

THE ADVANTAGES OF A BIRD'S EYE VIEW

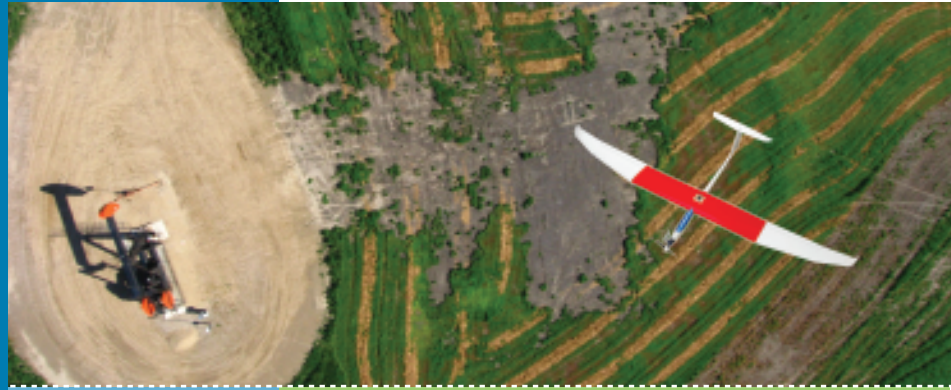
Aerial Cameras

Since June 2009, Matrix has been providing a unique service for our clients: collection of real time, geo-referenced, high resolution aerial photographs from unmanned aircrafts. The aerial photographs are collected by either an autopilot controlled or GPS-guided airplane, or a remote-controlled helicopter.

The unmanned airplane is electrically powered and has a wingspan of 2.4 m. Powered by lithium batteries, the unmanned airplane has the ability to stay aloft for 45 minutes on a single charge. With the ability to fly at any altitude between 120 and 600 m above ground, the unmanned airplane can easily cover a 1.6 by 0.8 km area and a total linear flight distance of 13 km per flight.

The helicopter is also electrically powered and has a rotor span of 1.5 m. With the ability to hover within tight locations and at lower altitudes, the helicopter can also obtain photographs at almost any angle – vertical to horizontal – which enables us to target areas of concern.

Not only is the technology cost-efficient and portable, it also produces high resolution photographs. It also promotes safer working conditions compared to a manned aircraft. Each aircraft carries a 12 megapixel camera. The unmanned airplane's camera takes photographs at pre-programmed GPS coordinates along its flight plan. The helicopter's camera has a downlink system that sends real time views to a computer to assist in framing the photographs as they are being collected. Once all the photographs are on the computer, Matrix personnel stitch the photographs together to form a single photograph of the area. The cameras currently can produce visual spectrum photographs; Matrix is exploring the possibilities of using infrared cameras.



Aerial Imaging

These photographs produced from the unmanned aircrafts have helped assess several locations with limited accessibility:

- initial spill response and remediation;
- asset inventories and evaluation;
- environmental impact statements (EIAs);
- vegetation assessments of reclaimed locations; and
- Phase II environmental site assessments (ESAs) investigations involving historical impacts.