



## How Virtual Collaboration Tools Can Support Inspections and Certifications on Water Treatment Installations in Remote Areas

Regular **maintenance of water treatment installations** and their equipment are critical to delivering safe drinking water to communities. Water treatment plants, tanks, pumps, motors, valves, generators, and other equipment can be **located in remote locations** making inspections, maintenance, and support challenging for lone technicians or new employees who are responsible. In order for the technician to receive information in a timely manner while remaining safe and conducting tasks efficiently, **virtual collaboration tools like AR** should be utilized.

## What is Augmented Reality Collaboration?

According to a **Gartner** report, “by 2025, over 50% of FSM deployments will include mobile augmented reality collaboration and knowledge sharing tools, up from less than 10% in 2019,” (Gartner, The Future of Field Service Management, December 2019). Field Service Management is moving towards Augmented Reality collaboration to better equip and enable their workforce. **Augmented Reality** is a graphic overlay on the real world through the use of a screen. In the scenario of maintenance on water utility equipment, Augmented Reality features may be used through a **remote support call**.

Remote support calls occur on **mobile devices** (phones, tablets), **head mounted devices** (e.g. RealWear HMT-1), or **smart glasses** (e.g. Microsoft HoloLens). The remote expert can see what the field technician sees through their video feed sharing. A remote assistance call can share multimedia like videos, pictures, text, and diagrams. The expert can even annotate on the field of view of the technician by drawing circles or arrows to provide guidance to the technician.

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## How Remote Locations for Water Utilities can Hinder Technicians

Field Service technicians often travel to **conduct installations, inspections, maintenance, or repairs on equipment or systems in difficult to reach areas**. Also, these technicians typically work alone. These individuals strive to address problems and implement solutions that can significantly affect the quality of water for the greater community. While much of their work may be routine, there are instances where the **trouble-shooting** or issue is outside of the individuals' knowledge.

Other times the technician is a new employee and doesn't have the necessary expertise to carry out a task on their own. In either instance the technicians are limited in what they can achieve with their current tools and skills, which is why they may need to call for back-up. However, the need to have an additional person travel to the location to provide expertise or guidance is time consuming and costly. Water utility work may take place at multiple sites over a large area, and the need to have everything running smoothly and safely is extremely important. This challenge is growing due to the increasing numbers of retiring experienced field technicians. As new,

less experienced technicians begin carrying out tasks they will likely need guidance to work with the installation, maintenance, trouble shooting, and repair of electrical and mechanical equipment as well as machinery including plant and pump station maintenance and repair emergencies.

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## The Benefits of Remote Collaboration for Maintenance on Water Utility Equipment

When water utility engineers or technicians use **remote collaboration maintenance**, they receive several benefits including **on-demand digital information and data, real-time support, and even perform certifications**. By using the head mounted device, or smart glasses, the water utility engineers can automatically or manually **identify key areas to inspect, and the associated data** such as historical records, technical sheets or tutorials. This Augmented Reality collaboration can be used to help technicians do maintenance and repair on water treatment plants and pumping stations including associated mechanical and electrical equipment and devices.

If the digital resources do not provide enough information, then the engineer can call an expert back at their headquarters or office who can offer **virtual real-time** guidance helping to overcome any issues. Remote support calls are typically used when a technician needs information that they do not have on hand. The expert on the call can provide real-time assistance **without the need to travel on-site**. Furthermore, the virtual collaboration can connect multiple people to the same call which is helpful when performing certifications at the water treatment plants, such as the field technician, an offsite expert/colleague, and a product manager from their end customer.



Weather, mechanical and electrical hazards, slippery surfaces, and heights: these hazards require a technician's full attention and motor skills to maneuver safely. The remote video calls enable technicians to complete the work quicker and, most importantly, **hands-free** (if using a head mounted device). This ensures their safety while working around the water treatment equipment and helps them to focus on the task at hand. To activate the video call the engineer/ technician needs only to use **voice commands** and wait for the answer of their off-site expert.

Overall, Augmented Reality remote collaboration improves in the following ways:

- **Less travel:** there is no need to send a second person to assist on-site. Through remote assistance and collaboration, the second person can provide guidance virtually in real-time. In addition, the use of the Augmented Reality tool for digital step-by-step work instructions and other data means the individual does not need to go back and forth to their vehicle to access a laptop or manual.
- **Time saved:** by accessing virtual data immediately and utilizing remote support calls technicians can problem solve quicker. Complex challenges with the water treatment equipment can be overcome in less time.
- **Improved safety:** through wearing head mounted devices or smart glasses technicians are working hands-free. They can have their hands on their tools and navigate around equipment in the elements. Additionally, by having a heads-up display their vision is also not impaired or distracted.
- **Enhanced support:** water Utility Field Service technicians and engineers have more resources through the virtual repository of information and from the option to call a colleague for additional insight. They are offered a variety of options for retrieving data or documenting data.

## Conclusion

Augmented Reality remote collaboration enables water utilities workers to carry out their tasks in an efficient, high quality and safe manner. They are equipped with the tools necessary to take on any challenge no matter their expertise or skill set. The remote assistance video streaming, Augmented Reality and collaborative annotation helps to improve the options of information resources for technicians.