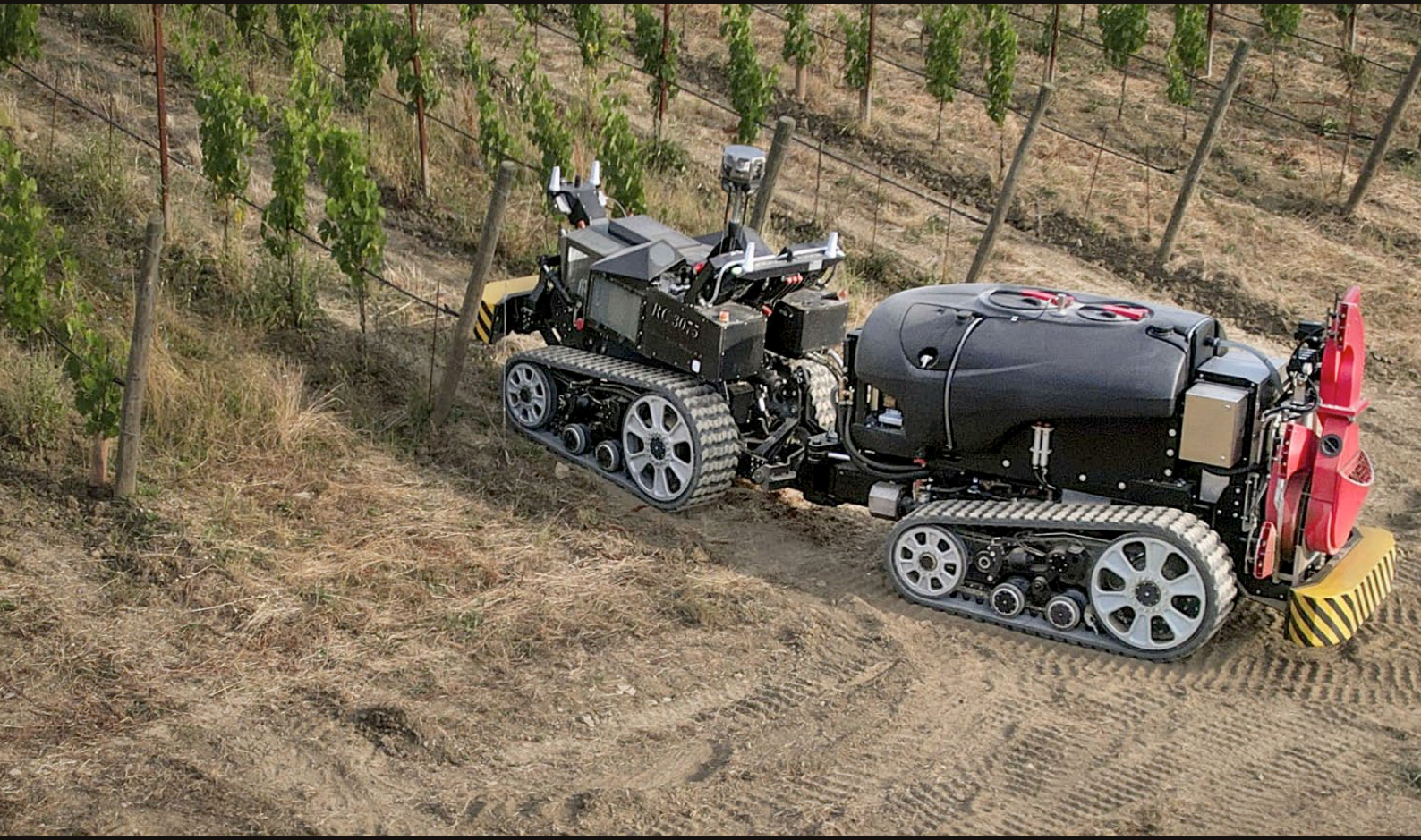


Black Shire



ROBOTIC **FARMING SOLUTIONS**





The world's most advanced autonomous tracked robot for viticulture and arboriculture

RC 3075 is the Black Shire autonomous tracked robot designed to usher viticulture and arboriculture into a new era.

It operates between crop rows with precision, continuity, and safety, supporting operators in the most demanding and repetitive tasks.

It is not simply an agricultural vehicle, but an intelligent platform capable of transforming daily field work: more efficient, better controlled, and more sustainable.

ADVANCED ENERGY EFFICIENCY

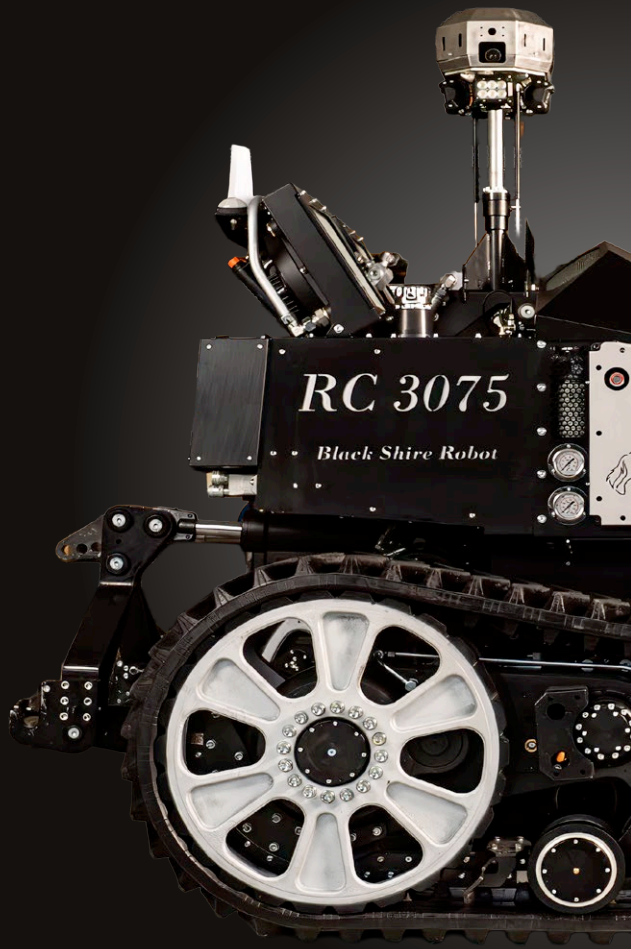
The diesel/electric combination provides significant fuel savings, reducing operating costs without compromising performance.

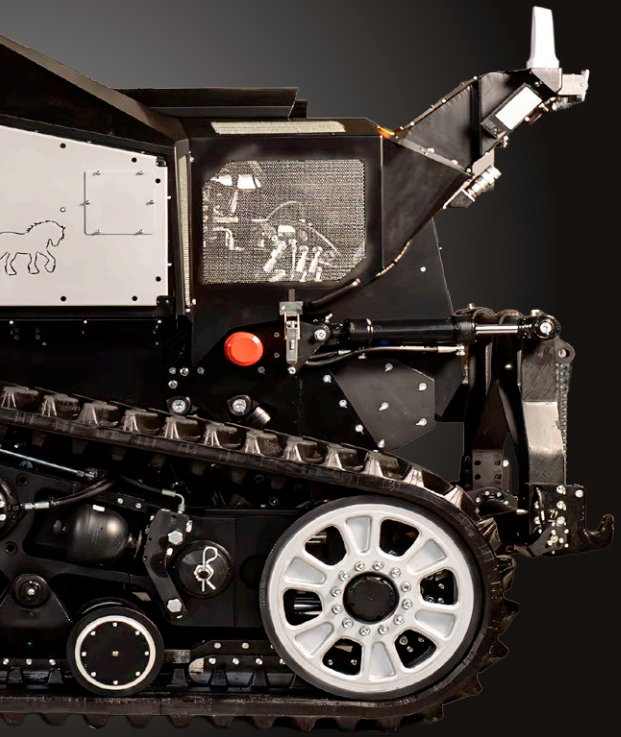
24/7 OPERATIONAL CAPABILITY

Flexible work-cycle management allows continuous operation, seamlessly adapting to crop and field requirements.

