

CONNECTED ASSETS. VISIBLE OPERATIONS.

RF CONNECTIVITY FOR MODERN MINING OPERATIONS

RF Antennas.
Engineered Around Your
Application.

THE ANTENNA IS THE LAST PHYSICAL LINK BETWEEN THE ASSET AND THE NETWORK.

Mining operations depend on communications that continue to work across moving equipment, exposed sites, metal structures, changing terrain and remote infrastructure. Bloomice helps engineers match the antenna, mounting method, cable and connector to the real installation - so valuable data reaches the people and systems that need it.

MINING CHANGES THE RF BRIEF

A network may reach the mine. That does not guarantee reliable connectivity at the machine, sensor, camera or control panel. The installation itself determines how much of the available RF performance is actually realised.



UNDERGROUND PROPAGATION & MOBILITY



REMOTE TELEMETRY & EXPOSED ASSETS

01 SCALE AND CHANGING TERRAIN

Pit geometry, benches, stockpiles and moving faces continually alter line-of-sight and coverage. An installation that worked during commissioning may be shadowed later.

02 METAL, VIBRATION AND IMPACT

Machine bodies, cabins and protective structures affect tuning and radiation. Shock, vibration, dust, water, UV and washdown add mechanical demands.

03 MOBILITY AND MIXED NETWORKS

Assets may move between public cellular, private LTE or 5G, Wi-Fi and GNSS. MIMO, antenna separation and handover performance must be considered together.

04 CABLE AND MOUNTING LOSSES

Long cable runs, tight routing, unsuitable connectors and poor sealing can remove the advantage of a well-selected antenna before the signal reaches the radio.

TYPICAL CONNECTED MINING APPLICATIONS

MOBILE PLANT & FLEET

Telemetry / positioning / Wi-Fi

SCADA & MONITORING

Pumps / tailings / environment

VIDEO & SECURITY

CCTV / access / perimeter

PEOPLE & SAFETY

Voice / alerts / connectedworker

REMOTE OPERATIONS

Gateways / offices / failover

OEM & EMBEDDED

Sensors / trackers / controllers

APPLICATION-LED PRODUCT SELECTION

THE RIGHT ANTENNA FOR THE ASSET

Six representative Bloomice product examples for common mining connectivity requirements. Final selection should always be confirmed against the radio, enclosure, mounting surface and operating environment.

01 CASCO MIMO LTE/Wi-Fi/GNSS

BEST FIT Haul trucks, drills and service vehicles

FORMAT & CAPABILITY

2 x LTE / 2 x Wi-Fi / 1 x GNSS / M27 body mount

Combines data, local wireless and positioning in one rugged housing for mobile equipment.



02 BODY ADYNA J-81 GNSS / 5G LTE

BEST FIT Machine telemetry and positioning

FORMAT & CAPABILITY

2G / 3G / 4G-LTE / 5G NR / multi-GNSS / IP67

Compact, ground-plane-independent installation on metal, composite or plastic surfaces.



03 SETA LP LTE-5G

BEST FIT Low-profile exposed equipment

FORMAT & CAPABILITY

600-3800 MHz / IP68 / impact-resistant / omni

A robust, discreet option where height, weather protection and physical exposure matter.



04 PARED-J-NF/5G

BEST FIT Remote buildings and fixed telemetry

FORMAT & CAPABILITY

2G / 3G / LTE / 5G NR / medium gain / wall or pole

Permanent outdoor coverage for gateways, pump stations, weather and monitoring assets.



05 MIMO-PLUS 5G NR / LTE

BEST FIT Gateways, cameras and control systems

FORMAT & CAPABILITY

2G / 3G / LTE / 5G NR / MIMO / IP66 / wall or pole

MIMO performance for fixed applications that need stronger throughput and link resilience.



06 FLEXIONAR LTE/5G

BEST FIT OEM devices and compact enclosures

FORMAT & CAPABILITY

617-5925 MHz / 0.25 mm foil / self-adhesive / ground-plane independent

An ultra-thin embedded option for sensors, trackers and equipment with limited internal space.



PERFORMANCE IS CREATED AT THE INSTALLATION

ENGINEER THE INSTALLED SYSTEM

Selecting the product is only the start. Mounting, cable loss, connector sealing and final validation determine whether the radio sees the network performance expected on paper.

FIVE QUESTIONS BEFORE AN ANTENNA IS SPECIFIED

- 01 NETWORK?**
Bands, public or private, MIMO, Wi-Fi and GNSS requirements.
- 02 ASSET?**
Radio, enclosure material, space, ground plane and mounting position.
- 03 ENVIRONMENT?**
Movement, vibration, shock, dust, water, UV and temperature.
- 04 RF PATH?**
Cable type and length, connector, routing, sealing and separation.
- 05 VALIDATION?**
Installed-state testing on the real asset in its operating condition.

PRODUCT EXAMPLE	PRIMARY APPLICATION	MOUNTING	CONNECTIVITY
CASCO MIMO LTE/Wi-Fi/GNSS	Mobile plant and fleet	Body / panel	LTE MIMO / Wi-Fi / GNSS
BODY ADYNA J-81	Telemetry and tracking	Body / panel	LTE / 5G NR / GNSS
SETA LP LTE-5G	Low-profile exposed asset	Low-profile fixed	LTE / 5G NR
PARED-J-NF/5G	Remote fixed site	Wall / pole	LTE / 5G NR
MIMO-PLUS 5G NR / LTE	Gateway / video / controls	Wall / pole	LTE / 5G NR MIMO
FLEXIONAR LTE/5G	OEM and embedded device	Internal adhesive	LTE / 5G NR

UNDERGROUND COVERAGE IS A SYSTEM DESIGN EXERCISE

Tunnel geometry, rock conditions, frequency, access-point spacing and moving machinery determine whether endpoint antennas, specialist circularly polarised antennas, repeaters, distributed systems or leaky feeder are appropriate. Safety classification must be confirmed before specification: FRAS, ATEX, IECEx or intrinsic-safety requirements may apply to particular sites.

BRING BLOOMICE THE ASSET, THE RADIO AND THE ENVIRONMENT.

We will help define the antenna, cable, connector and validation route around the application.

