TTControl
HYDAC INTERNATIONAL

Driving the next generation of mobile machines

Intelligent, Connected, Safe and Secure

ttcontrol.com ↗

hydac.com ↗

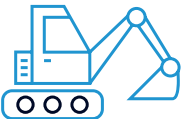# Providing robust solutions for innovative off-highway vehicles

TTControl is a leading company in the field of safety control systems, rugged displays and connectivity as well as IoT solutions for mobile machinery and off-highway vehicles. The joint venture of the HYDAC Group and the TTTech Group is based in Vienna (Austria) and Brixen/Bressanone (Italy) supported by HYDAC sales offices in 52 countries worldwide.

> **Developing highly reliable electronic control systems.**

TTControl provides products that build the technological heart of construction and agricultural machines as well as lifting platforms, cranes, municipal vehicles, and other special mobile equipment. As a leading provider of functional safety products, TTControl's hardware and software platforms enable vehicle manufacturers to develop highly reliable electronic control systems efficiently and economically.
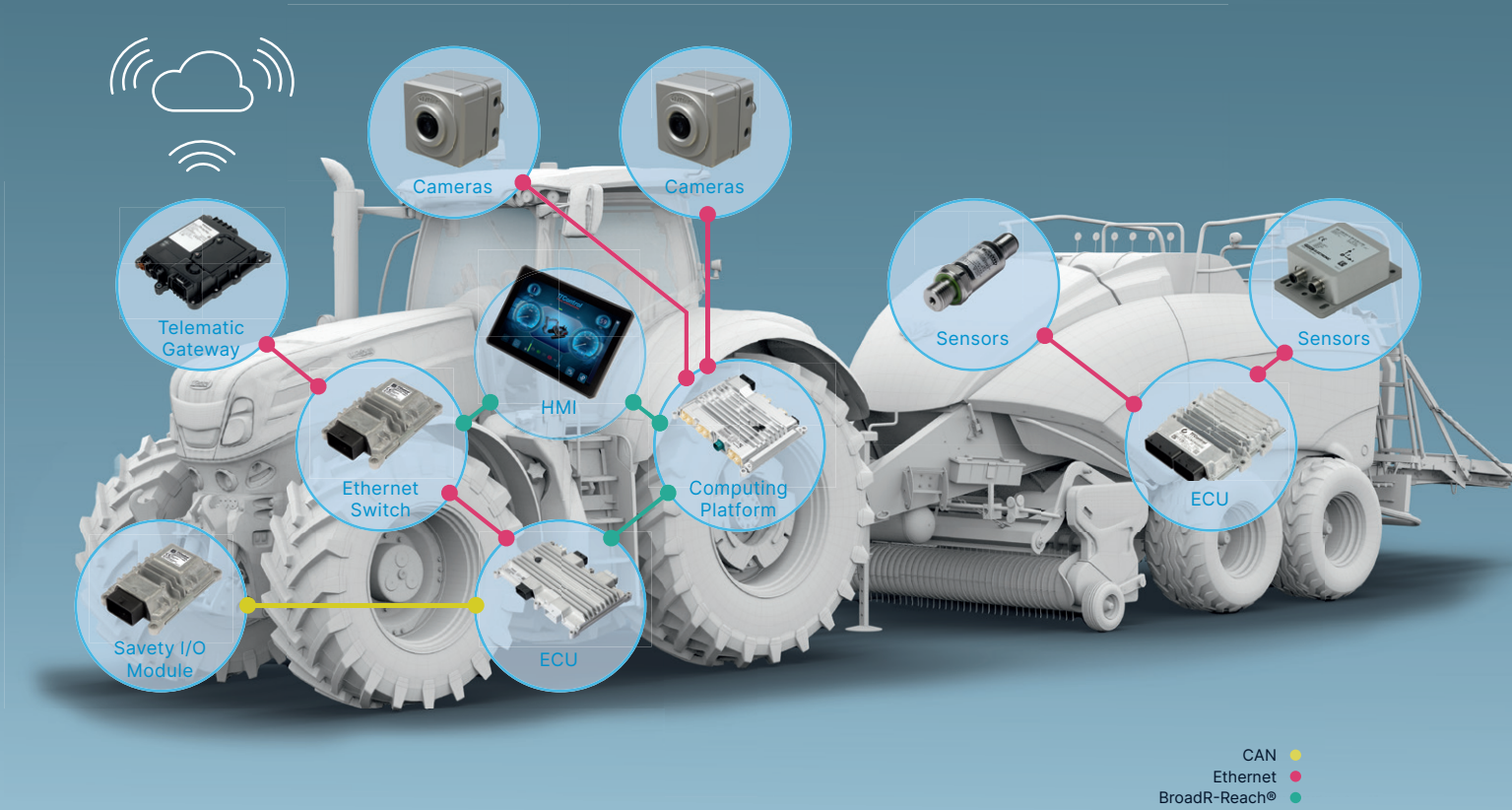
With over 20 years of experience, TTControl accompanies their customers and partners throughout the entire development process, providing extensive know-how about system architectures, functional safety and application software. Their software competence includes developing advanced control algorithms, real-time operating systems, and application software tailored to meet the specific needs of their clients. TTControl's software solutions ensure seamless integration with hardware components, enhancing the overall performance and reliability of the systems. Additionally, TTControl places a strong emphasis on cybersecurity, ensuring that their systems are protected against potential threats and vulnerabilities.