OPERATIONAL RELIABILITY

RC 3075 guarantees constant precision and repeatability, even during the most complex field operations.





SOIL CONSERVATION & RESPECT

The track drive system reduces soil compaction even in challenging conditions, preserving soil structure.

OPERATIONAL VERSATILITY

High-precision combined operations optimize every field task. Speeds up to 7.2 km/h allow operations to be completed faster while maintaining high quality standards.

SIMULTANEOUS OPERATIONS

Implements can be mounted both front and rear, enabling multiple parallel operations and boosting overall efficiency.

Agility without compromise

MAXIMUM SLOPE AND CROSS-SLOPE CAPABILITY OF 30°

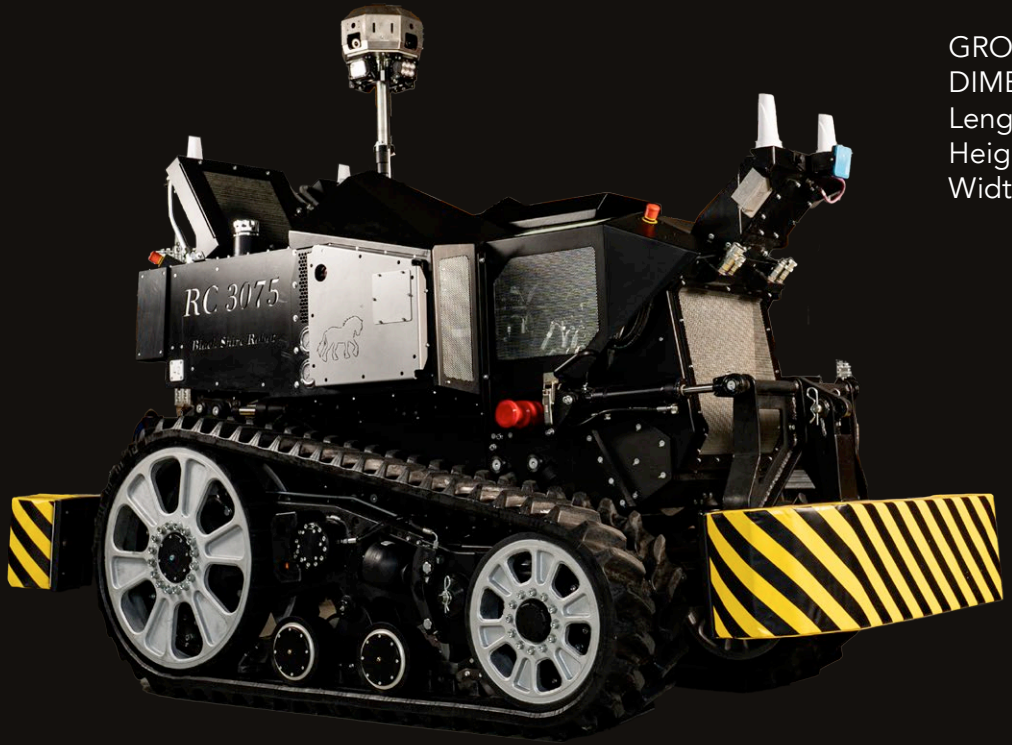


30°



30°

Technical details



GROUND CLEARANCE: 23 cm
DIMENSIONS:
Length 275 cm
Height 210 cm
Width 135 cm

Primary GNSS, Wi-Fi,
and LTE/4G antennas for
comprehensive connectivity

N°2 auxiliary cooling radiators
for high-temperature operations

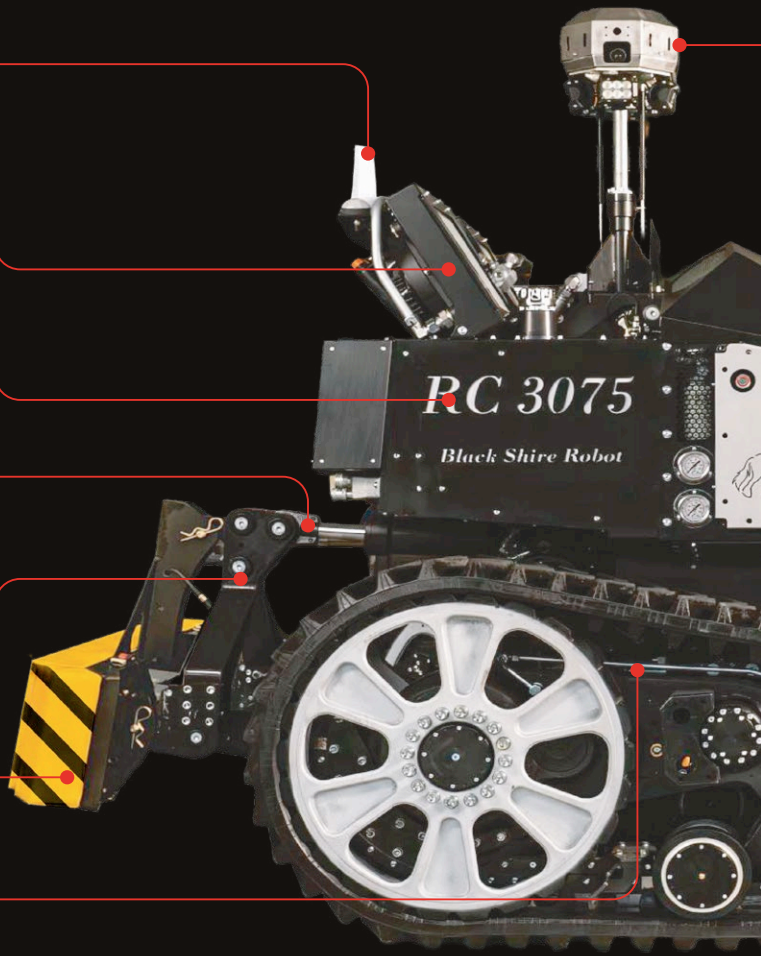
85L Diesel tank providing up to
14 hours of continuous
operational autonomy

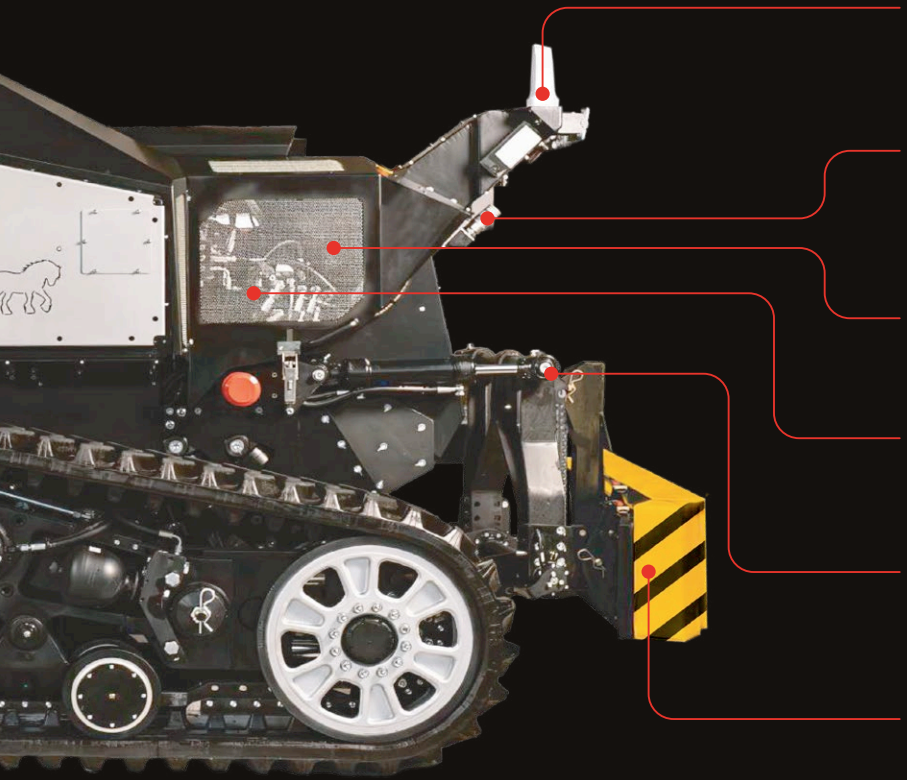
Electrical outlets (power and signal)
and hydraulic connections (high pressure,
low pressure, brake release, and return)

