger than 12pt, and all discussion should be presented in structured paragraphs. You may add small images where appropriate/necessary to support your discussion.

Step 1:

Analyse the drawings of the compressed air mounting bracket provided and consider how it would have been manufactured.

Identify **at least 3 engineering processes** that are used to manufacture this part and describe in your report:

- The purposes of these processes in the manufacture of the part
- How these processes work to complete their intended task
- What health and safety factors need to be considered and how they can be controlled
- How likely the success of this process will be influenced by human factors (eg: boredom/distraction, skill level, health, etc.)

It is recommended that you spend approximately 2.5hours researching appropriate manufacturing processes and safety factors for your notes and 2.5 hours drafting your assignment document.

Step 2:

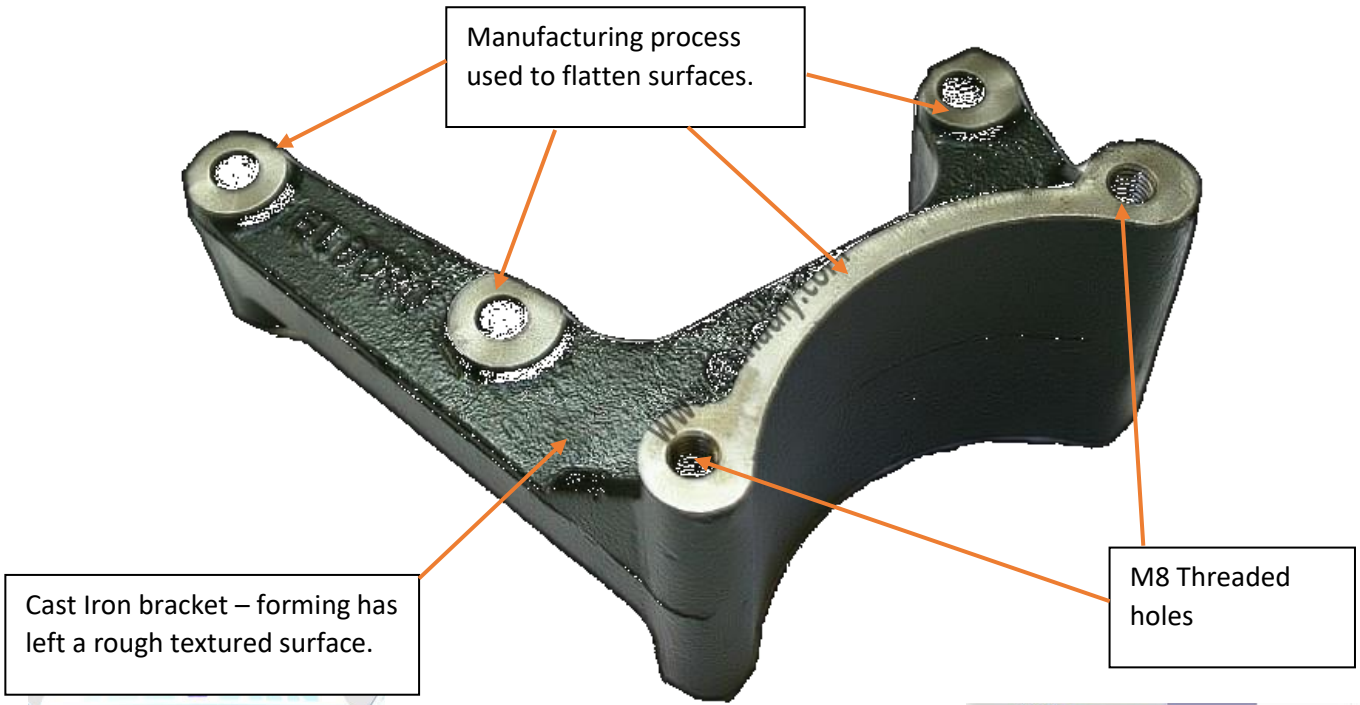
For each of the processes you have identified, please research possible alternative ways of achieving the same manufacturing result and discuss your alternative manufacturing process for each, describing:

- How this alternative manufacturing process could be used to replace the current process (how would it work/what would it involve)
- The advantages and limitations which would come with switching to this manufacturing process compared with the current manufacturing solution

Finally, you need to evaluate your suggested alternative against the existing manufacturing solutions, explaining which manufacturing options would be most beneficial for the company to use, justifying your choices by comparing the advantages and drawbacks of each.

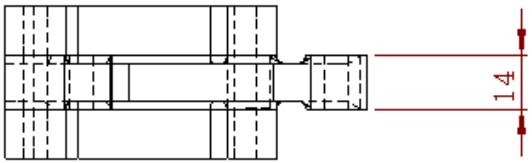
Information about the compressed air mounting bracket:

This bracket has been designed and manufactured to help securely hold the compressed gas cylinder in place when installing an air compressor. They ae often used where the gas cylinder could be dangerous or explosive if it fell over, or used where compressed air needs to be transported in a vehicle such as in an RAC van or in an ambulance as can bee seen in the images below.