In partnership with lead customers, TTControl is working towards making autonomous operation a reality, leveraging their expertise in both hardware and software to drive innovation in the industry.

Advancing safe technologies, improving human lives

Find out more:
ttcontrol.com

Cameras	Cameras
Telematic Gateway	Sensors
HMI	Sensors
Ethernet Switch	Computing Platform
Savety I/O Module	ECU
	ECU

CAN ●
Ethernet ●
BroadR-Reach® ●

Anticipating the demands of tomorrow

Based on our long-standing industry experience and extensive functional safety know-how, TTControl creates products for the current challenges of our customers while also developing new solutions for future mobile machinery.

Safe, secure and robust hardware components

→ High-performance ECUs
→ Robust, automotive proven hardware components
→ Intuitive HMI gesture function
→ Fast boot-up times
→ Cybersecure by design

High-performance computing platforms for automated and autonomous operations

→ Object and people recognition
→ Top view applications
→ Deepening human-machine collaboration
→ Sensor fusion

Electronic in-vehicle architectures

→ Knowledge transfer from the automotive to the off-highway domain
→ Ethernet as the future in-vehicle architecture technology
→ Higher bandwidths for enormous data flows
→ Standard Ethernet (100-BASE-TX) or

BroadR-Reach® Ethernet interfaces (100BASE-T1) Connectivity and telematics

→ Data collection for analysis purposes
→ Predictive and preventive maintenance
→ Remote diagnostics
→ ECU updates over the air