CAT 1/2 Three-point
hitch for implements

Certified safety bumper for
fully safe autonomous operation,
including reverse driving

Brushless electric motors for
maximum efficiency and control





Vision system: advanced cameras powered by AI algorithms

Auxiliary GNSS, Wi-Fi, and LTE/4G antennas for redundant and reliable connectivity

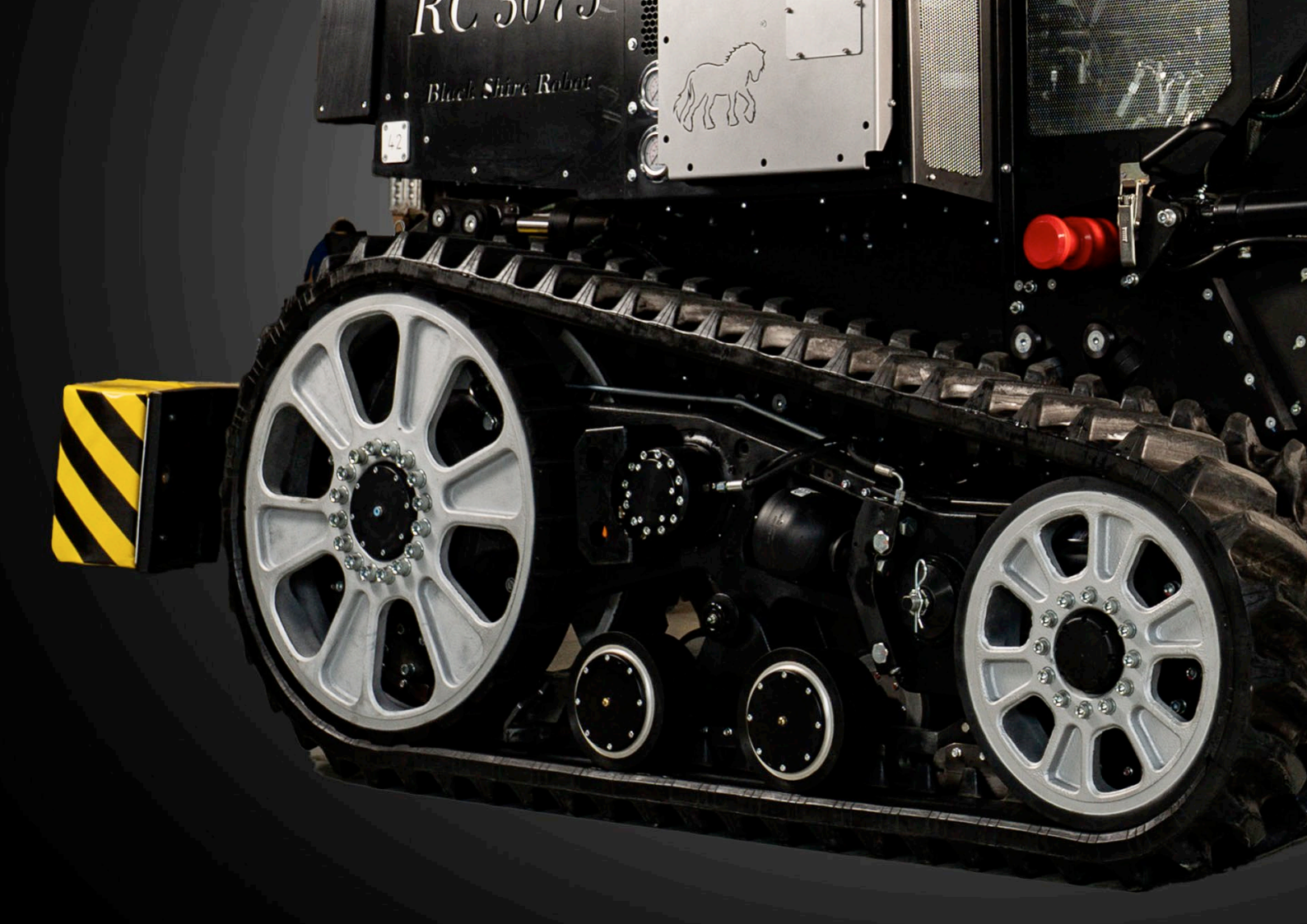
N°2 power and signal electrical outlets and hydraulic connections (high pressure, low pressure, brake release, and return)

