



Topcon's Digital Photogrammetry and Robotic Technologies Exponentially Increase Archaeological Survey Efficiency

ImageMaster PRO cut down data processing time to one third, GPT-9000A reduced time and labor by 50 percent

Misuzu General Consultant Company in Nagano, Japan, is one of the country's most experienced companies of the surveying and consulting fields, with expertise in the areas of archaeology, geology, control-point and cadastral survey, construction survey, laser scanning and aerial photogrammetry.

At an archaeological site in Saku-city, Nagano, Misuzu recently conducted a topographical survey utilizing Topcon's ImageMaster PRO, a 3D photogrammetry software, and a detailed survey and stakeout with the GPT-9000A robotic total station.

"A digital photogrammetry technology has notably increased job efficiency in archaeological site survey,"



Isamu Kumaki, Survey Group Leader
Misuzu General Consultant Company

said Isamu Kumaki, survey group leader of Misuzu.

"To take pictures of this 3,500 square-meter site, we used a radio control helicopter equipped with stereo cameras. For small areas where a helicopter is not suitable, we created a special long rod that accurately suspends cameras so we can take stereo pictures of the ground vertically below the cameras. This combination dramatically reduced field work time."

"With the conventional analogue technology, it took about 10 days for data processing, including film development. Digital photogrammetry using the ImageMaster PRO cut down the processing time to one third." Kumaki also said, "Previously we could find missing areas or miss shots only after the films were developed. Digital technology prevents such mistakes because we can check the pictures at any time on site."

Archaeological sites also require a huge number of point measurements with millimeter accuracy. "In this site, we took a total of 3,500 points. The one-person robotic survey capability of GPT-9000A reduced time and labor by 50 percent compared to the two-person survey with a manual total station," Kumaki said.

"Every day we needed to provide the supervisor with



the updated site drawings that reflect survey results of the previous day. The GPT-9000A's robotic functionality was quite helpful for us to quickly update the drawings, because we were able to do everything, from controlling instrument to inputting features and attributes, at the prism side where all pieces of relics are placed."

Misuzu is fully utilizing both products for diverse applications. "We used the ImageMaster PRO for wall crack inspection of water storage ponds as well as general topographical surveys," Kumaki said. "We are studying the combined usage of the digital photogrammetry and the 3D laser scanning technologies to add new value to our services."