Datumate
Construction Data Analytics

CASE STUDY: MEKOROT



Mekorot Innovates and Optimizes Project Management and Execution with DatuBIM Construction Data Analytics

Construction Project Optimization as a Public Mandate

Mekorot, Israel's National Water Company, is known for embracing new technologies to increase efficiency and reduce costs. Recently, they sought a digital construction management solution that would help them improve processes and keep construction projects on time and budget.

Mekorot builds new large-scale water facilities and expands its water supply network with additional water pipelines continually, depending heavily on service providers, such as designers, project management firms, and construction workers, that change with each project. This makes Mekorot construction projects, like other similar development, hard to manage and monitor.

The company lacked a central management platform for all data and stakeholders. Mekorot was seeking a solution that would enable them to monitor project execution progress, digitalize the entire project lifecycle and deliver actionable insights to all stakeholders. In order to enable more effective supervision of sub-contractors and billing, the solution had to allow easy and accurate tracking of work executed and increase accountability and transparency.

"With every construction project, we want to build smarter. To do this, we need smart technologies," said **Gil Applebaum, Reservoirs Engineer at Mekorot.** "We are a government company and as such, we see it as part of our mandate to strive for constant optimization. Being able to effectively supervise all participating teams and stakeholders is critical for our optimization efforts."

DatuBIM for Data-Driven Project Management and Reporting

Mekorot initiated a pilot to assess the suitability of DatuBIM Construction Data Analytics Platform. DatuBIM turns data captured via drones into a digital twin of the construction site. This as-built digital twin is continuously updated, with each additional drone flight contributing a new dataset and fresh insight for the project manager.

MEKOROT
Israel National Water Co.

ABOUT MEKOROT

Mekorot, Israel's National Water Company, is considered a leading, technologically advanced water supply company, at the cutting edge of integrating innovative technologies.

ABOUT THE PROJECT

Monitoring the construction of a water reservoir and pumping station:

- Area: **0.15 km²**
- Duration: **14 months**
- Data Acquisition Frequency: **Monthly**
- Images / Flight: **562**

Delivered as non-disruptive, cloud-based SaaS platform, DatuBIM was quick and hassle-free to set up, and integrated seamlessly with Mekorot's existing engineering processes. Once they experienced DatuBIM's ability to track progress through comparisons between the different datasets, Mekorot expanded the pilot into a full project, with DatuBIM monitoring the entire 14-month construction lifecycle for a water reservoir with a pumping station.

The Project: Monitoring Construction of a Water Reservoir and Pumping Station

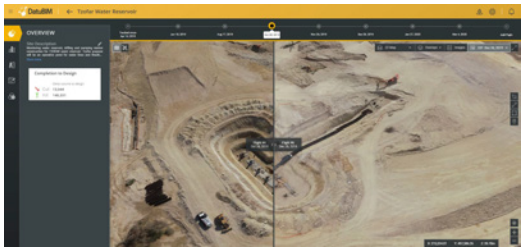
The planned water reservoir is an artificial pond created from local materials with a construction site covering approximately 0.15 km^2. The operative pond will be fed by a variety of sources, including brackish water, and will have a capacity of up to 200,000m^3 of water for agricultural use.

As this project included a huge amount of earthwork, Mekorot decided to gather new drone survey data once per month. The flight scheduled enabled work progress to be monitored well and enabled datasets to be available in accordance with monthly reporting and billing cycles.

"For us, it is paramount to have data compiled at short intervals. You need updated information if you really want to base your decisions and actions on these findings. DatuBIM meets this need with its ability to process the data quickly and in a meaningful way. And with each new dataset, DatuBIM automatically generates reports and insights that help us optimize execution workflows. With DatuBIM, we finally had an effective way to supervise our many service providers and sub-contractors," said **Yaniv Sharabi, Project Manager at Mekorot.**

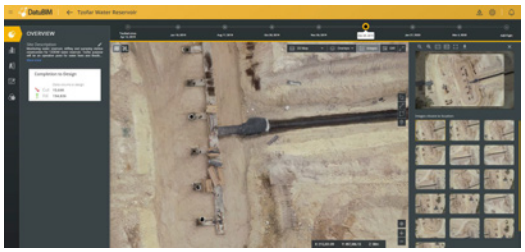
Remote Construction Monitoring: Automatically Generated Engineering Data and Reports

The DatuBIM platform provides engineering analytics about progress and supports Mekorot in tracking quality and supervising the many service providers. Up-to-date digital datasets help Mekorot to easily monitor crucial metrics:



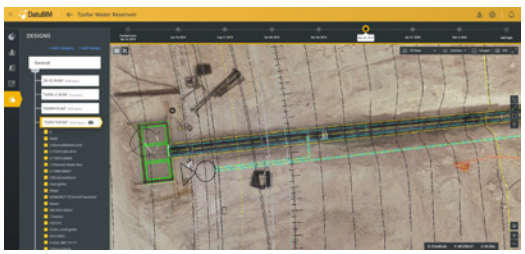
Visualization of Progress

The comparison of as-built digital twins generated at different dates gives Mekorot a quick overview of the work accomplished in a specific time frame.



Visual Inspection

DatuBIM allows for convenient zoom-in to high-resolution drone images for a visual inspection of the construction site.



