



Driving the next generation of mobile machines

Intelligent, Connected, Safe and Secure

Providing robust solutions for innovative off-highway vehicles



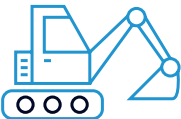
TTControl is a leading company in the field of safety control systems, rugged displays and connectivity as well as IoT solutions for mobile machinery and off-highway vehicles. The joint venture of the HYDAC Group and the TTTech Group is based in Vienna (Austria) and Brixen/Bressanone (Italy) supported by HYDAC sales offices in more than 50 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.

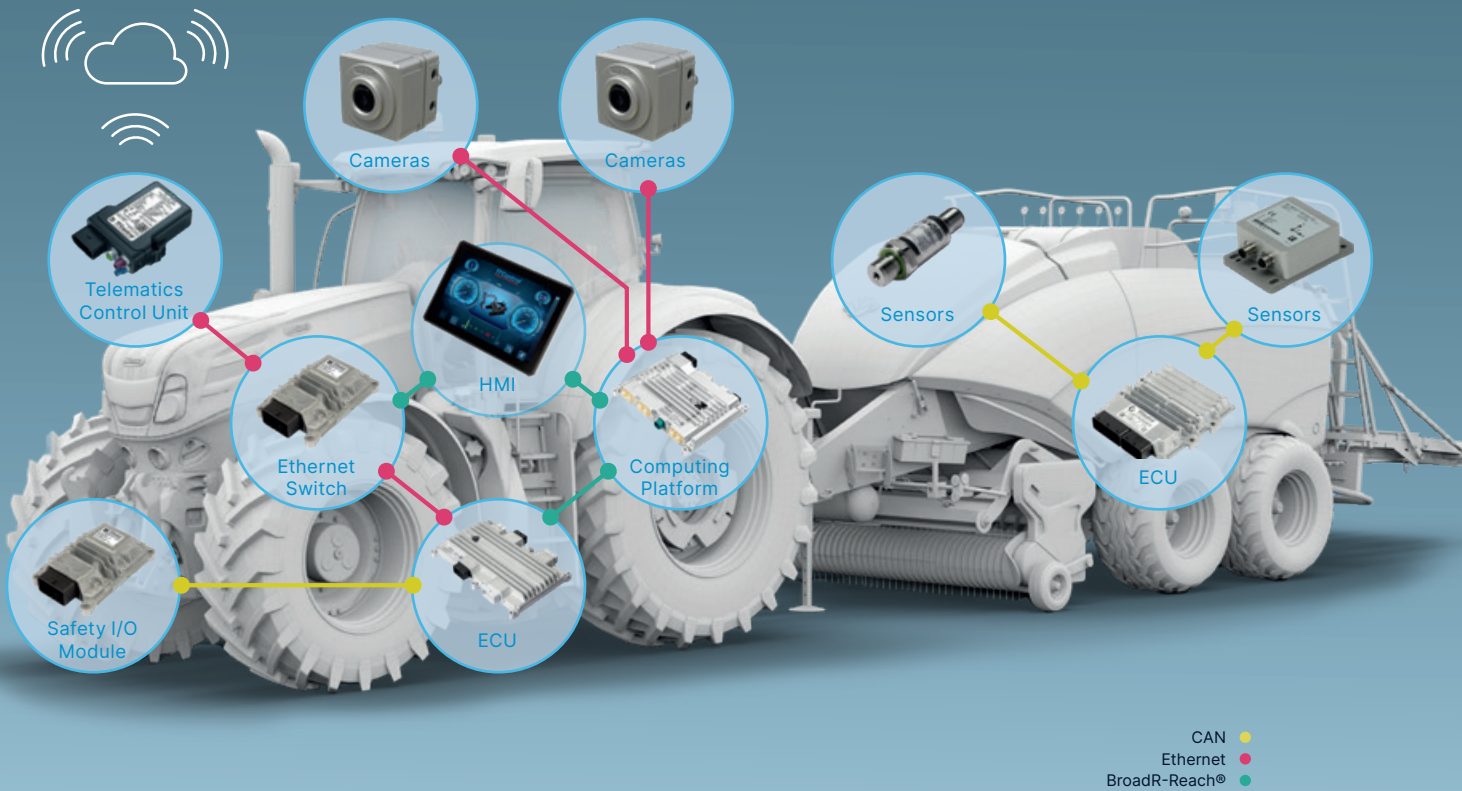
With 25 years of experience, TTControl accompanies their customers and partners throughout the entire development process, providing extensive know-how about system architectures, functional safety and application software. TTControl's software competence includes several software layers that ensure 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



