

Extreme surveying:
Shooting stereo pairs
from a helicopter in the
Alaska Bush.



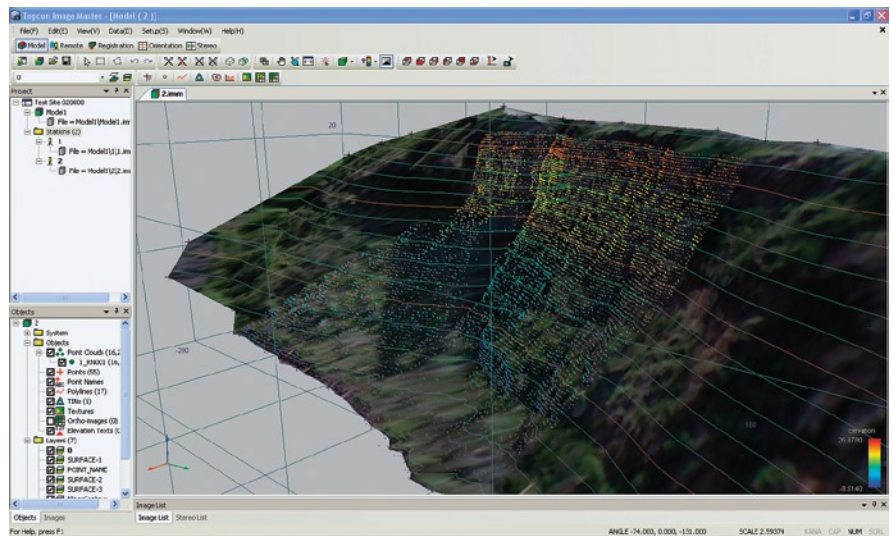
Topcon ImageMaster

Surveyors traditionally have welcomed emerging technology when it offers an improvement in the accuracy and integrity of measurement and mapping. One of the most revolutionary tools of late for the surveyor has been the emergence of Global Navigation Satellite Systems (GNSS). The term encompasses existing and planned satellite systems—United States GPS, Russian GLONASS system, European Galileo and Chinese Compass systems.

While GNSS poses opportunities for myriad applications, surveyors have incorporated it into their operations more quickly than some other professionals. One way that surveyors have incorporated satellite technology into their work is through 3D modeling.

Uses for satellite technology are expanding as quickly as the software that drives the applications can be developed. One of the latest software products available to surveyors is Topcon ImageMaster, a PC-based imaging station control and post-processing software capable of 3D point cloud management and photogrammetry modeling. ImageMaster software combined with total stations and satellite receivers is a powerful surveying tool.

It was the PRO version of ImageMaster that helped make land surveying in the Alaskan Bush possible. When a surveying crew set out to determine boundaries in a native Alaskan village, digital aerial photogrammetry was determined as the most feasible route to gain a look at the geographically challenging terrain. With the use of a helicopter used for U.S. Bureau of Land Management work, a surveying strategy that would be a less-costly plan of attack for the pro-bono project than standard digital aerial



ImageMaster photo-modeling software screen image.

photogrammetry was launched: “off-the-shelf” digital camera, GNSS receivers and ImageMaster photo-modeling software.

Eric Stahlke, the surveyor who does “extreme” surveying by helicopter, barge, or whatever it takes in Alaska for the Tanana Chiefs Conference, used ImageMaster to manipulate controlled stereo pairs from photos shot while strapped in a helicopter that had the door removed so photos could be shot using the digital camera. Aerial target points were established using ATVs that arrived by a survey barge. The result was a low-cost accurate survey.

ImageMaster provides a panoramic view of field photos. When automatically “stitched” together, a group of photos makes a 360-degree-angle photo field book. When using ImageMaster, the surveyor can define the area of interest to record both photographs and the density of the point cloud collected. Once a point cloud is collected, points, lines, and

polygons can be drawn and annotated. Survey coding and annotations can then be assigned to individual points in the point cloud.

In addition to ImageMaster PRO, there are three versions: IS, Lite, STD. The IS version controls the Topcon Imaging Station (IS) via WiFi connection and makes 3D TINS and photo textured surfaces of IS collected data. The Lite version is used with the GPT-7000i imaging total station, and the STD version includes all IS edition features plus editing of IS scanned data with tools such as volume and cross section calculations.

Making use of another new technology that is changing how we all work—wireless technology—ImageMaster provides control via WiFi application. This is a feature unique to Topcon that allows full remote control of the imaging station from the field, office or vehicle. And maybe someday, when WiFi is available there . . . from the Alaskan Bush. *A*