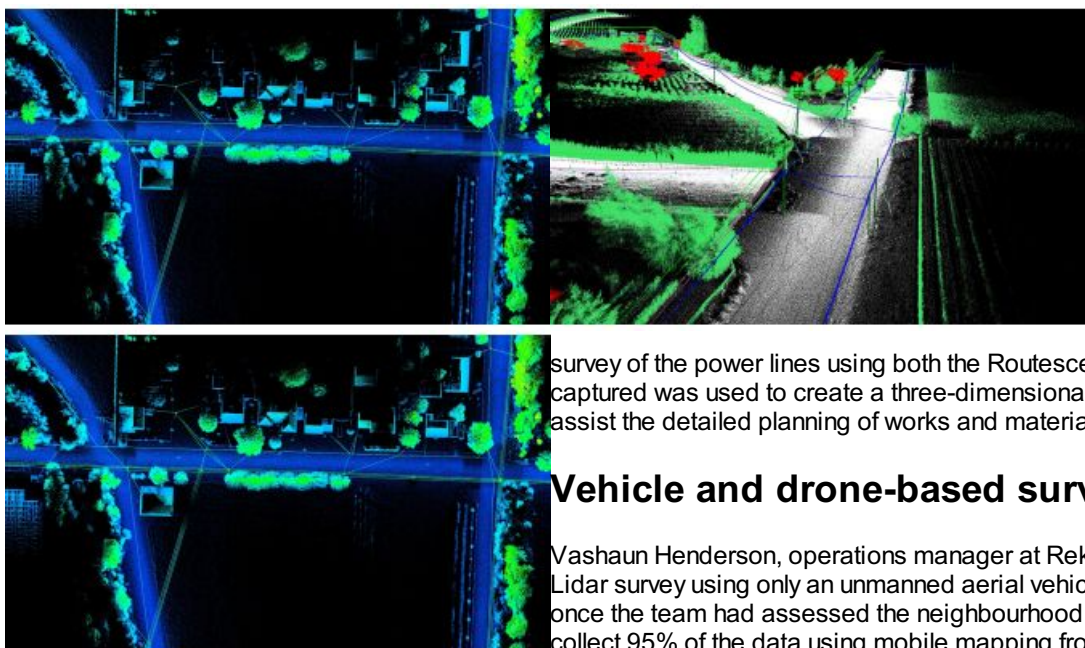


Mobile Mapping System Used in Canadian Power Lines Project



Both vehicle-based and UAV-based Lidar systems from Routescene have been used in a survey to prepare for the replacement of aging power lines in Oliver, British Columbia, Canada. Electricity distribution company Fortis contracted professional Lidar service provider Rekon Solutions Inc, which conducted a

survey of the power lines using both the Routescene systems. The data captured was used to create a three-dimensional view of the roads in Oliver to assist the detailed planning of works and materials required.

Vehicle and drone-based survey

Vashaun Henderson, operations manager at Rekon, had planned to conduct a Lidar survey using only an unmanned aerial vehicle (UAV or 'drone'). However, once the team had assessed the neighbourhood they decided they could collect 95% of the data using mobile mapping from a truck. The Routescene

Lidar system offers the flexibility of being either vehicle or UAV-mounted. With mobile mapping, the Lidar system is closer to the road and street assets such as telegraph poles and power lines, which allows more accurate data to be collected. The drone was used to fly over an area including a river which it was not possible to access using the truck.

"We have learned from this experience. If there is a possibility that we can use the vehicle system for a project, we now always fix the roof rack system to the truck. It never hurts to take it along, just in case," Vashaun commented. "We protect all the sensors from grime from the road during transport to and from the site. With the vehicle mobile mapping system, you can collect a huge amount of data. We collected all the truck-based data for this project in just one hour. With the drone we are limited by battery life to individual flights of 15-20 minutes."

□ Resulting point cloud data to plan power line upgrade.

Ensuring data quality

[Routescene's vehicle Lidar](#) kit includes a roof rack which has a specially developed shock absorption system to reduce vibrations from an uneven road surface. This allows the best possible results to be obtained.

Quality control is important to ensure the right data is collected and that it is of good quality. During the survey the Lidar scanner, INS and GNSS within the system were constantly monitored from inside the truck using Routescene's QA Monitor software. This ensures the system is set up properly and is collecting high-quality data throughout the survey. This prevents repeat visits to sites and delays to projects. As a result of this quality control, only one pass through the neighbourhood was required with the truck.

Efficient and detailed Lidar data collection

In [this case](#) the mobile mapping system was quicker and more efficient than using the drone. The area to be surveyed covered about 4.9km, which took about an hour. A total of over 950 million points were collected and processed. This meant the average number of points per square metre was over 1,400, which provided an incredibly detailed view. The point cloud showed fine

details such as road kerbs, manhole covers, electricity poles, guy ropes, trees, the sag of electricity lines, electricity entry points into houses and many other useful features.

Processing the data

The Lidar data was processed back at the office with Routsene's [LidarViewer Pro software](#). The data was matched with the location, orientation and ground control points to establish absolute accuracy. The data was then cleaned and analysed. Using specialist software it was also possible to classify the data. This meant that the client was provided with separate LAS files for a DEM, DTM, distribution lines, neutral lines, fibre-optic overhead lines, anchor and guy lines, structure and poles, vegetation and roads lines. The client also received the data in x, y, z format, which is used in special power line analysis packages.

In summary, using the Routsene mobile mapping system accelerated the collection of data for the survey team and LidarViewer Pro software enabled the huge amount of collected data to be processed and analysed in detail.

“Using the vehicle-based Lidar system and the UAV where required allowed the client to save money and time when planning the update of electricity lines to the community. We were able to provide highly detailed 3D georeferenced information quickly and efficiently. It would have taken a considerable amount of time and cost to gather this data any other way,” added Vashaun.

□ Classified power line Lidar data.

<https://www.gim-international.com/content/news/mobile-mapping-system-used-in-canadian-power-lines-project>