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 solutions

- High-performance computing platforms
- Intuitive human machine interfaces
- Highly configurable safety ECUs
- 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

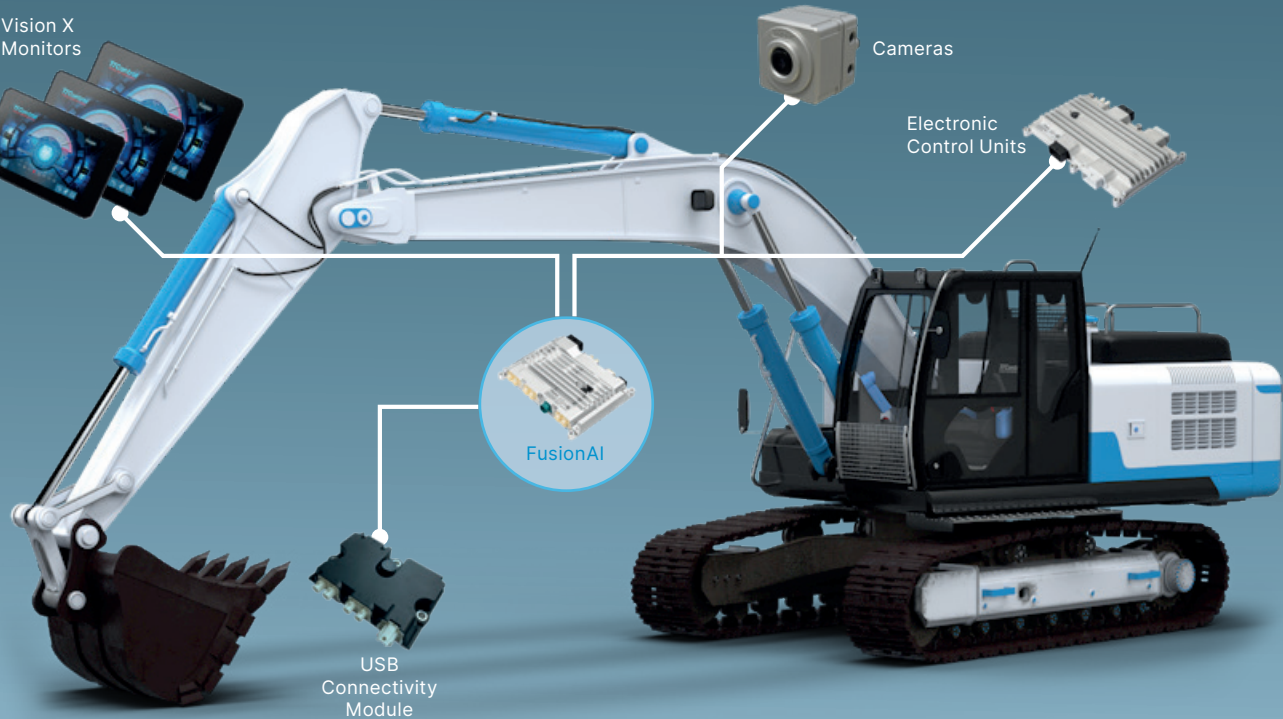
Multi-screen and multi-interface computing platform

Meet FusionAI, 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, Ethernet and GMSL camera 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.

