

Student Name: ██████████	Year of Course: Year 1
Evidence Type: Module Job Description: Investigate and find leak within pressurised tank using thermography	Module: Modern Engineering Practice Module No: M1H326682
Competence Description (from GA UK_Spec Map): Select and apply appropriate materials, equipment, engineering technologies and processes, recognising their limitations	UK Spec Ref Code: C13
<p>Provide a description of the activity (to be) carried out: (Reference: Documents / Drawings used / H&S / Safe Access / PPE / Tools and Equipment / Materials)</p> <p>This week I needed to identify any present leaks on Blend Tank 3 using thermography.</p> <p>The Activity: (Reference Hand Over Procedures / Restoring the Workplace)</p> <p>Prior to the yearly insurance inspection of our on site blend tanks, it is common practice to pressurise the tanks to 63 psi with water and compressed air ensuring the pressure holds. The tank began to drop in pressure and evidence of water was present at the bottom of the tank, therefore an investigation to find these leaks had to be carried out. As the tank is insulated, it is difficult to pinpoint exactly where the leak is escaping, so using the thermal imaging camera is required to pinpoint where the issue is coming from. One area in particular would appear to be colder than the rest of the tank and the camera would suggest the area of concern had water flow <i>escapes</i> above one of the tank lips (see Figure 1). It was agreed with the maintenance manager to build scaffolding at the side of the tank to investigate further. Once the scaffolding was in place, I safely climbed the scaffolding then, using a mallet and chisel, I removed a large section of insulation. Once removed, this exposed the surface of the tank, where it quickly became evident that there was a large damp area surrounding a weld. The area was wiped dry which exposed a small pin hole on the weld, this would be the area that impacted the pressure of the tank. Contractors were then arranged to repair the pin hole who removed a section of the tank and re-welded the area after draining the tank. Once complete, the tank was then refilled with water and pressurised back to 63 psi. After a few hours of successfully holding pressure, and no water was evident around the tank, the tank was then ready for the insurance inspection which was due to be carried out the following week.</p>	

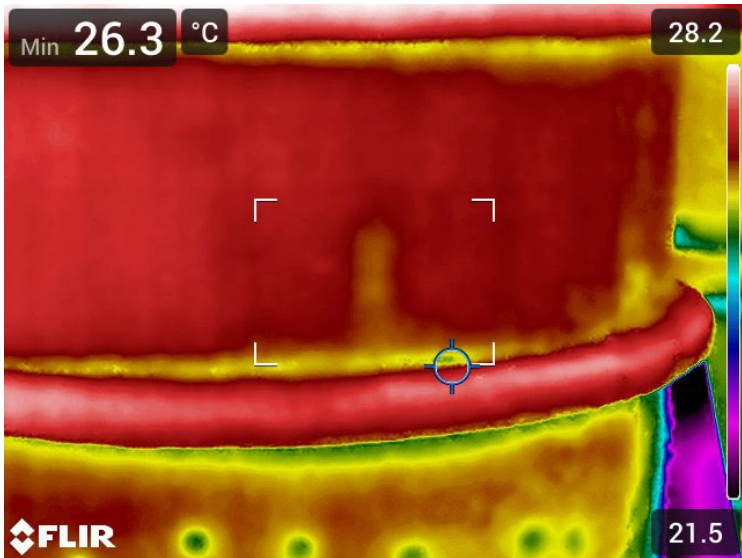


Figure 1 - FLIR image of the blend tank

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Student Reflections:

This task best fits in with the competence Modern Engineering Practice by “Selecting and applying appropriate materials, equipment, engineering technologies and processes, recognising their limitations”. The module helped me as it gave me knowledge on how to properly approach this problematic situation. Understanding the material of the tank and surrounding insulation was crucial in identifying the area where the leak was present, assisted by the thermography technology.

On reflection of this task, the investigation was deemed a success as I pinpointed the leak relatively quickly without using extra resource, expenditure and added downtime to resolve the issue. With carrying out this specific task, in order to identify the areas of the tank that are leaking, the insulation of the tank must be removed, scaffolding erected around the area, costing in excess £28K. This saving is massive considering we have 10 tanks on site which would create unnecessary disruption onto the flow of production.

Looking back on this task, I had great difficulty throughout removing the insulation as it was tightly secured around the tank with a hardened mesh. With the mesh being as close to the surface of the tank, I was sceptical in using power tools in the event of damaging the tank further, therefore I had to use a chisel which became a difficult task in an awkward position.

Overall, I gained great satisfaction in completing this task as my team demonstrated that using the correct technology and having the understanding of the materials and surrounding environment of the tank, avoided using unnecessary maintenance resource and saved the business circa £25K.

Mentor Comments:

Alan carried out this task in a competent manner using his experience of thermography technology and safely working from height using the appropriate PPE.

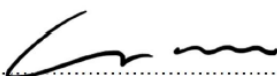
Mentor Statement: I have read the above report and can confirm that the task outlined above is a true account of the activities that this apprentice performed. This work was completed to a satisfactory standard and within an acceptable timescale.

Mentor Signature.....



Date 01/02/2024

Student Signature



Date 02/02/2024