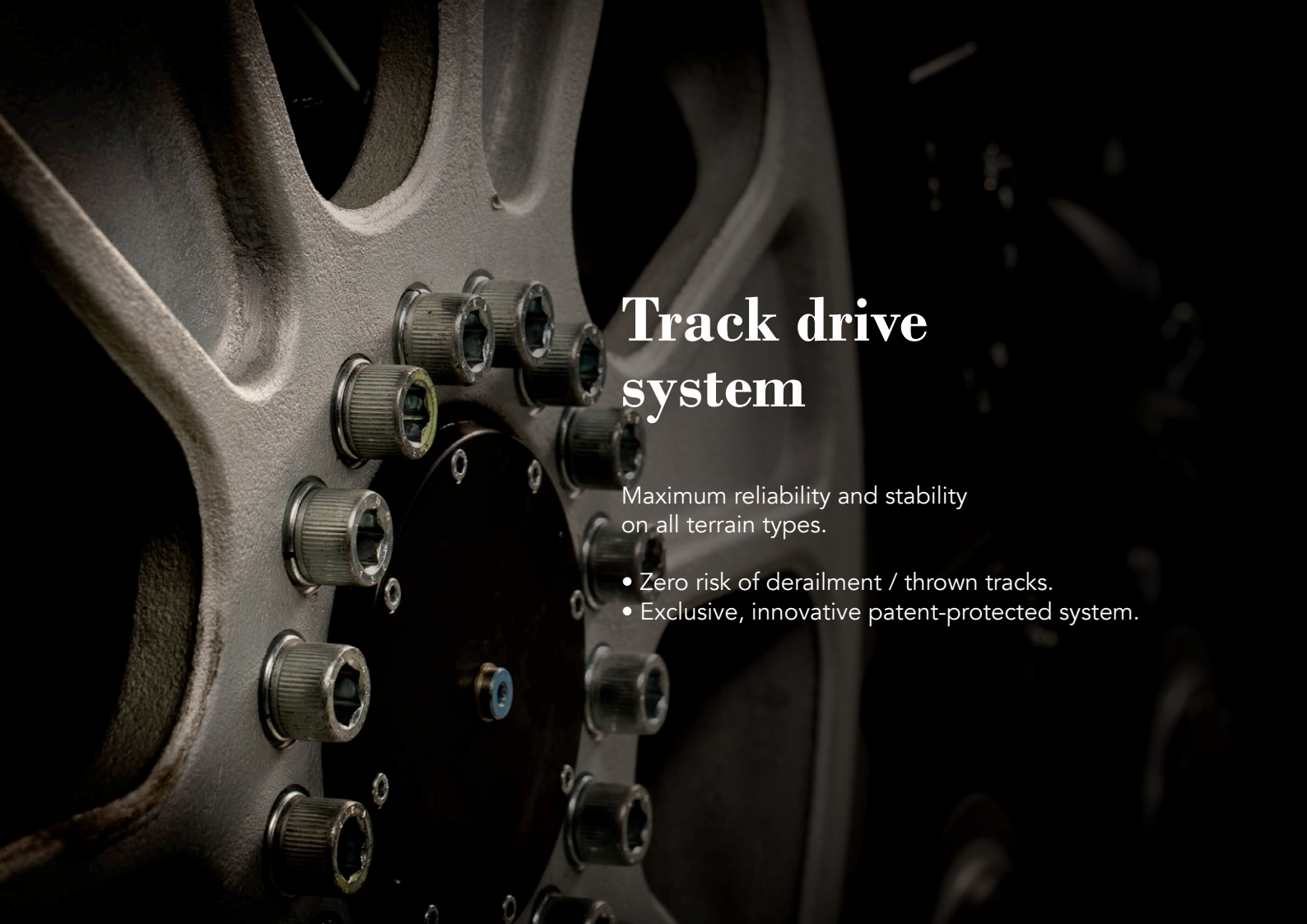
Easily accessible Kubota air filter

75 HP Kubota Stage V engine for efficiency, durability, and economy

CAT 1 Three-point hitch

Certified safety bumper for safe autonomous driving under all conditions


RC 3075
Black Shire Robot



Track drive system

Maximum reliability and stability
on all terrain types.

- Zero risk of derailment / thrown tracks.
- Exclusive, innovative patent-protected system.


RC 3075
Black Shire Robot



Trailer: advanced RC 3075 integration

• When attached to the robot, the trailer operates as a single integrated system fully managed by autonomous driving software.

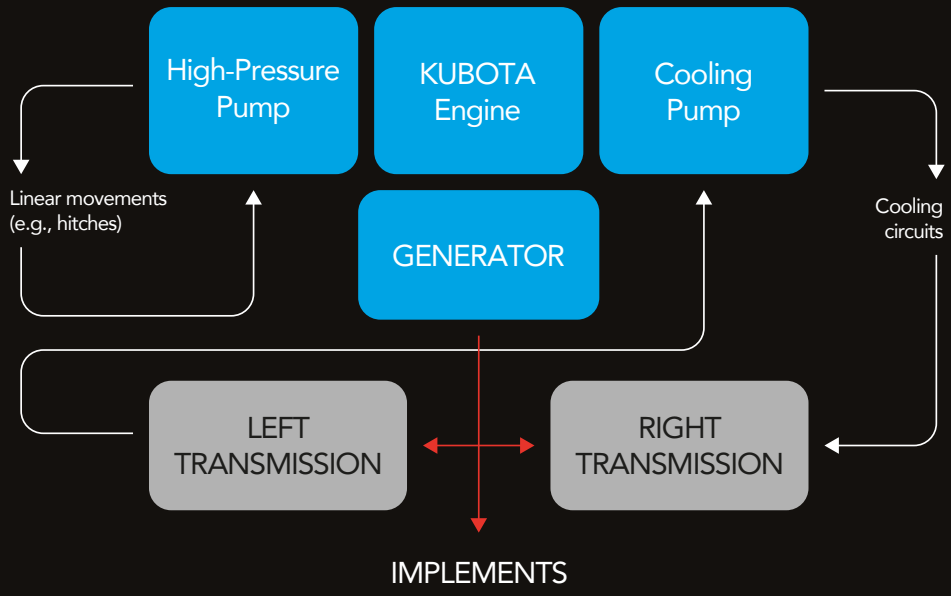
• To ensure reliability and operational efficiency, the trailer is equipped with the same brushless motors used on the robot, providing performance continuity and maximum traction.

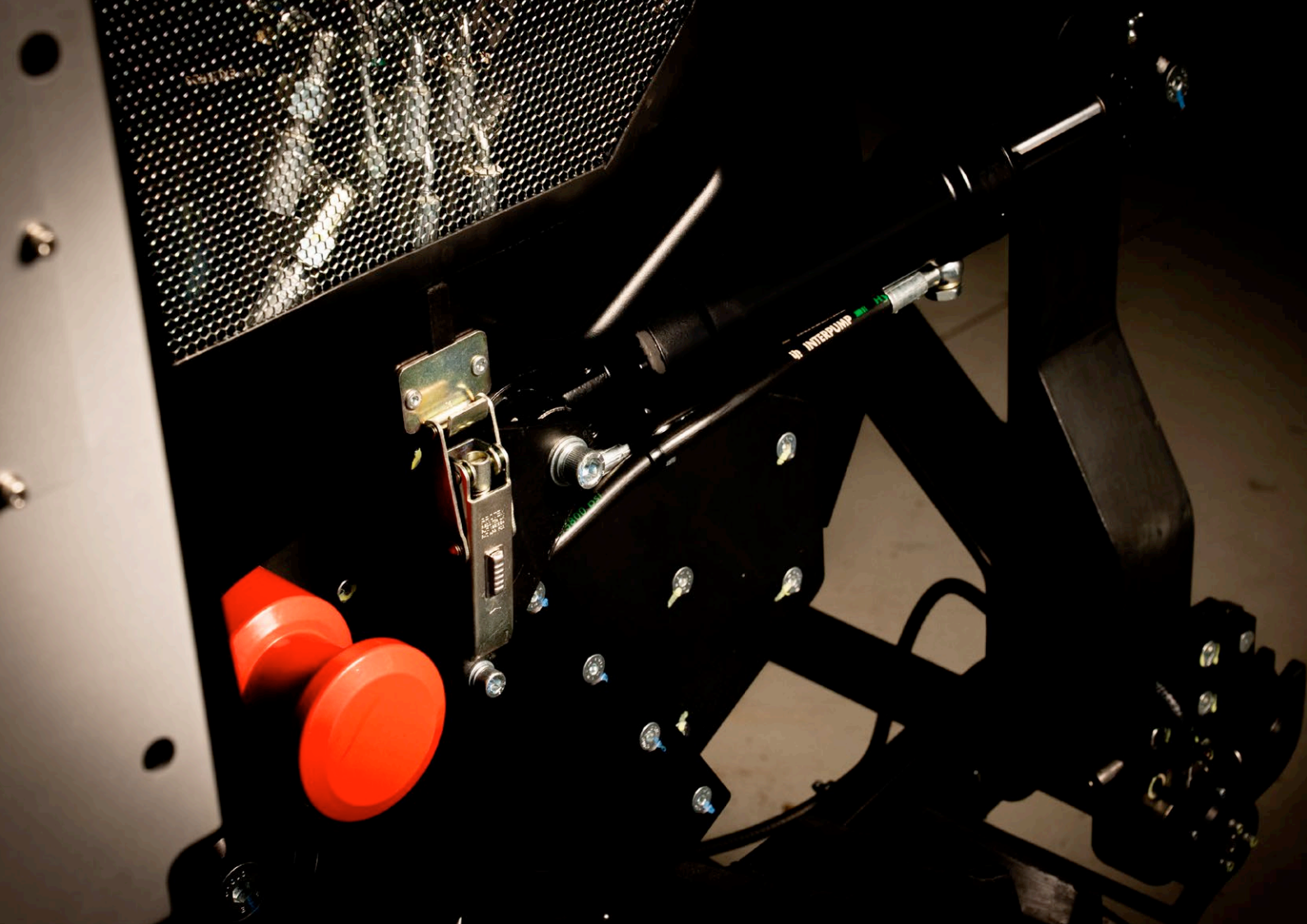
• Barrel capacity up to 3,500 L ensures high operational autonomy, reducing refilling frequency.