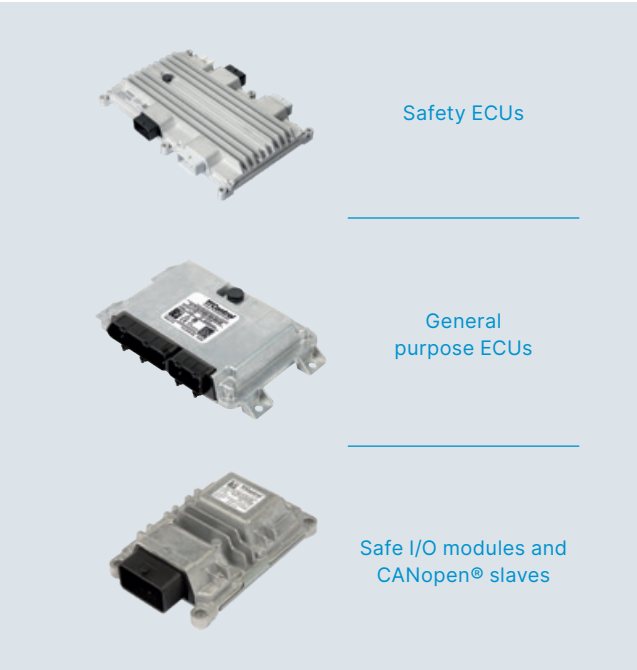


Find out more about FusionAI:
ttcontrol.me/FusionAI



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-certified according to EN ISO 13849 (PL d), ISO 19014 (MPL d), IEC 61508 (SIL2), ISO 25119 AgPLd, ISO 26262 ASIL C
- ➔ Programming environments C and CODESYS®
- ➔ CANopen and CANopen Safety compliance
- ➔ Automotive-style aluminum housing
- ➔ ISOBUS standard compliant
- ➔ Cybersecure by design
- ➔ Multicore real-time operating system
- ➔ High-speed communication interfaces

Learn more about our controller portfolio:
ttcontrol.me/ECUs

CANopen

CANopen
safety easy to use

ISO BUS

TUV NORD

CODESYS



Rugged operator interfaces

At TTControl, we have been at the forefront of designing and manufacturing Human-Machine Interfaces (HMI) for more than two decades. 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" display with excellent price-performance ratio in a compact size



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

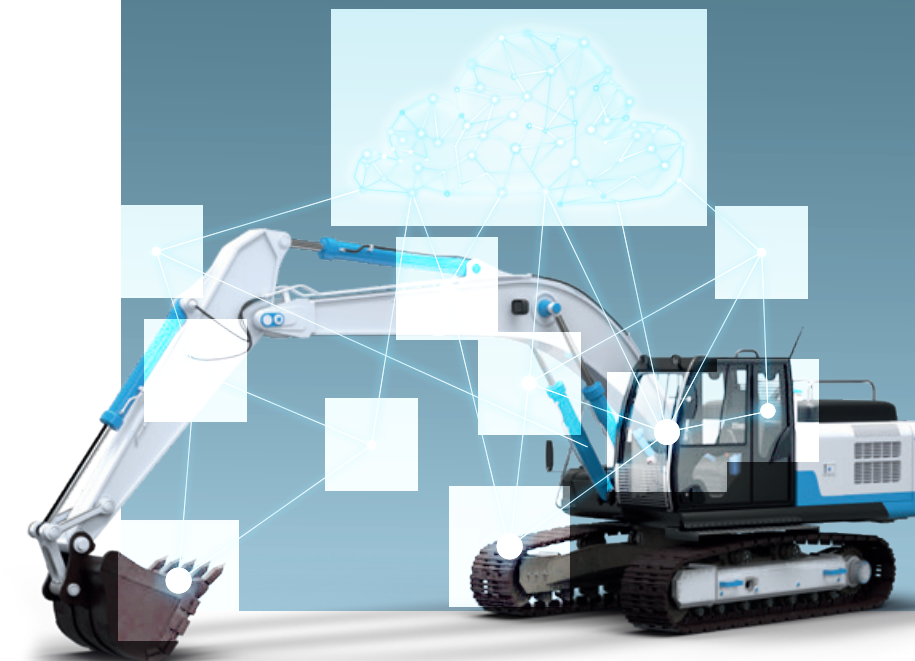
Robust 12.1" monitor



Telematics & connectivity solutions

Connect. Monitor. Optimise.

TTControl's telematics portfolio empowers OEMs and fleet operators to unlock the full potential of connected mobile machinery. Our modular, scalable solutions are built for harsh off-highway environments and designed to support evolving cybersecurity and connectivity standards.



