

GUARANTEEING THE SAFE AND RELIABLE DELIVERY OF DRINKING WATER - MEKOROT SUCCESS STORY

FIELDBIT PERFECTS FIELD REPAIR SERVICES FOR
ISRAEL'S NATIONAL WATER COMPANY

“Fieldbit streamlines the maintenance of facilities for water production, delivery, and quality and allows for faster problem diagnosis, reduced equipment downtime, and expedited training of new technicians.”

Yossi Yaacoby, Director of WaTech® Division, Mekorot

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OVERVIEW

Approximately 80% of Israel's drinking water is derived from desalination, a process that removes minerals from saline water, converting saltwater into "sweet water" that's useable for drinking, farming, and washing. Water is delivered from desalination facilities directly to households, businesses and farms just three hours after it is extracted from the sea. The equipment required to accomplish this enormous, non-stop task is expansive, complex, and myriad. Any malfunctions can directly impact water consumers' health.

As the nation's water supplier, Mekorot services approximately eight million people daily – the entire Israeli population. It is critical that the company keep its equipment running at peak performance, 24/7.

Fieldbit has been instrumental in improving first time fix rates of Mekorot's highly complex and wide assortment of machineries, quickening fix times, streamlining maintenance and training procedures, and ultimately ensuring the safety and reliability of Mekorot's daily 4 million cubic output water supply.

BUSINESS NEEDS

Mekorot employs field service teams consisting of several hundreds of electricians, mechanics and water experts who address problems and malfunctions that arise among literally hundreds of different types of equipment – from pumps to sensors to electronics and electrical systems – across more than 3,000 facilities nation-wide.

The team's ultimate need is to ensure that all of these hundreds of pieces of machinery run smoothly and properly at all times; that this complex infrastructure is maintained with maximum uptime. When problems arise, they need to be fixed quickly and efficiently to ensure the continual flow of healthy water to consumers.

Streamlining standard maintenance procedures is also important, as well as training new technicians.

CHALLENGES

Several issues arise that make the field service team objectives a challenge to fulfill:

- **Many machine types means many experts** - There are hundreds of different complex machines, and as many vendors, requiring the field services team to include members

with several types of specific expertise. It's impossible for every field engineer to be familiar with every piece of Mekorot equipment. Add to this the rate at which technology changes and the fact that the machinery is constantly evolving.

- **Differing facilities means particular local experts** - With more than 3,000 Mekorot facilities across the country, each built and renovated at different times, and each featuring different machine types, each district needs a local field services team that can repair its specific machines.
- **Expertise has its limits** - On any given day, a support engineer may be called on to solve anything from the most routine issue to the most complex repair; he needs to be able to handle whatever is thrown at him. But, there is no on-site engineer capable of solving every issue that comes up. When an engineer is unable to fix problems on his own, he needs to call in backup, which is costly; return to headquarters to learn how to solve the problem or locate the appropriate replacement part and then return on a second service call; or seek remote assistance, which is fraught with limitations.
- **Remote assistance is a pain** - Explains regional director of Soreq district Itzik Rahimi, remote assistance generally entails exchanging smart phone photos and explaining over the phone, an often frustrating and time-consuming process with many potential pitfalls and miscommunications. "Site engineers don't have their hands free, so it can take a lot of extra time to send the information back and forth," says Rahimi. "Also, many plant environments have a lot of background noise, making phone communication difficult." Moreover, frequently, field technicians are required to work with gloves for protection from chemicals which make the use of smartphones or tablets impractical.
- **Take-over fixing gap** – There's a continuity issue when it comes to swapping out field engineers and continuing on repairs that were started by a different engineer. Bridging this gap often requires remote assistance.
- **"Over-fixing"** – Oftentimes, field engineers choose to replace parts when it's unnecessary, since replacing an entire part is often easier than locating and solving a specific problem. This is very expensive.
- **Dangers at the plant** – Some Mekorot facilities host high-voltage and chemical equipment, and safety is a major concern.
- **Training is expensive and time-consuming** – Field engineers at Mekorot are trained over several years. It's a long process, involving new employees being mentored by seasoned experts.