• Operates seamlessly on slopes and cross-slopes up to 30°, matching the robot's capabilities.

Internal combustion power, electric soul

The internal combustion engine generates electrical power and high-pressure hydraulic flow. Used as a generator, it powers the motors.




INTERPUMP

Replacing hydrostatic or mechanical drive systems with electric motors delivers numerous advantages:

- Higher energy efficiency.
- Precise control of speed and torque delivery.
- Real-time diagnostics and monitoring.
- Reduced maintenance requirements.
- Higher reliability and operational flexibility.



The diesel engine is mechanically coupled to the generator to eliminate friction losses.

Power is delivered to transmissions and implements as 780V electricity.


RC 3075

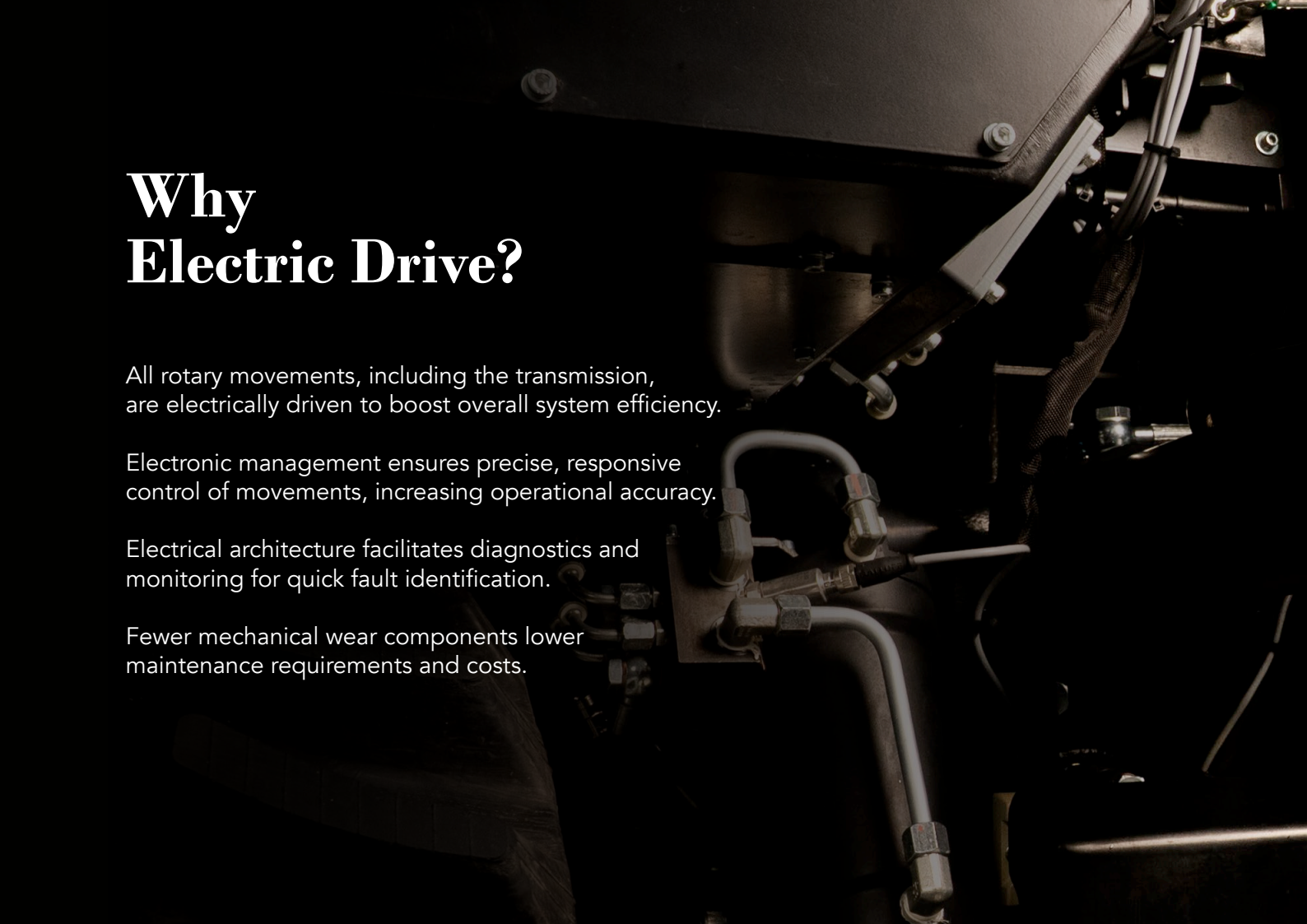
Why Electric Drive?

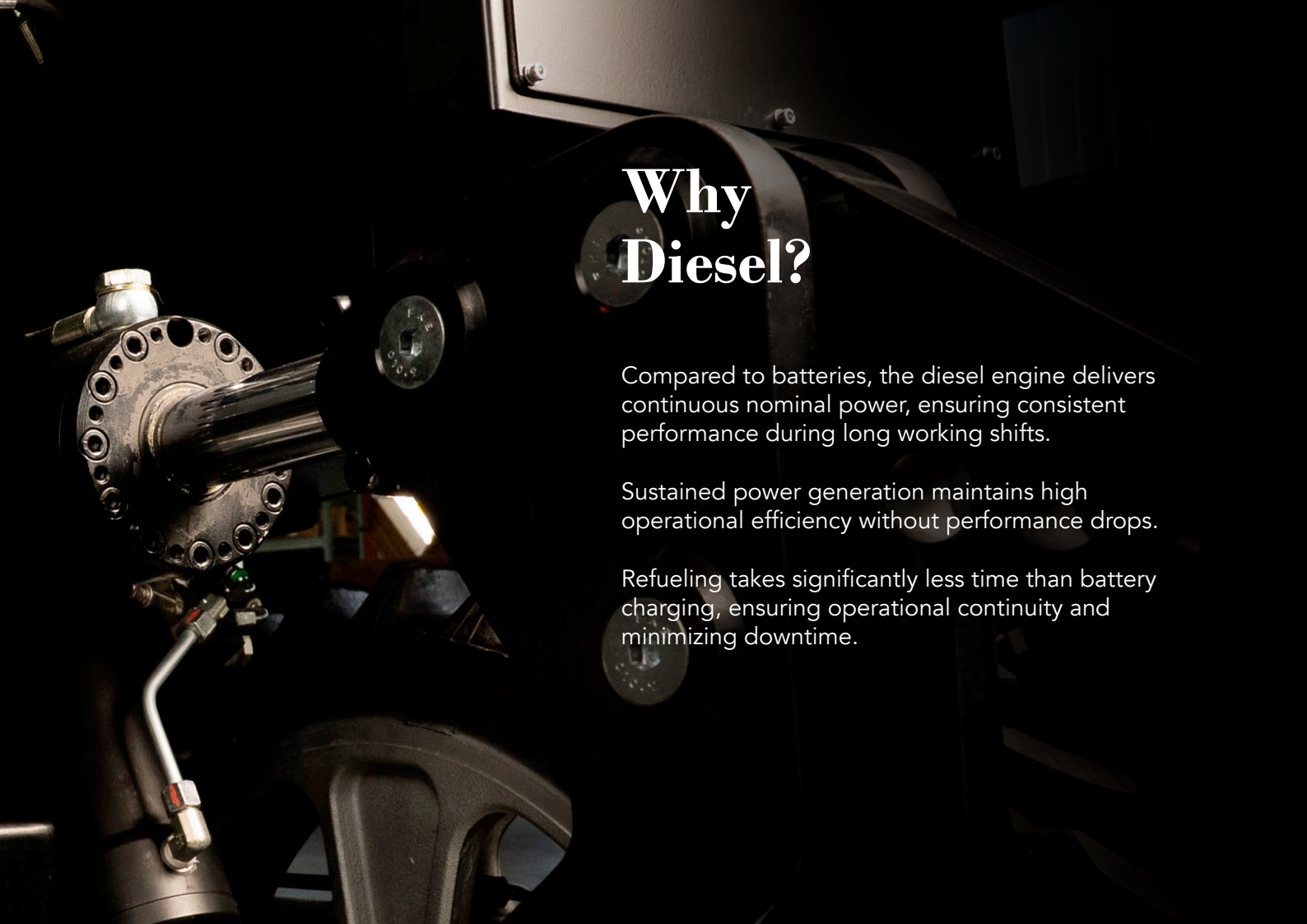
All rotary movements, including the transmission, are electrically driven to boost overall system efficiency.