Our core telematics products

TTConnect Pro with Cloud

A turnkey, plug-and-play telematics solution for fast deployment and minimal integration effort. Combines TTControl hardware with a cloud platform for real-time fleet management, secure over-the-air updates, and seamless integration with our MATCH software platform

- ➔ Ideal for: OEMs seeking ready-to-use IoT solutions
- ➔ Key features: Fleet monitoring, diagnostics, productivity boost, OTA updates

TTConnect Cyber Wave

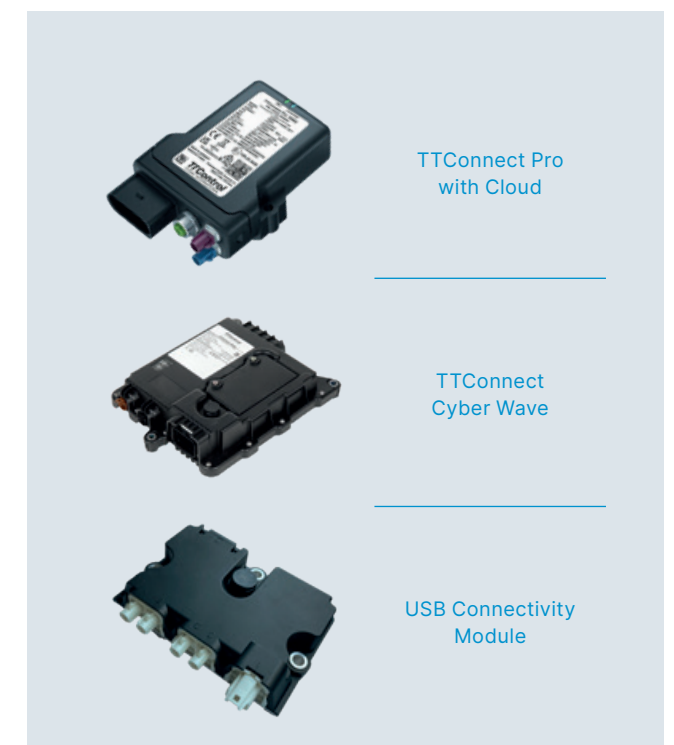
A powerful, programmable telematics gateway for maximum flexibility and control. Supports Docker, REST, MQTT, and custom cloud integrations, perfect for OEMs wanting to develop and deploy their own applications.

- ➔ Ideal for: Full ownership of application software and custom integrations
- ➔ Key features: Edge computing, data preprocessing, custom cloud connectivity

USB Connectivity Module

A compact, robust module that adds wireless connectivity to existing Linux-based systems like FusionAI or Vision 3. Enables IoT features without a dedicated telematics gateway.

- ➔ Ideal for: Vehicles with existing Linux-based devices
- ➔ Key features: Lightweight IoT use cases, seamless integration with TTControl FusionAI



ttcontrol.me/telematics ↗

TTControl Software Ecosystem

Accelerate development. Ensure compliance. Simplify integration.

As software complexity rises and safety and cybersecurity standards become more demanding, TTControl's Software Ecosystem provides everything you need to bring advanced, compliant, and secure machines to market faster. Benefit from mature software modules, intuitive tools, and expert support that simplify complexity and empower your engineering teams to innovate without compromise.

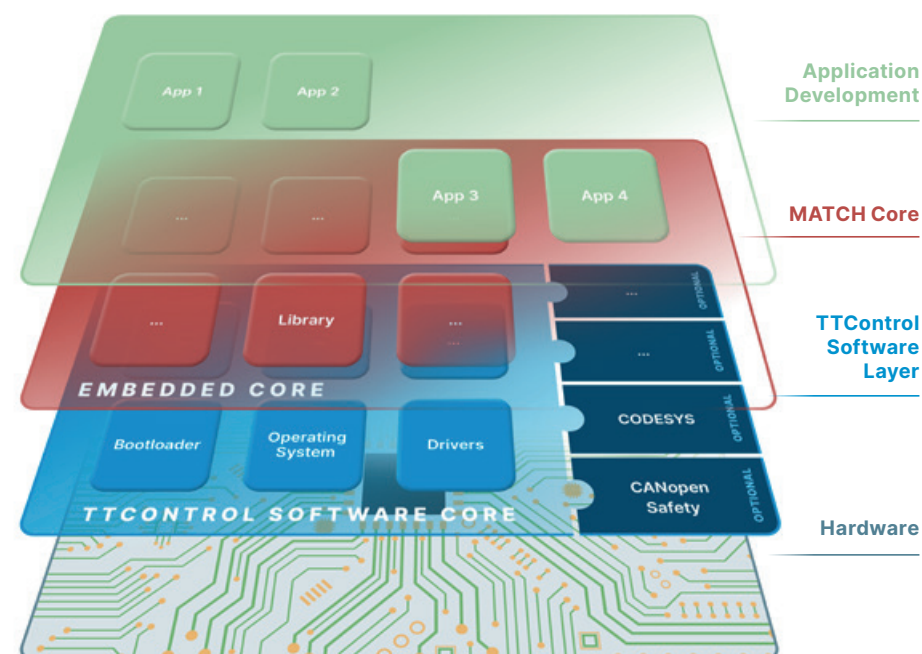
What does the TTControl Software Ecosystem offer?

