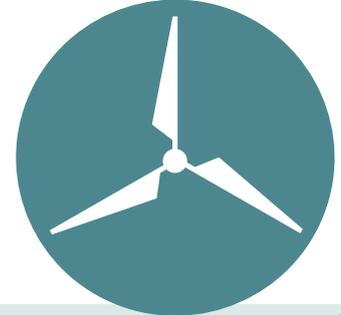


Project brief

Below the horizon



In this project, you will design a work-class remotely operated vehicle (ROV) for use in subsea activities. James Fisher Marine Services (JFMS) use these as deep as 2,000m under the surface to operate tools, bury cables, survey the seabed and below the seabed, and to investigate/inspect issues in client's equipment. However, when used in support of building an offshore wind farm attached to the seabed, the water depths are much less but tides and currents underwater can be stronger. You will need to investigate the different uses of these vehicles and the tasks they can carry out before starting to plan your design.

You will need to:

- **Research remotely operated vehicles (ROVs) in different fields of use to find out what features they have in different environments.**
- **Identify a task for your ROV to carry out and plan what will be needed for it to be able to achieve that.**
- **Complete an annotated design of your ROV. Individual components may need more detailed design. You may be able to make a prototype using materials you have around the house.**

You should start by looking into different environments where ROVs are used and get an understanding of how they work in general. How does the remote operation work? Are there common features across all ROV? How are they adapted for different uses? Why would a ROV be better than work undertaken by a diver?

Look into the environment that JFMS operates in. What does this mean for your ROV, which will need to survive working in this kind of environment? What tasks do these ROVs need to carry out? What will your ROV be able to do and what does that require? When you design your ROV, you need to consider: the materials you are using for the different sections and how you will control it remotely (there are many similarities to an Xbox or games controller); how it will carry out its task and how you will power it; how you will use cameras to be your eyes under the water; and how long you expect your design to last.



Things to think about:

- What needs to be included to enable a ROV to be able to operate underwater?
- How will you launch it from a vessel?
- How will your design deal with the pressure at that depth?
- How will your vehicle carry out at least one specific task?
- What materials are best for the task and the environment?
- How will the remote operation work when controlled from a vessel (boat)?

By doing this research, you will have a better understanding of JFMS and the tasks involved in subsea installation, maintenance, and inspection.

Useful places to start your research:

<http://www.jfmarine-services.com/subsea-services/subsea-tooling/>

<https://www.smd.co.uk/our-products/work-class-rovs/>

<https://www.instructables.com/id/Underwater-ROV/>

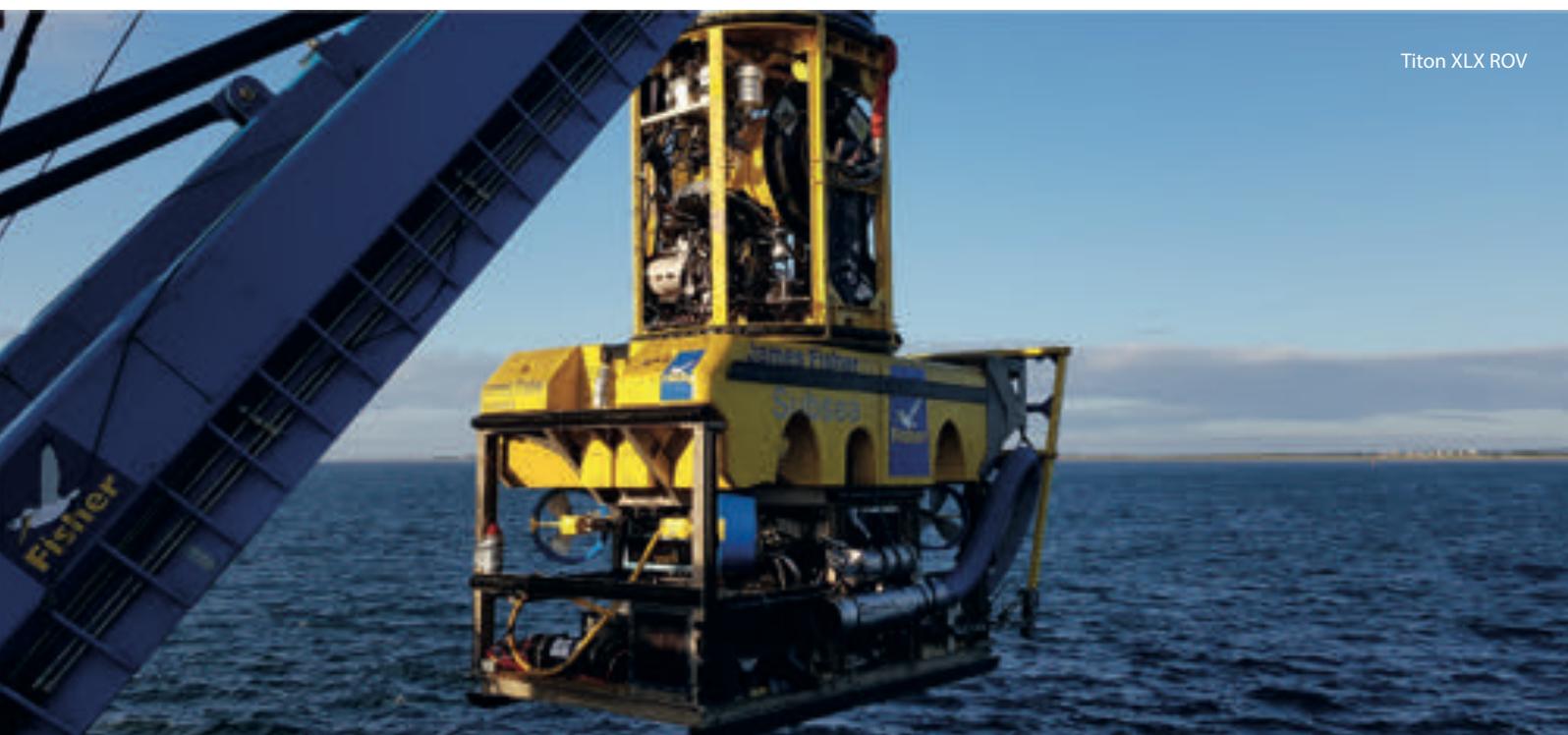
<https://www.deeptrekker.com/news/using-rovs-to-maximize-crew-safety>

<https://www.marineinsight.com/tech/what-is-remotely-operated-underwater-vehicle-rov/>

Remember to consider the criteria, guidance and structure for a CREST award as you plan, develop and complete your project. You can also review the project video and CREST presentation on the Ogden Trust website: www.ogdentrust.com/coastalenergy



Cougar XT ROV on the supply vessel Olympic Bibby



Titon XLX ROV