Multi-screen and multi-interface computing platform

Meet FuisonAI, the revolutionary new product from TTControl that supports the shift from hardware to software-defined machinery. Designed to cover a wide range of application possibilities, Fusion can be utilized as an operating unit, an image processing device, a gateway to the cloud and many more options. Fusion empowers manufacturers to take control like never before.
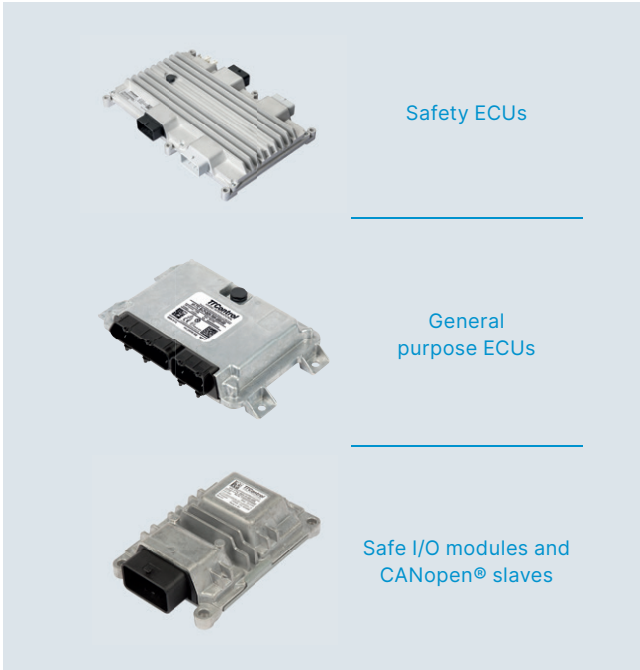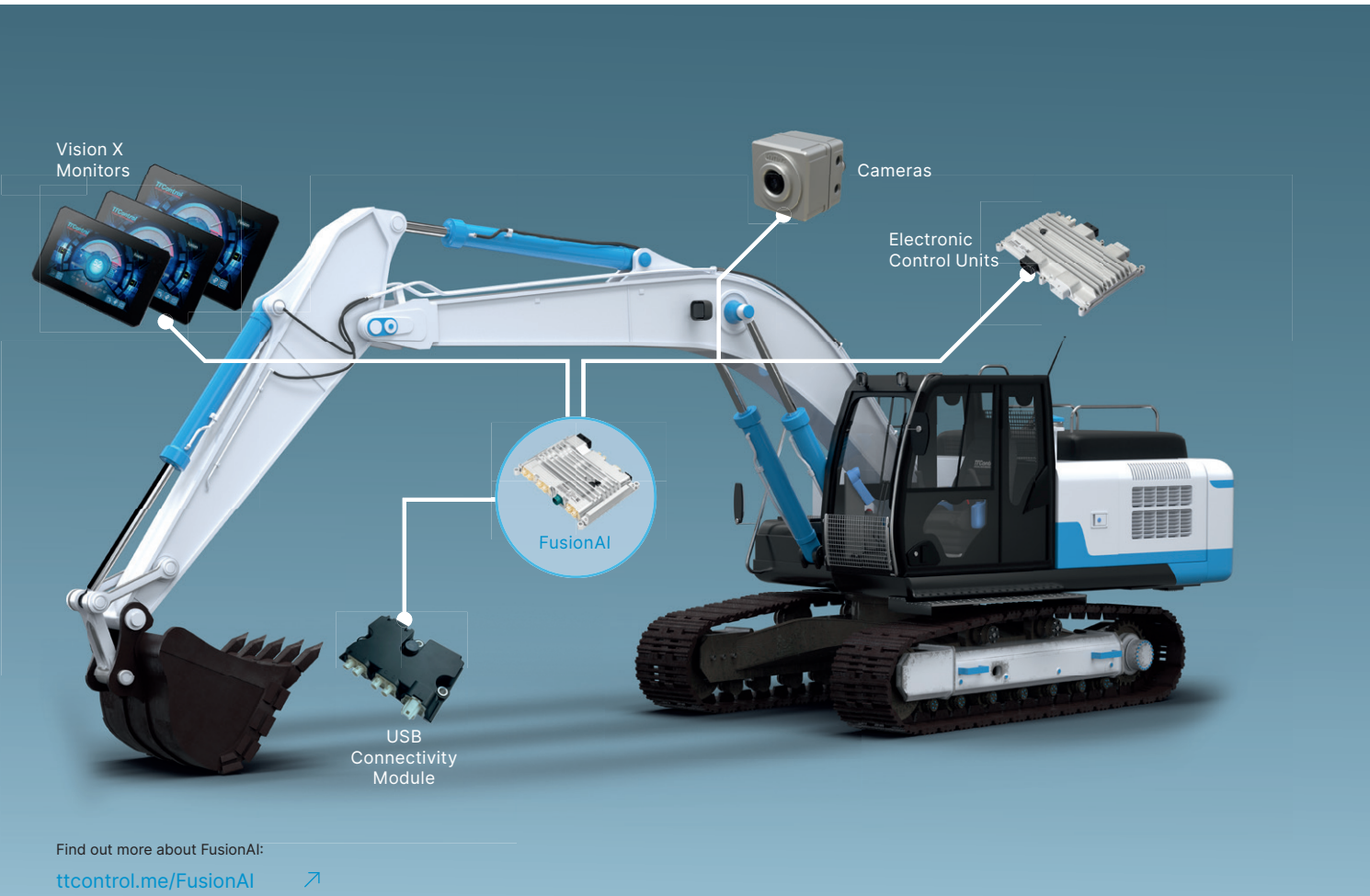
Unlock endless possibilities:

⊙ Multi Displays: Drive up to 4 displays effortlessly, maximizing visibility and productivity on the go

⊙ Safety First: Equipped with safety features for seamless interaction with operators

⊙ AI Acceleration: Unlock the potential of artificial intelligence with optional AI acceleration for processing of camera or sensor data, enabling smarter and more efficient operations

⊙ Versatile Connectivity: Providing multiple CAN and Ethernet interfaces, Fusion seamlessly integrates into your existing setup, offering unparalleled flexibility.

