Storage tanks within the oil and gas industry play a vital role, they can contain unrefined or refined products. The tanks themselves can vary in shape and size, from small cylindrical tanks, spherical tanks, to floating roof tanks some of these large crude tanks can be 50m in diameter and store in excess of 35,000m³ of liquid product.

The report will be solely looking at floating roof designed tanks and the maintenance / repair methods used in these tanks after corrosion has taken place and the floor needs replacing. The maintenance procedure for floor replacement is to first cut the shell from the floor, the shell is then raised on jacks creating a void between both surfaces. The corroded floor is then chopped into pieces and slid out of this void. Due to the roof legs being in contact with the floor small areas around the legs cannot be removed at this stage, it is the method of ‘lifting the roof legs’ (to remove these pieces and lay the new floor) this project aims to improve.

The concept has been refined, indicating the correct materials and size for the jacking post after calculations were conducted. Additionally, a conceptual jack holding system has been drawn this has not been covered during this project, but the need has been realised due to project-specific insights that have emerged during development.

The calculations for tank roof weights were carried out. Jacking beam buckling stresses and material weights were also calculated using T357 Formulae some of which are shown above.