Electronic management ensures precise, responsive control of movements, increasing operational accuracy.

Electrical architecture facilitates diagnostics and monitoring for quick fault identification.

Fewer mechanical wear components lower maintenance requirements and costs.





Why Diesel?

Compared to batteries, the diesel engine delivers continuous nominal power, ensuring consistent performance during long working shifts.

Sustained power generation maintains high operational efficiency without performance drops.

Refueling takes significantly less time than battery charging, ensuring operational continuity and minimizing downtime.

Torque control

CONTINUOUS AND STABLE OPERATION EVEN UNDER SEVERE CONDITIONS.

KEY FEATURES:

• Real-time power management across the system with automatic load adaptation.

• When resistance increases, the system automatically draws full available engine power.

• If maximum capacity is reached, vehicle and implement speed automatically adjust to prevent overload or stalling.







Autonomous driving

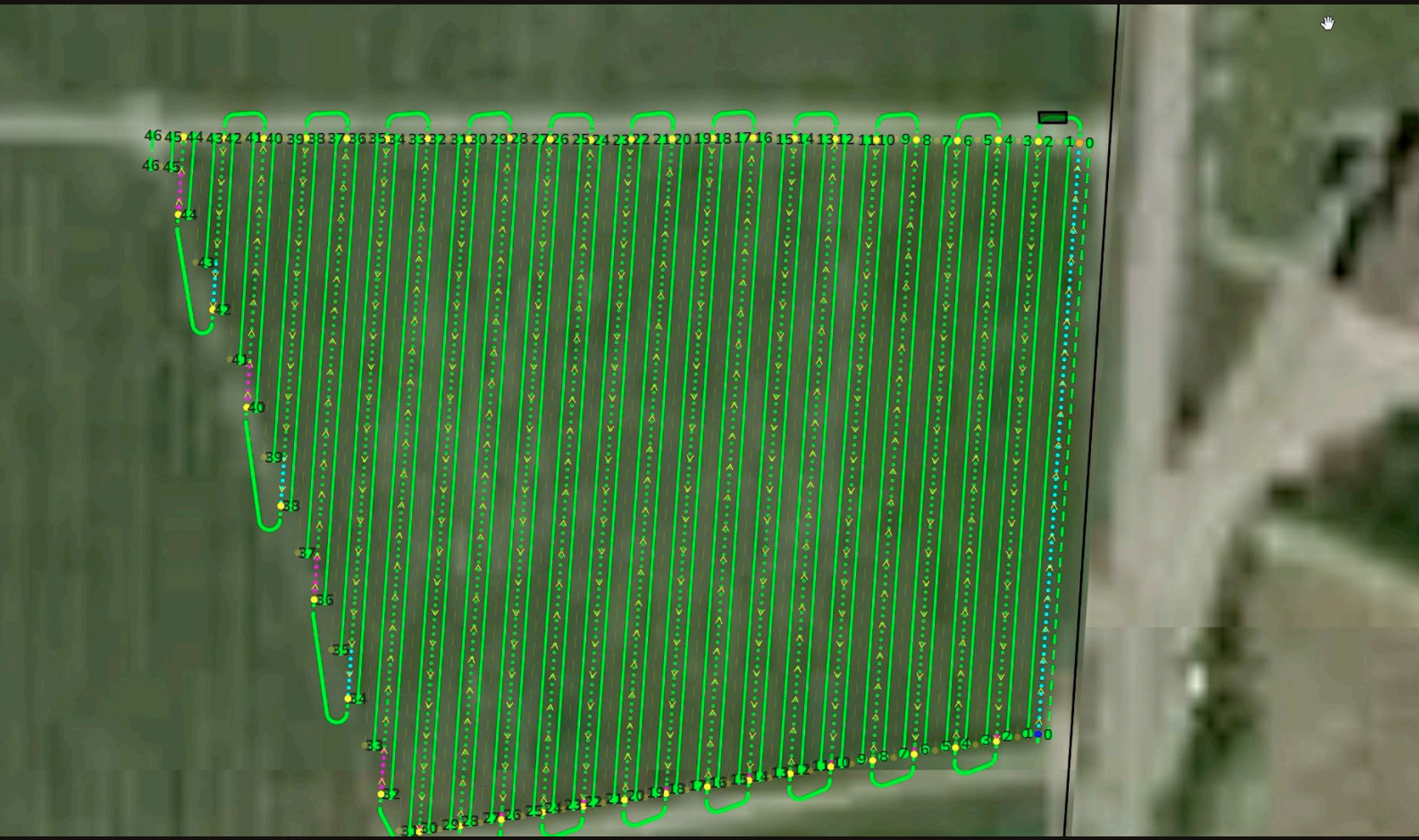
RTK navigation system, Path Generator,
and advanced connectivity.



Navigation system

PROPRIETARY HIGH-PRECISION AUTONOMOUS DRIVING SYSTEM DEVELOPED TO AUTOMATICALLY AND REPEATABLY EXECUTE FIELD OPERATIONS WITHOUT CONTINUOUS OPERATOR SUPERVISION.

Autonomous field management:
- No continuous operator supervision required.
- Automatic execution of operational missions.
- Repeatable trajectories.
- Adaptability to specific operational demands.
- Remote path management and control.
- Remote assistance and diagnostics.
- RTK positioning with millimeter-level accuracy.