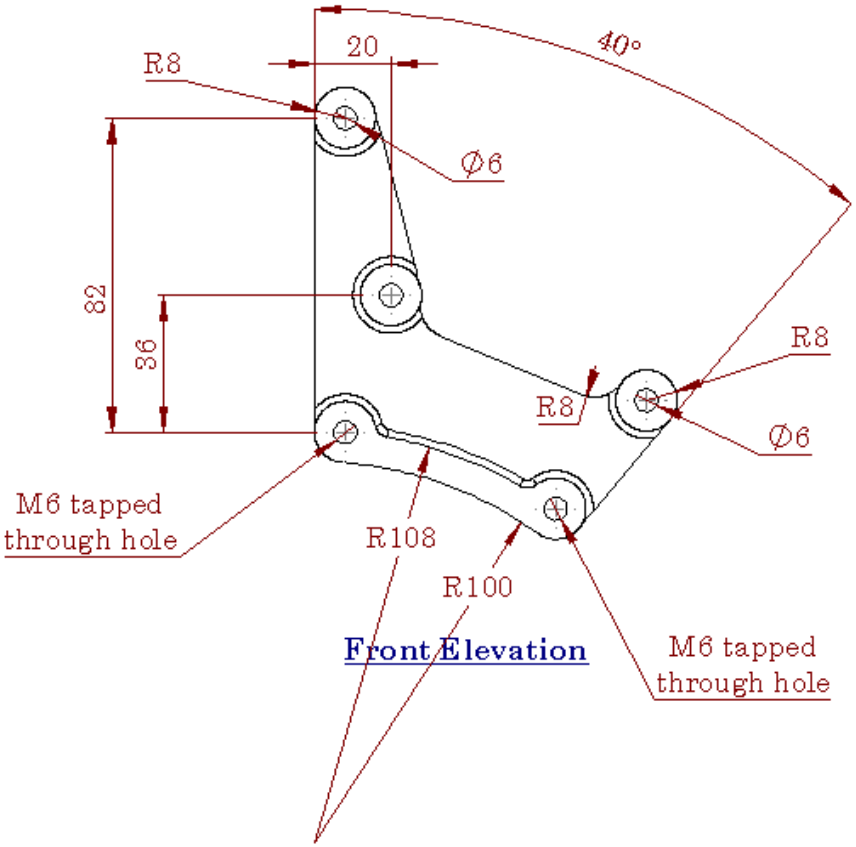


Technical Drawings on following page.

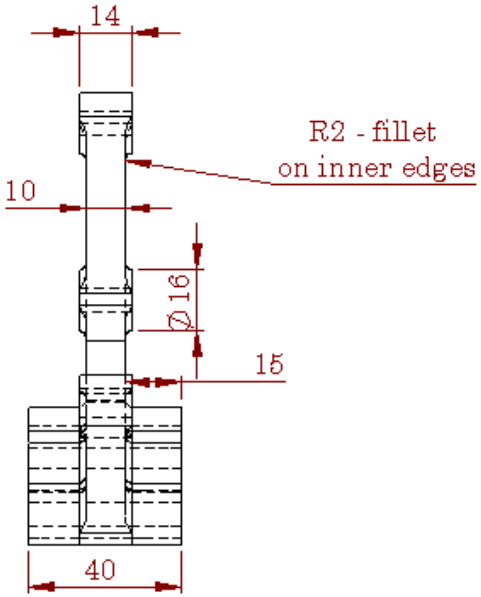
It is recommended that you spend approximately 2.5hours researching appropriate manufacturing processes and safety factors for your notes and 2.5 hours drafting your assignment document.



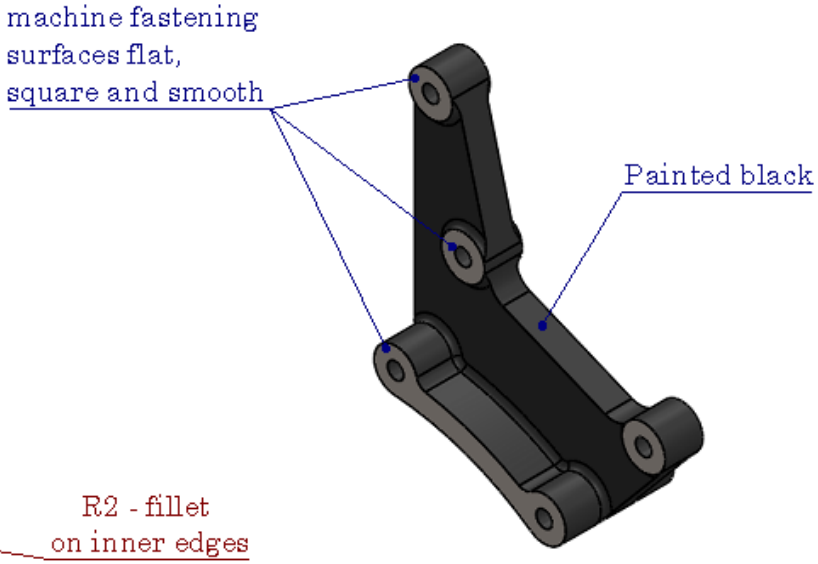
Plan View



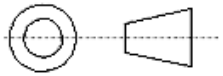
Front Elevation



Side View



3D Isometric View

BTEC Engineering Lvl 3. - Unit 2		
Part Name: Air compressor bracket		
	Material: Cast Iron	
	Quantity: 500	
Tolerance: ±0.5mm	Finish: Black paint	
All measurements in mm.	Scale: 1:2	Sheet #: 1 of 1