Quality Control

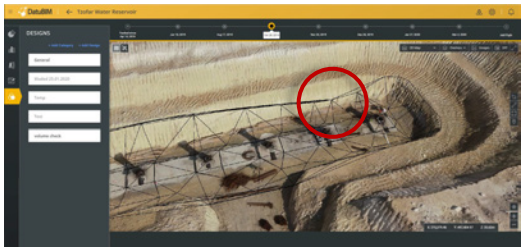
DatuBIM allows supervisors and project managers to import design plans and compare them with the digital twin of the construction site. By doing so, project stakeholders can promptly detect deviations from plan and effectively address and resolve issues.

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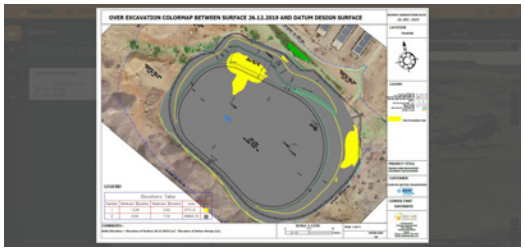
Volume Calculations and Tracking of Earthwork

Automated and accurate volumetric measurements over time including quantity & materials report enabled the project manager to validate or refute constructors' claims and assure that work was done according to plan.



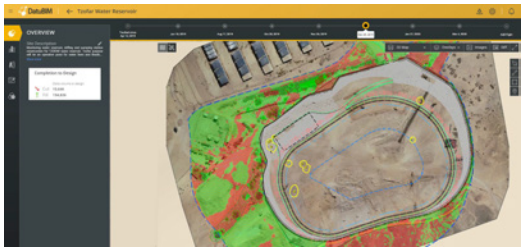
Raising Accountability and Supervision

Anchoring and comparing a surveyor's measurement layer to the model in DatuBIM is a matter of a few mouse clicks. Mekorot was able to double check the delivered measurements and detect a surveyor's mistake without having to send another surveying team into the field. Read more about this on the Datumate blog.



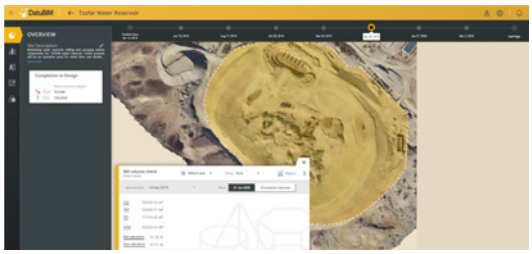
Prevention of Over-excavation

Since the pond is built of natural material, preventing over-excavation is critical to assure its stability and to keep maintenance low for decades into the future. DatuBIM Managed Services delivered custom reports tracking excavation over time and detected precise areas of over-excavation for immediate intervention.



Identifying Land Encroachment

With construction taking place in a nature reservoir, it is essential to identify land encroachment and works executed in prohibited areas. Mekorot depended on DatuBIM to monitor topography changes over time on out-boundaries and forbidden zones to discover unauthorized work.



Supervision of Bill of Quantities

DatuBIM is a construction tech solution that strives to improve its customers' workflows. To meet Mekorot's unique needs, the DatuBIM Managed Services team developed a custom module to create supervision reports directly from the DatuBIM platform. Mekorot can now easily validate the accuracy of invoices received by service providers.

For example, DatuBIM can examine earthwork bills instantly without any additional costs, versus the three days of lost time and costs associated with land surveying rechecks that would otherwise be required.

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DatuBIM – From the Project Manager's Viewpoint

Yaniv Sharabi, the project manager for this Mekorot construction project, summarizes his experience with DatuBIM and its transformational impact.



"The use of drones and advanced, new construction technologies like DatuBIM puts Mekorot at the forefront of the new digital era. Without any tedious surveying work in the field, DatuBIM delivers us quantity reports and measurement analytics. These detailed, quickly generated reports enable me as the project manager to monitor the entire construction site in a comprehensive way.

"It gives me the ability to zoom in to the smallest details on the ground. Comparing work executed to plans assists me in spotting deviations and errors before they occur.

"By serving a wide range of essential data, DatuBIM allows me to effectively monitor the progress of the construction project in order to meet deadlines and to stay on budget. Images, videos, maps and 3D models, all integrate into a rich visual, digital representation of the construction site and give a clear view of construction progress and pace."

Supporting Informed Decision Making and Day-to-Day Reporting, DatuBIM Provides Value and Time and Cost Savings

With automatic data collection and reporting scheduled at monthly intervals, Mekorot can compare current status to design plans and previous reporting instances to discover and address any issues in a timely fashion.

In addition, DatuBIM makes it easy to share reports with all relevant project stakeholders, including project management, supervision, planning and engineering. With DatuBIM, Mekorot can monitor work done by sub-contractors and validate their bills.

> "***DatuBIM for us is the power of knowledge.*** *Without sending out teams, we can check issues we otherwise might have neglected. The time savings are significant, since with DatuBIM we easily compare design and engineering to the field. The as-built digital twins and accurate reports generated by DatuBIM clearly help us to optimize processes and cut operational costs.* ***We have entered a new era of transparency and accountability*** *and are getting all teams involved. DatuBIM delivers us the insight we need to better supervise, manage and support our service providers,*" says **Sharabi**.

As an additional benefit, the transparency and digital supervision enabled by DatuBIM encourages Mekorot's general contractor and service providers to report more accurately.

Based on the substantial benefits and ROI of DatuBIM, Mekorot is planning to use the platform in upcoming projects.