- ➔ **Comprehensive Suite:** Layered software and services for ECUs, HMIs, and high-performance computing units.
- ➔ **Ready-to-use drivers & OS:** Abstract hardware complexity and accelerate integration.
- ➔ **MATCH middleware:** Advanced development and cross-product compatibility.
- ➔ **Engineering services (ADC):** Lifecycle support from requirements to commissioning and maintenance.
- ➔ **Compliance & security:** TÜV-certified safety functions and built-in cybersecurity, with continuous updates for the latest standards (IEC 61508, ISO 13849, ISO 25119, ISO 19014, ISO 26262).

Your benefits:

- ➔ **Performance & efficiency:** Highest system performance and huge time savings thanks to certified, configurable software components.
- ➔ **Reduced complexity:** One contact for all software needs, lowering development costs and time to market.
- ➔ **Flexibility:** Freedom to choose your preferred development environment—C/C++, CODESYS, MATLAB® Simulink®, MATCH, and more.
- ➔ **Lifecycle support:** Continuous maintenance, updates, and expert documentation.

Explore the TTControl Software Ecosystem and build on a foundation you can trust.



ttcontrol.me/software

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

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



Customer innovation powered by TTControl

PÖTTINGER – Precision in agricultural machinery

TTControl's electronic control units (ECUs) empower PÖTTINGER's agricultural equipment with robust and reliable automation. Designed for harsh field conditions, the ECUs ensure precise control of complex machinery functions, enhancing productivity and operational safety.

WHAT OUR CUSTOMER SAYS:

“High quality standards and the fit of the products are key for the successful collaboration, but the personal aspect is also highly relevant. It is important to have suppliers like TTControl that can offer us perfect, matching solutions to fulfill the needs of our customers and the best fit for our products. We see TTControl as a very innovative company with high quality products.”

STEFAN ACKERMANN,
Director of Product Management at PÖTTINGER



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ttcontrol.me/Poettinger

ROSENBAUER – Safety-critical systems for firefighting

In partnership with Rosenbauer, TTControl delivers advanced safety controls and software development for firefighting vehicles. These systems are engineered to meet the highest standards of reliability and responsiveness, supporting mission-critical operations.

WHAT OUR CUSTOMER SAYS:

“TTControl is a strategic and reliable partner, also acting globally like we do. They have the right products, a full portfolio, the whole chain – hardware, software, and innovation, which allows us to be competitive. I would say that TTControl's products are the heart of our product.”

MARKUS SCHACHNER,
Head of Product Development at Rosenbauer Group



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ttcontrol.me/Rosenbauer

PALFINGER – Intelligent lifting solutions

TTControl supports PALFINGER's lifting equipment with high-performance control systems that enable precise and safe operation. The collaboration centres on modular and scalable electronics that adapt to various lifting scenarios.

WHAT OUR CUSTOMER SAYS:

“TTControl is a reliable, innovative company with many years of experience in the application of control systems for mobile machinery, expertise regarding functional safety, and good collaboration skills. And it has a strong strategic focus on beyond state-of-the-art system solutions for future applications.”

ANDREAS HILLE,
SVP Product Line Management & Engineering at PALFINGER



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PRINOTH – Innovation in snow grooming

Prinoth's snow groomers benefit from TTControl's rugged control units and software platforms, designed for extreme environments. The partnership enables advanced vehicle automation and diagnostics, improving grooming precision and reliability.

WHAT OUR CUSTOMER SAYS:

“The collaboration between TTControl and Prinoth is already lasting 25 years. TTControl's offering in terms of hardware and software competence was pretty unique in our area, and they also got in the experience from the automotive sector for the off-road sector, which is very interesting.”

MARTIN KIRCHMAIR,
Technical Director at Prinoth



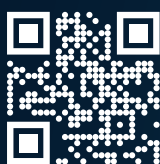
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● TTControl / TTTech Group
● HYDAC International

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of mobile machinery



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