Experience the power of Fusion and elevate your mobile machinery operations to new heights. Don't just keep up with the competition—lead the way with FusionAI by TTControl.

Vision X Monitors

Cameras

Electronic Control Units

FusionAI

USB Connectivity Module

Find out more about FusionAI:

ttcontrol.me/FusionAI ↗

ECUs and I/O modules for demanding work environments

TTControl's off-the-shelf products cover the requirements of a large range of different mobile machinery and were designed to meet their specific needs. Our portfolio includes powerful high-end controllers, as well as cost-efficient small or mid-size ECUs. We offer a range of safety certified controllers as well as high-performance ECUs. Our safety certified I/O modules are protected by a compact, automotive-style housing and our general purpose I/O modules provide a cost-effective solution for different demands. All our devices have been tested under extremely harsh environmental conditions.

Safety ECUs

General purpose ECUs

Safe I/O modules and CANopen® slaves

⊙ EN ISO 13849 (PL d), ISO 19014 (MPL d) and IEC 61508 (SIL2) certifications

⊙ ISO 25119 AgPLd certification

⊙ ISO 26262 ASIL C

⊙ Programming environments C and CODESYS®

⊙ C programming extended with SAFERTOS® Integration

⊙ CANopen and CANopen Safety compliance

⊙ Automotive-style aluminum housing

⊙ ISOBUS standard compliant

⊙ Cybersecure by design

⊙ Multicore real-time operating system

⊙ High-speed communication interfaces

CANopen   CANopen safety easy to use

ISOBUS   TÜV NORD   CODESYS

Learn more about our controller portfolio:

ttcontrol.me/ECUs ↗

MATCH - software platform for mobile automation

The MATCH software platform is designed to streamline the development of mobile automation solutions. It provides a robust and flexible framework that supports various applications, including autonomous operations, fleet management, and predictive maintenance. MATCH enables seamless integration with TTControl's hardware components, ensuring optimal performance and reliability. The platform's intuitive interface and advanced features make it easy for developers to create, test, and deploy automation solutions, reducing time-to-market and enhancing overall efficiency.

ttcontrol.me/match ↗

Rugged operator interfaces

At TTControl, we have been at the forefront of designing and manufacturing Human-Machine Interfaces (HMI) for over 20 years. Our third generation of displays, tailored for the off-highway market, incorporates cutting-edge electronics to ensure exceptional performance and reliability in even the harshest environments.

Why choose our displays?

→ **Exceptional performance and reliability:** Cutting-edge electronics ensure exceptional performance, highest safety and reliability in even the harshest environments.

→ **Smooth integration:** Our displays offer seamless integration and quick development thanks to their mechanical design, making them adaptable to different setups.

→ **Advanced human-machine interfaces:** Facilitates advanced human-machine interfaces and supports demanding machine applications.

→ **Easy programmability:** Quick development through various programming environments such as C programming, CODESYS TargetVisu, and MATCH.

→ **Scalability:** Effortlessly scalable to accommodate your expanding needs

Learn more about our operator interface portfolio:
ttcontrol.me/HMIs ↗

Vision 3 Series

Vision 304
A robust 4" display with excellent price-performance ratio in a compact size

Vision 305
A robust 5" touchscreen display with a built-in controller

Vision 307
A robust 7" display with excellent price-performance ratio in a compact size

Vision 312
With a robust 12" touchscreen display, the largest member of the Vision 3 family

Vision x - Monitor Family

Vision x108
Robust 8" monitor

Vision x110
Robust 10.1" monitor

Vision x112
Robust 12.1" monitor

Application Development Center

TTControl's Application Development Center offers specialized services to help customers develop and optimize their mobile machinery applications. The center provides access to a team of experts with extensive experience in system architectures, functional safety, and application software. Customers can benefit from tailored development support, including software design, coding, testing, and validation. The Application Development Center also offers consulting services to help customers navigate complex regulatory requirements and achieve compliance with industry standards.

ttcontrol.me/adc ↗

Service, support and training

→ Working together with experts in our TTControl Academy seminars

→ TTControl Academy offers training courses ranging from one-day sessions to an entire week, covering functional safety as well as product trainings for our customers.

Find out more about functional safety and our trainings:
ttcontrol.me/trainings ↗

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Driving the next generation
of mobile machinery

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