

T Level Technical Qualification in Design and Development for Engineering and Manufacturing

**Employer-Set Project
(8730-035)**

**Project Brief
Summer 2024**

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The employer

Oceans Technology Limited is an established company that provides engineering design solutions across the world to shipping and harbours. They provide electronic solutions to communication and navigation needs, along with physical structures such as floating harbours and buoys (as shown in Figure 1). You are employed by Oceans Technology Limited.



Figure 1

Buoys defining the approach to a harbour – Robin Webster -
<https://www.geograph.org.uk/photo/5150593>

The project

Oceans Technology Limited has been approached by Harbour Shipping Limited, who are a shipping company operating a number of harbours throughout the world. They wish to improve the visibility of shipping lanes into the harbour. To do this, they want to design new buoys to mark shipping lanes that can be found if they drift away. The client has in the past lost buoys and has therefore also asked that any design solution be fitted with a trackable system. The material of the buoy must also be able to stand up to the harsh sea environment.

Harbour Shipping Limited have approached Oceans Technology Limited to research and provide a technical brief and initial design solutions for the design of a new buoy.

An extract of the design specification relating to your part of the project has been provided. This includes performance requirements, budget constraints and timescale requirements.

Product design specification

Harbour Shipping Limited wish to develop a bespoke buoy to be sited at its harbours across the world. Figure 2 currently shows a typical buoy.



Figure 2

A typical buoy – published anonymously – <https://www.digii.eu>

Performance requirements of the buoy

The specific performance requirements for the buoy are:

- the buoy must have a height between 1400 mm and 1800 mm above the sea with a base diameter of 500 mm (tolerance 25 mm)
- the buoy to use standard fixings
- buoys for entering the harbour must have green colouring
- buoys for leaving the harbour must have red colouring
- an alert system if the cable holding it in place breaks
- a tracking system that will be used to track the buoys if it becomes detached from the cable and starts to drift away
- a renewable power source for the above systems that can provide 12 V supply
- secure, watertight and easily accessible place for the battery and electrical circuit
- made from material that will not easily rust or corrode
- the overall shape, ergonomic features and aesthetics design of the buoy is to be modern and visible from a distance
- the buoy should be able to withstand minor impacts
- these will be placed in a harbour
- each buoy has a budget of £2000.

Budget

Harbour Shipping Limited have budgeted of £200,000.

Project duration

Harbour Shipping Limited would like a total production of 100 buoys and you can assume a manufacturing capacity of 2 buoys per week and a required overall timeline of 70 weeks to complete design, prototype development and manufacturing.

Get in touch

City & Guilds Technicals Quality Team

We 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:

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