SOLUTION

Fieldbit has revolutionized the way Mekorot conducts field services.

The smart glasses and mobile app platform combination enable any dispatched field engineer to access real-time crystal clear remote help from experts or vendors located anywhere in the world. This means that local service teams don't necessarily have to be comprised of particular experts.

When a call comes in that the dispatched technician cannot solve on his own he can easily connect directly to another engineer or expert anywhere in the world, who can see exactly what the field technician sees in front of him, and in turn provide targeted guidance direct to the field technician's line of vision.

The quality of the assistance format far exceeds cellphone photos and phone calls. Augmented Reality (AR) lets the remote expert superimpose markings, messages and diagrams directly onto the engineer's field of view. Thanks to smart glasses, the engineer's hands are kept free to simultaneously commit fixes.

Back-and-forth lag time is drastically reduced, as is confusion that can result from expert and engineer speaking different languages, or from plant environments being noisy or otherwise distracting.

Fieldbit makes working in potentially dangerous high-voltage and chemical machine environments, safer; the continuous contact means fewer "wrong moves" and the engineer is never alone.

The real-time view also makes remote diagnoses possible, and allows the service center to dispatch the exact parts needed for repair on the first field call.

Perhaps best of all, successful collaborations are recorded and cataloged, building a resource library of protocols for complex fixes, for other field engineers to use. This alleviates pressure on field engineers to be experts in all technologies utilized by Mekorot; significantly reduces the need for long training mentorships; and makes it much easier for technicians to swap each other out, since one can easily pick up where the other left off. "Fieldbit is saving us a lot of time and money," says Rahimi, citing one example, in which field engineers were able to fix a chlorine pump that was showing higher than usual chlorine levels, in one third of the time it would normally take. In this case, they were able to diagnose the problem—a sensor malfunction - and dispatch the correct replacement part immediately upon arriving to the scene. The quickness of the repair also spared them inspection by the Water Standards Authority.

BENEFITS

Fieldbit has made Mekorot's field services department significantly more efficient and effective. Fieldbit has:

- **INCREASED FIRST-TIME FIX RATES** - IMMEDIATE RESOLUTION HAS BEEN MADE POSSIBLE, EVEN FOR VERY UNUSUAL OR NON-ROUTINE CASES, NO MATTER THE TECHNICIAN ASSIGNED AND HIS SPECIFIC CAPABILITIES, MACHINE OR VENDOR EXPERTISE.
- **QUICKENED FIXES** – DIRECT REMOTE COMMUNICATION BETWEEN EXPERT AND FIELD ENGINEER HAS EFFECTIVELY ELIMINATED BACK AND FORTH IN THE FIELD, AND MADE SITE VISITS SHORTER AND FIXES, FASTER.
- **SAVED TIME AND MONEY** – MORE ACCURATE DIAGNOSES AND SINGULAR SITE VISITS MEANS REDUCED EQUIPMENT AND LABOR COSTS.
- **MADE SITE VISITS EASIER** – NOW, TECHNICIANS DON'T NEED TO DRAG HEAVY MANUALS ON SITE, OR FILL TECHNICAL SUPPORT VANS WITH A SURPLUS OF UNNECESSARY REPLACEMENT PARTS. REMOTE ASSISTANCE IS SMOOTH, CONTINUAL AND HANDS-FREE, SO THERE'S NO WORKFLOW INTERRUPTION. THE SYSTEM IS IMPERVIOUS TO BACKGROUND NOISE, LIGHTING OR TEMPERATURE ISSUES, AND IT'S EASY TO PICK UP WHERE ANOTHER ENGINEER LEFT OFF.
- **EASY TO LEARN** – THE OUT-OF-THE-BOX SYSTEM IS INTUITIVE AND EXTREMELY EASY TO LEARN; MOST FIELD TECHS TAKE 10 MINUTES TO "GET" THE UI, AND TWO HOURS TO GET FULLY TRAINED.
- **MADE SITE VISITS SAFER** – FIELD ENGINEERS ARE NEVER ALONE, AND THAT REDUCES THE RISK OF MISTAKES WITH HIGH VOLTAGE AND CHEMICAL EQUIPMENT.
- **DELIVERED PEACE OF MIND** – TO BOTH SUPERVISOR AND FIELD TECHNICIAN. THE LATTER ARRIVES TO EVERY FIELD CALL WITH CONFIDENCE THAT HE WILL LEAVE HAVING FIXED THE PROBLEM; AND THE FORMER HAS REAL-TIME CONTROL AND ACCESS TO ALL FIELD CALLS AT ANY GIVEN TIME.
- **MADE TRAINING EASIER** – THE COLLECTION OF A FIXES LIBRARY HAS ALTERED TRAINING PROCEDURES FROM LONG-TERM TO SHORT-TERM MENTORSHIP, AND ENABLED FIELD ENGINEERS TO KEEP UP WITH RAPIDLY-CHANGING TECHNOLOGIES.