Driving precision

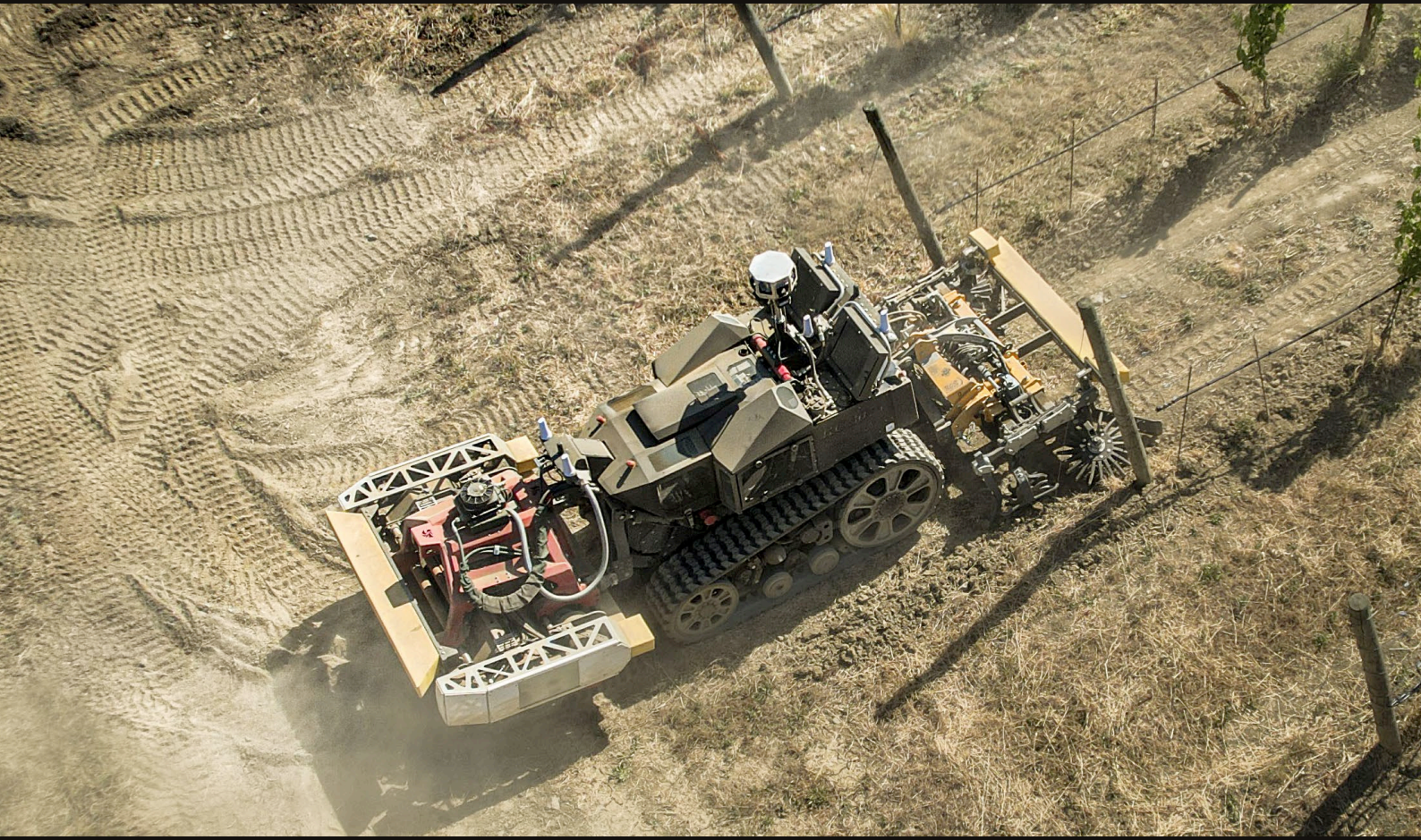
GNSS RTK TECHNOLOGY

Driving precision is guaranteed by technology RTK (Real Time Kinematic), delivering an average positioning accuracy of 7 mm.

This technology allows the robot to:
- Operate with extreme accuracy along rows.
- Maintain planned trajectories.
- Execute repeatable maneuvers.
- Ensure high operational precision.









Intelligent row entry

INTELLIGENT MANEUVER ADAPTATION BASED ON THE ATTACHED IMPLEMENT, ENSURING PRECISION, EFFICIENCY, AND OPERATIONAL EASE DURING ROW ENTRY AND FIELD WORK.





Reverse driving: maximum maneuverability

The RC 3075 robot is designed to execute complex maneuvers in tight spaces thanks to its ability to automatically move forward and reverse without operator intervention.

Connectivity

RC 3075 IS EQUIPPED WITH AN ADVANCED EXTERNAL COMMUNICATION SYSTEM BASED ON MULTIPLE DEDICATED CHANNELS.

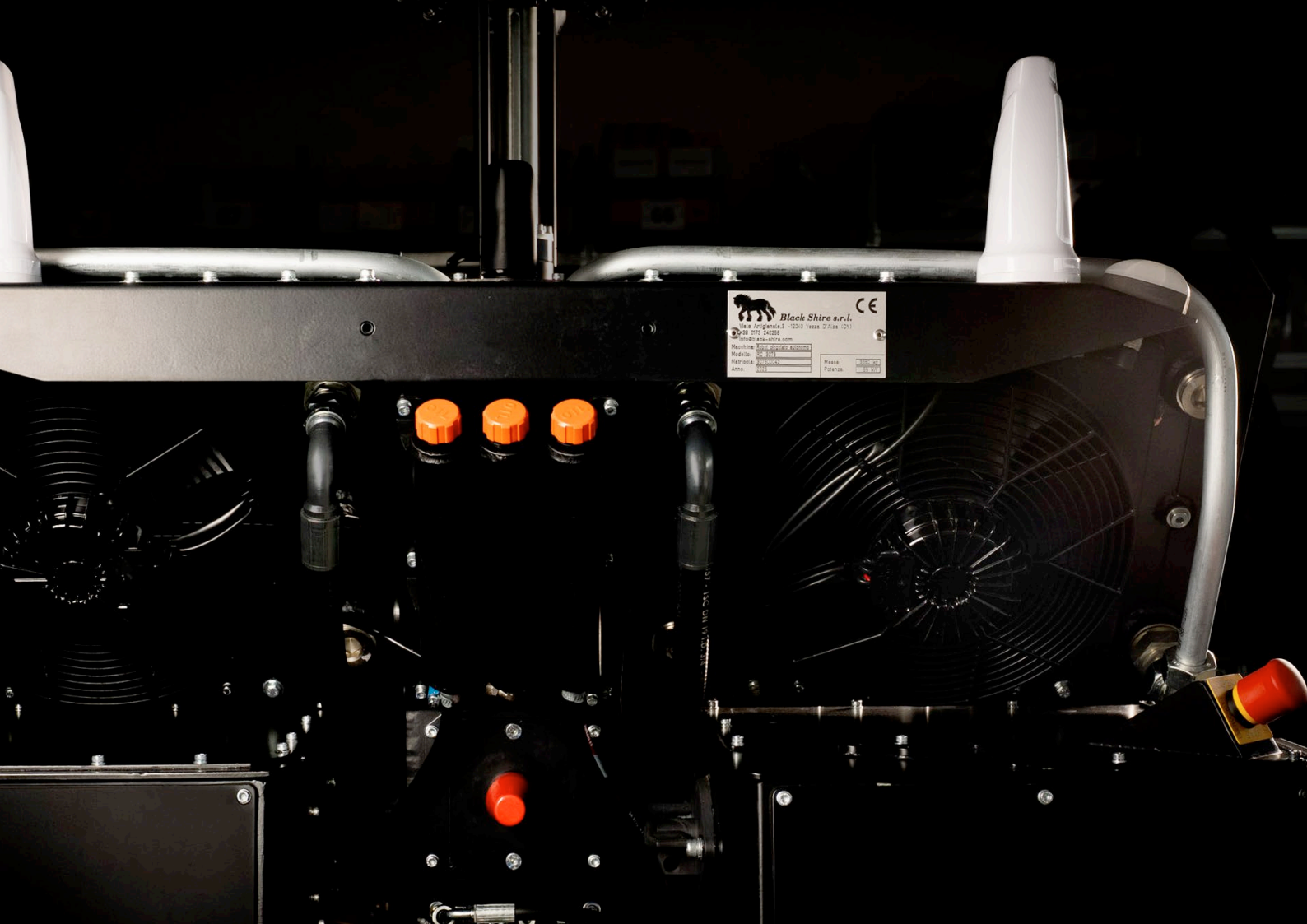
Communication system:

• N°2 GNSS RTK Receivers
Ensure millimeter positioning required for autonomous driving.

• N°2 Wi-Fi Antennas dedicated to remote control pairing and local service support.

• N°2 LTE Antennas for cloud connectivity, app control, route uploading, and remote technical support.



