

CHASING

CHASING M2 S

Water Tank Inspection Case in UK

Infrastructure Inspection case



Case Background

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Date:

April 2024

Address:

Hereford, UK

Description of site conditions:

Franklin Hodge offers a quality-assured service utilising proven, cost-effective and low-maintenance tank systems. They produce water tanks, predominantly for the fire sprinkler industry, drinking water tanks, as well as grain silos, glass-coated storage tanks for drinking water and for waste-effluent tanks. Franklin Hodge Industries tanks have been installed on every continent and in virtually every climatic condition, the experience Franklin Hodge have had consistent uninterrupted approval for over 40 years.

Site Preparation:

CHASING M2 S

CHASING WSRC

CHASING REEL

An underwater scene with a school of fish swimming in a blue, dimly lit environment. A large, dark rock formation with a cave-like opening is visible on the left side. The fish are scattered throughout the scene, some near the cave and others further away. The overall atmosphere is mysterious and serene.

Business Challenges



Business Challenges

Why do we need to inspect large-scale water tanks?

Regular inspection of water tanks, whether for fire sprinklers or drinking water, is crucial for several reasons:

1. **Safety and Compliance**: Regular inspections ensure that water tanks meet safety standards and comply with local, state, and national regulations.
2. **Prevent Contamination**: Inspecting tanks internally helps to detect and address issues such as sediment build-up, microbial growth, rust, and corrosion, which can contaminate the water supply.
3. **Preserve Structural Integrity**: Internal inspections help identify early signs of damage or wear in the tank, such as cracks, leaks, or corrosion.
4. **Water Quality**: Regular inspections help in monitoring the quality of water.

Challenges in Water tank internal Inspection

1. **Access and Confined Spaces**:
 - **Entry**: Large water tanks often have limited access points, which can make entering and exiting the tanks difficult and time-consuming.
 - **Confined Spaces**: Once inside, the confined nature of tanks poses risks such as poor ventilation, which can lead to hazardous atmospheres.
 - **Mobility**: Navigating within the tank can be challenging, especially if there are internal structures like baffles or supports.
2. **Water Service Interruption**: Inspecting and maintaining large water tanks often requires taking them out of service temporarily. This can disrupt water supply, which is particularly challenging for essential services like hospitals or fire departments, and requires careful scheduling and rapid work to minimize downtime.



Business Challenges

3. Safety Hazards:

- Drowning Risks: Even small amounts of residual water can pose drowning risks.
- Slip and Fall: Wet and slippery surfaces inside the tank increase the risk of slips and falls.
- Toxic Exposure: Exposure to chemicals or biological agents like bacteria and mold that might be present in stagnant areas of the tank.

4. Environmental Conditions:


- Darkness: Tanks are typically dark, requiring artificial lighting to conduct inspections, which can be logistically challenging to set up.
- Temperature Extremes: Depending on the location and material, tanks can be extremely hot or cold, which can affect both inspector comfort and safety.

5. Resource Allocation: Conducting thorough inspections and subsequent maintenance on large tanks demands significant resources, including time, manpower, and budget. Balancing these resources with the need for ongoing water supply and system operation can be a logistical challenge.



Work Flow of Water tank Inspection

Watch video:



1. Deploy ROV

CHASING M2 S is set up and connected



Fig1 Connect the drone to the tethering cable



2. ROV prepare to inspect the water tank

CHASING M2 S is taken up to the entry of the tank and ready to dive in



Fig2 Lift up the drone on the outside with a rope



Fig3 Ready to enter the water tank



3. Interior inspection



Fig4 Capture HD imagery of tank bottom

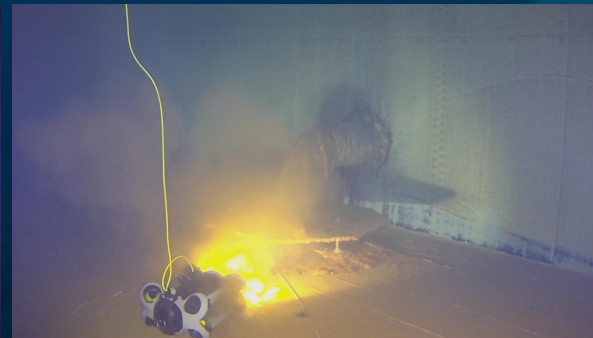


Fig5 Inspect interior component



Fig6 Inspect high-level fittings on the tank

4. Detailed Records collection



Fig7 Operator controls the drone on the ground outside the tank

A photograph of two business professionals shaking hands over a wooden table. The man on the left is wearing a white dress shirt and a blue and white striped tie. The man on the right is wearing a dark suit jacket. On the table, there is a glass of water, a tablet computer, and some papers. The text "Client Values" is overlaid in white on the handshake.

Client Values



Client Values

1-Enhanced safety & Reduced Risk

CHASING M2 S eliminates the need for human divers to enter potentially hazardous environments, thus reducing the risk of accidents and injuries related to confined spaces, drowning, or exposure to noxious gases or contaminants.

2-Cost Efficiency

CHASING M2 S is easily deployed and can perform inspections more quickly than human teams, minimizing the downtime required to drain and prepare tanks for entry. Thus, reducing the need for crews to enter tanks cuts down on labor costs and the logistical complexities of managing such operations.

3-High-Quality Imagery

CHASING M2 S is equipped with an EIS anti-shake camera capable of capturing 4K/30fps high-definition video and 12-million-pixel static photos. Its LED lights provide up to 4000 lumens of adjustable lighting. The stable underwater posture of the CHASING M2 S can capture detailed images and videos of the tank's interior. This allows for better detection of issues like cracks, corrosion, and sediment buildup.

4-Consistency

CHASING M2 S provides a consistent and repeatable inspection process, which is crucial for tracking changes and degradation over time.



5-Accessibility & Versatility

The 8 vectored propeller layout ensures the 360-degree omnidirectional movement, CHASING M2 S can easily reach and maneuver in parts of a tank that are difficult or impossible for humans to access, ensuring a thorough inspection of all areas.

6-Multipurpose Use

CHASING M2 S can be equipped with various sensors and tools to perform tasks beyond visual inspection, such as sampling water quality, laser scaler for measuring crack length or picking up loose component by grabber arm

7-Real-Time Feedback

CHASING M2 S provides real-time data to operators, allowing immediate assessment and decision-making. Integration with software for data analysis can help predict future maintenance needs and optimize maintenance schedules.