THE BOTTOM LINE

Since implementing Fieldbit in 2016, Mekorot has succeeded to:

- Cut machine downtime
- Cut machine fix time
- Save time on service call dispatches
- Save money on equipment costs due to more accurate diagnoses
- Shave time off training periods

LOOKING FORWARD

Mekorot looks forward to continuing to build the library of complex fixes for field services, with an eye to developing more efficient standard maintenance and training protocols. Eventually, the Fieldbit system will allow field technicians to tap into a vast repository of solutions, so that remote real-time collaboration becomes unnecessary in most cases. “Over time, we will be able to review the history of each machine and know what maintenance was performed before,” said Rahimi. “This knowledge has huge value to our organization.”

Mekorot also intends to implement the system in other departments, besides field services, such as electricity, quality and operations. “In every department, we have ideas of new applications,” says Alon Shpinger, WaTech® Engineering Department, Mekorot. “We will definitely be expanding our use of Fieldbit.”

ABOUT FIELDBIT

Fieldbit, founded in 2013, is an out-of-the-box enterprise solution that utilizes augmented reality (AR) to revolutionize complex equipment repair field services. The system - which combines SaaS Knowledge Capture and Distribution platform, smart glasses and smart phone – enables secure real-time, hands-free visual collaboration between site engineer and remote expert on machinery fixes, and accumulates a proprietary library of successful solutions for future field application. Fieldbit quickens fix times, reduces the need for site visits, boosts first-time fix rates, and streamlines complex equipment repair services' maintenance and training procedures. Fieldbit is based in Israel, with offices in Uden, Netherlands and Rockville, Maryland, USA.

ABOUT MEKOROT

Mekorot is Israel's national water company; it is government-owned, falling under the joint purview of the Ministries of Energy, Water, and Finance, since 2007. Mekorot provides approximately 80% of the drinking water and 70% of the total water consumption in Israel. In numbers, this represents approximately 1.5 billion cubic meters of water that it supplies every year. The company handles about 30% of the wastewater in the country and reuses about 60% of the effluent water reclaimed in the process.

Mekorot's sales currently stand at about NIS 3.7 billion per annum, and its equity is approx. NIS 3.3 billion. The company's annual balance sheet is about NIS 13.4 billion.

Mekorot has more than 3,000 facilities for the production, supply and enhancement of water quality nationwide, including approximately 690 pumping stations, approximately 1,070 wells, 730 pools, approximately 100 water reservoirs and pipelines of approximately 12,000 km in length.



THANK YOU

FOR MORE INFORMATION PLEASE CONTACT:
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