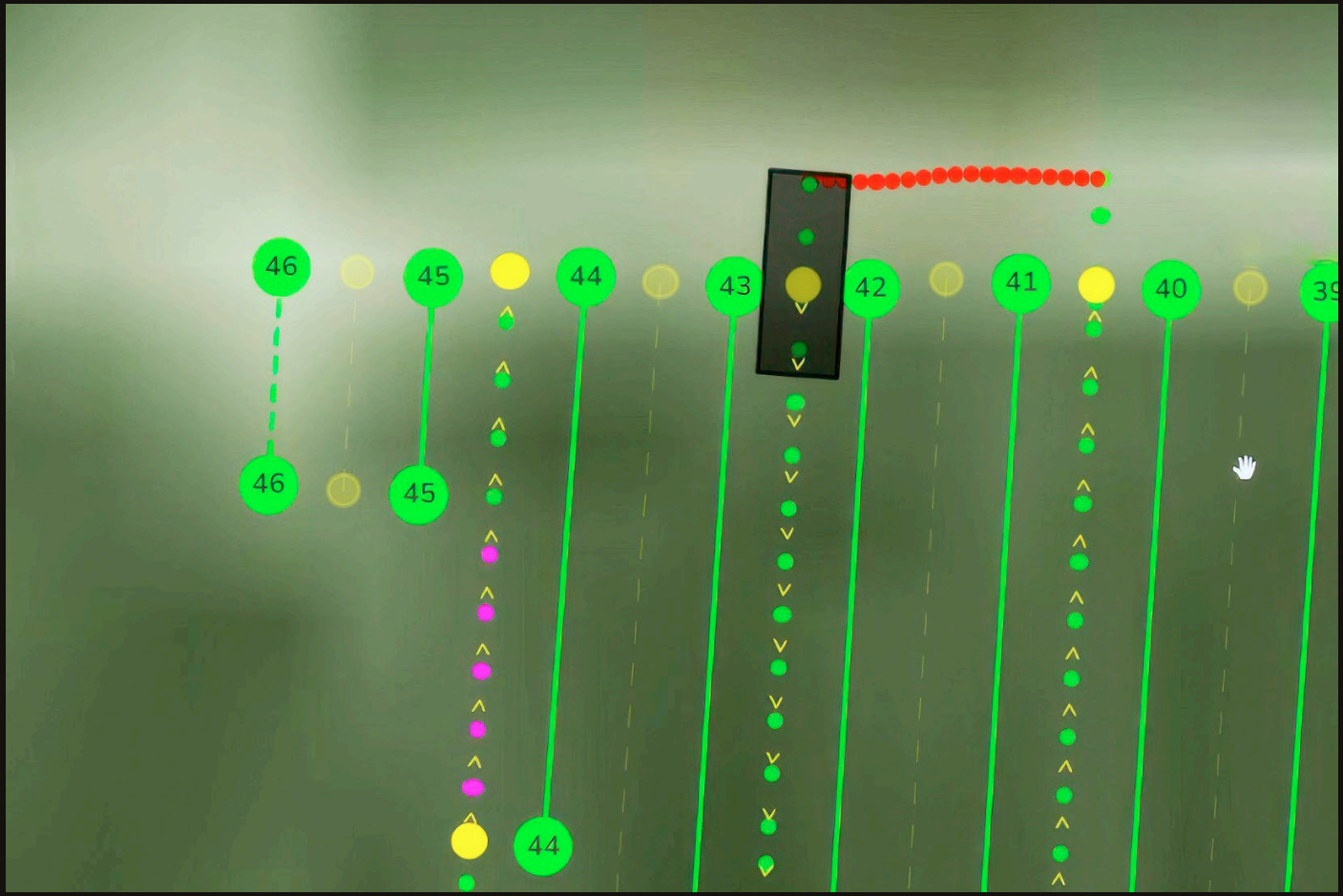

Black Shire s.r.l.
CE

.1 Cloud Path Generator

THE SYSTEM ALLOWS AUTOMATIC OR MANUAL CREATION OF OPERATIONAL PATHS.
CLOUD PATH GENERATOR: THE PATH IS GENERATED VIA THE "PATH GENERATOR" WEB PORTAL.

The system generates the path starting from:
- End-post map (vineyard).
- Tree map (orchard).

Maps can be:
- Provided by the company that installed the system.
- Surveyed using a mapping pole.


46
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.2 Manual field recorder

THE PATH IS RECORDED DIRECTLY IN THE FIELD BY DRIVING THE ROBOT WITH THE REMOTE CONTROL, CAPTURING THE COMPLETED TRAJECTORY IN REAL TIME AND MAKING IT REPEATABLE.

During recording, the system acquires:
• Full trajectory of movement

• Maneuver and inversion points

• Operational sequence of the path
The recorded path is saved and made immediately available for future use.


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Leaflet | © OpenStreetMap contributors
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Path modification

THE SYSTEM ALLOWS MODIFICATION OF PREVIOUSLY CREATED PATHS, ENSURING MAXIMUM OPERATIONAL FLEXIBILITY AND ADAPTATION TO REAL FIELD CONDITIONS.

Modification options:
• Possibility to edit individual sections of the path

• Deletion of existing maneuvers

• Recording of a new replacement maneuver
Path updating: the new maneuver is automatically integrated into the existing path without needing to recreate it from scratch.


Veicolo
Veicolo con rimorchio
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App and remote control

THE SYSTEM ALLOWS COMPLETE ROBOT MANAGEMENT VIA MOBILE APPLICATION AND REMOTE CONNECTION, INTEGRATING OPERATIONAL CONTROL, MONITORING, AND REMOTE SUPPORT.

Smartphone App:
- Machine status monitoring.
- Operational mission management.
- Real-time map display of robot position.

Remote Control:
- Access to primary operating parameters.
- Continuous diagnostics and monitoring.
- Remote technical support via LTE connection.

Auxiliary safety systems

Advanced cameras powered by artificial intelligence algorithms.

- Person detection in the working area.
- Remote visual supervision during operations.







Implements and modularity

RC 3075 IS DESIGNED FOR AGRICULTURAL USE, BUT THANKS TO ITS HIGH MODULARITY, IT CAN ALSO BE USED IN DIFFERENT OPERATIONAL CONTEXTS.

Equipping it with a wide range of implements allows adaptation to multiple operational needs and applications, including:

- Green space maintenance / Mowing
- Phytosanitary treatments
- Defoliation

Dedicated implement

FULLY AUTONOMOUS SYSTEM



RC 3075 + DEDICATED AND INTEGRATED IMPLEMENT

The dedicated implement is specifically designed and built for RC 3075 and includes: sensors and safety systems, electronics and control systems, vehicle-implement integration, risk assessment and compliance verification.

Result: the robot can operate autonomously without operator presence in the field, with the option of remote supervision.



Standard implement

FULLY AUTONOMOUS INTEGRATED SYSTEM

A. RC 3075 + ELECTRIC PTO + MODIFIED AND INTEGRATED STANDARD IMPLEMENT

The standard implement is adapted, electrified, and re-certified. As with the dedicated implement, to enable autonomous operation the following are required: sensors and safety systems, electronics and control systems, vehicle-implement integration, risk assessment and compliance verification.

Result: the robot can operate autonomously without operator presence in the field, with the option of remote supervision.

Standard implement

NON-INTEGRATED AND
NON-AUTONOMOUS SYSTEM

B. RC 3075 + ELECTRIC PTO + NON-INTEGRATED STANDARD IMPLEMENT

In this configuration, the implement is not integrated with RC 3075. The electric Power Take-Off (PTO) provides power, but alone it does not allow coordination of the implement's operation with the robot's systems.

Result: constant operator presence is required to control the vehicle via remote control and continuously supervise its operation.

Regulatory references: Directive 2006/42/EC - Regulation (EU) 2023/1230



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