Terralite™ XPS System

MAXIMIZE MINE PRODUCTION WITH TERRALITE™ XPS HIGH-PRECISION SOLUTIONS

High-precision Global Positioning Systems (GPS) have provided countless benefits for positioning and managing equipment in open-pit mining. Haul trucks, shovels, drills, dozers, mobile conveyors and other mission-critical machine operations are optimized by the use of real-time positioning applications enabled by GPS. However, for applications that require non-stop availability of real-time positioning data, GPS alone falls short.

Terralite XPS optimizes machine control and guidance system performance deep in the mine.

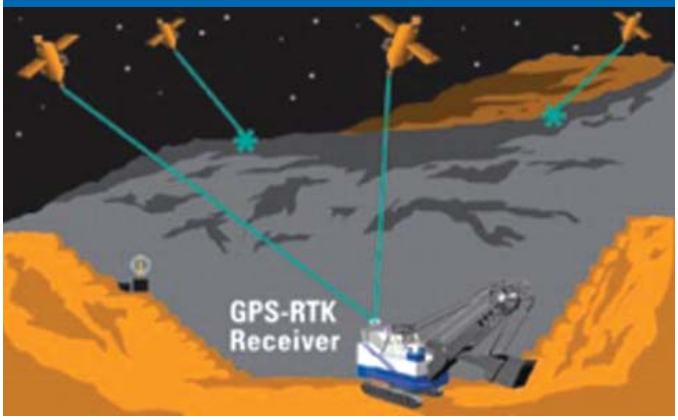
The Terralite XPS System is composed of a constellation of TX100 Terralite XPS Transmit Stations broadcasting Novariant's proprietary XPS signal combined with an IX100 GPS + XPS Reference Station. The Terralite XPS solution utilizes Novariant MX100 receivers, and provides operators in the pit with the necessary GPS + XPS signals which enable up to 100% availability of high-precision position data. This virtually eliminates operational down time due to limited GPS signal availability.

Now you can run your operation with confidence and simplicity – without compromise, without delay, and without need for work-around incurred by incomplete real-time position data.

THE CHALLENGE:

RELIABLE GPS LOCATION DATA DEEP IN THE MINE

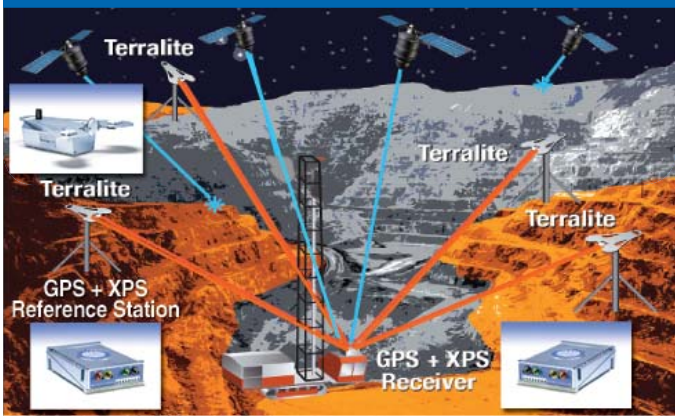
- Mine high walls and obstructions block GPS satellite signals
- ROI of high-precision machine applications assumes full satellite availability
- Must meet mine requirements for ruggedness, cost and expandability



THE SOLUTION:

GPS + XPS: 24/7 SIGNAL AVAILABILITY

- XPS provides up to 100% total signal availability
- Compatible with any application using GPS position data
- Easy set up with portable, self-surveying transmitters
- Scalable, simultaneous support for unlimited mobile units
- High performance in both mobile and static environments



Field rugged and designed to withstand the harshest of environments, the Terralite XPS transmitters are easily installed and positioned around the rim of the pit. After setup, the transmitters automatically begin to provide independent, yet interoperable, XPS signals to any number of MX100 Receivers.

The Terralite XPS System is compatible with all leading GPS-enabled applications that accept standard positioning inputs.

