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# Drone Supports Excavation Planning at Poland's White Mountain Sand Mine



TKSM Biala Gora, also known as the White Mountain Sand Mine, is using Topcon's Intel Falcon 8+ drone to inspect the reserves in the mine. This enables the accurate and efficient collection of real-time data for excavation planning. Located in Biala Gora in the centre of Poland, about 100km to the south of Warsaw, the White Mountain Sand Mine is Europe's biggest supplier of high-quality sand that

is used for glass production and other purposes.

The mine, owned by Quarzwerke Group, is a well-known producer of mineral raw materials. The family-owned company prides itself on combining high-grade raw-material resources with modern and efficient processing technology to ensure accurate results achieved in the most sustainable way possible.

## Accurate inspection

Because a mine is always changing and evolving, thorough inspection of stockpiles is crucial, which is why the Quarzwerke Group decided to venture into new technological

territories. By using [Topcon's Intel Falcon 8+ Drone](#) to inspect the reserves in the mine, they are now able to collect accurate and efficient data in real time, which in turn enables them to plan excavation accordingly.

The wide product range produced by the mine includes silica sand that is put through an extensive mechanical process for a broad range of applications. Primarily, TKSM Biala Góra supplies this refined, high-quality silica sand to the glass, chemical, foundry and construction chemistry industries. The exceptional quality of the raw material ensures the universal usability of the end product. To achieve this high-grade result, however, volumes need to be measured accurately to the millimetre.



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Inspecting such a large mine is no easy feat, so in June 2019, independent contractor Paweł Grad, who has been surveying the mine since 2013, decided to enlist the help of Topcon.

Paweł said: "Inspecting the mine is an extremely large, complex and time-consuming job and we are often under huge time constraints – usually having just a few days before we need to present the data back to Quarzwerke Group. The owner is extremely involved in the inspection of the mine and we're continually looking at ways to streamline the process and make it as efficient possible. So investing in the Falcon 8+ was a joint decision."

Piotr Matyjasek, regional manager for Topcon Positioning Poland, commented: "The Falcon 8+ drone provides precise high-resolution imaging in tight spaces and challenging environments, making it the ideal tool for volume calculations and for conducting photo inspections of the mine."

## Maximizing safety

The Falcon 8+ features first-class sensors, active vibration damping and compensating camera mounts for solid performance on any terrain. The rotary-wing unmanned aerial system (UAV or ‘drone’) is also able to capture imagery from all perspectives, while providing flexibility for immediate take-off and soft landing.

Paweł added: “Safety was a huge priority for us, as the mine is so close to a military base where the Polish Air Force operate. Helicopters are often flying back and forth, so moving away from traditional surveying techniques to a UAV solution was a daunting prospect for us, but the technical team at Topcon have been extremely supportive – they’ve made this transition really easy, offering us training on every element, from platform and software to workflow and regulations – and we’ve now got a UAV pilot’s licence.”

“From getting the initial photo data to presenting the survey information to the investor, the whole process is now simple and efficient. It’s completely revolutionized our workflow. The Falcon 8+ is also really easy to operate and has low noise and emissions, so our impact on the surrounding environment is minimal.”



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## Efficient data processing

Key to the success of the efficient surveying workflow is [Bentley ContextCapture](#). This software can quickly produce even the most challenging 3D models of existing conditions for infrastructure projects of all types, derived from simple photographs or point clouds. Without the need for expensive, specialized equipment, the user can quickly create and use these highly detailed, 3D reality meshes to provide precise real-world context for design, construction and operational decisions for use throughout the lifecycle of a project.

For the Quarzwerke Group and the contractor, this brings many benefits. The hybrid processing in ContextCapture enables the creation of engineering-ready reality meshes of the mine that incorporate the best of both worlds. Where needed, the versatility and convenience of high-resolution photography is supplemented by additional accuracy of point clouds from laser scanning.



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Overall, the Falcon 8+ and Bentley ContextCapture have helped to reduce the time it takes to capture and process the mine data. The whole process is not only now at least twice as fast, but the precision and quality of data is also of a much higher quality because the equipment is able to measure millions of points of a single object.

Paweł concludes: “The combination of Topcon technology and ongoing support from the team has completely changed the way we survey; our workflow is more efficient and our results are more accurate. We’ll continue to use these solutions on the mine and on projects across Europe for years to come.”

**For more information about Topcon, visit [www.topconpositioning.com](http://www.topconpositioning.com).**

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<https://www.gim-international.com/case-study/drone-supports-excavation-planning-at-poland-s-white-mountain-sand-mine>

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