TERRALITE XPS IS THE CHOICE FOR RELIABLE SIGNAL AVAILABILITY FOR HIGH-PRECISION GPS APPLICATIONS

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NOVARIANT™
MINING SOLUTIONS

Terralite™ XPS System Single-Pit Constellation ⊙ Multi-Pit Constellation

A PROVEN SYSTEM SOLUTION TO MEET YOUR SPECIFIC NEEDS

No two mines are alike, nor are the infrastructure requirements needed to maximize mine productivity. Novariant can meet your needs regardless of pit size and geography. We work side-by-side with our customers to determine the best positioning coverage solution for all equipment in the mine. We can recommend Single-Pit or Multi-Pit Constellations to match your current high-precision equipment requirement and the expected evolution of your mine plan.

Single-Pit Constellation

The Single-Pit Constellation of the Novariant Terralite XPS is ideal for pit mines with high-precision shovels, drills, and support equipment operating in a deep bowl-shaped pit. The Single-Pit Configuration supports machinery concentrated within the pit. Additional configuration options are also available to provide enhanced signal availability to surrounding surface regions and expansion areas.

Multi-Pit Constellation

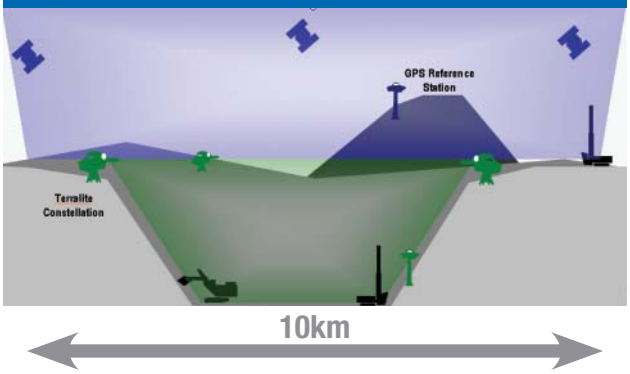
Many open pit mining operations involve more than one pit or extended workings with complex topographies, such as conjoined pits, long channels, or mezzanine expansion benches. The Terralite XPS Multi-Pit solution provides a migration path for these situations, thereby supporting mine operations as they expand and change scope. The Multi-Pit Configuration is ideal for pit mines with high-precision shovels, drills, and support equipment operating in different distinct pit areas, as well as for complex pits in which machinery frequently roams between different coverage zones.

System Features & Components

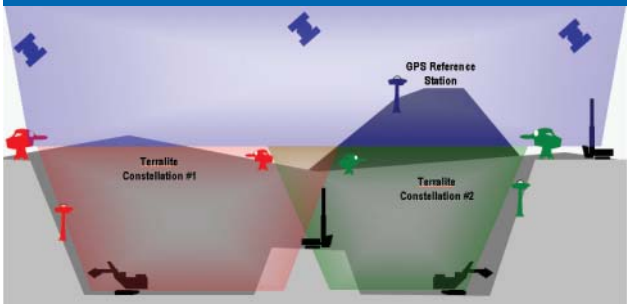
Novariant's GPS + XPS receivers are compatible with all leading brand high-precision GPS-enabled applications. Terralite XPS System configuration and monitoring functions are compatible with all major brand radio devices.

HARDWARE COMPONENTS	CONSTELLATION TYPE	
	Single-Pit	Multi-Pit n = # Pits
Terralite Stations	6	6 x n
GPS + XPS Reference Station	1	1 x n
GPS Reference Station	Optional	1

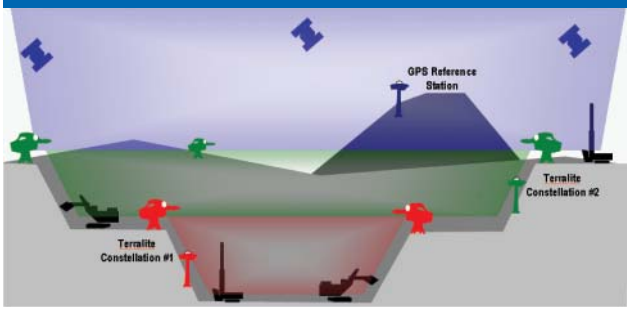
Typical Deployment — Single Pit



Typical Deployment — Adjacent Pits



Typical Deployment — Pit Expansion



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