

CONTROL SYSTEMS

- **CONTROL UNITS**
- DISPLAYS
- **CONTROL DEVICES**

SAFETY ENGINEERING

SOFTWARE AND BUS SYSTEMS







AN OVERVIEW OF SAMPLE SOLUTIONS

Our extract of implemented customer solutions will provide you with a brief overview of our range of services in the area of control units:

During the development of control units, Wölfle is able to pursue precise planning and implementation of all of out customer needs. We always apply the best solutions, to design the controls to be as simple as possible. This produces intelligent and reliable control units that are pleasant to the touch.



ASSEMBLY DEVICE FOR ELECTRONICS PRODUCTION



CONTROL UNIT PORTABLE FIRE PUMP

- Integrated control device with CAN-Bus (Automotive CAN/Fire CAN)
- Aluminium housing with operating membrane
- Combination of analogue and digital displays

03

CONTROL UNIT MANUAL BALER



- CAN-Bus with customer-specific protocol
- > Plastic enclosure per IP6K9K
- Membrane keypad with function and background lighting (EL)



CONTROL UNIT FIRE ENGINE

- 1 m large injection-moulded casing in RAL 3000 (fire engine red)
- > Customisation modules and order-related printing of the operating membrane



04

CAN INPUT MODULE WHEEL LOADER

- > Aluminium cover
- > Tactile switch with individual labelling
- CAN-Bus with customer-specific protocol

DISPLAYS CLEARLY LAID-OUT, PRECISE AND UNIVERSAL

AN OVERVIEW OF SAMPLE SOLUTIONS

Our extract of implemented customer solutions will provide you with a brief overview of our range of services in the area of displays:

Displays need to provide vehicle drivers a reliable overview of the functions of their vehicle or the machine at all times. All display types can be designed for requirements arising due to exposure to extreme environmental loads during use. In this way, we provide the ideal results. Regardless of the size and complexity of the task, we offer you a customised overall solution for your application.



TFT DISPLAY WHEEL LOADER

01

- > Windows[®] Embedded CE
- > Integrated 16-bit controller device > Standardised front end with LVDS
- interface
- > Boot loader and diagnostics



03

ANALOGUE DISPLAY WHEEL LOADER

- Analogue rotating instrumentsSimple and proven technology
- > Low-cost



02

LCD DISPLAY WHEEL LOADER

- Customised LCD
- > LED back-lighting with high illuminating power
- > Aluminium cover with completely matte glass

CONTROL DEVICES RELIABLE, ROBUST AND EASY TO INTEGRATE

AN OVERVIEW OF SAMPLE SOLUTIONS

Our extract of implemented customer solutions will provide you with a brief overview of our range of services in the area of control devices:

Control devices are electronic modules and the basis of vehicle electronics. Control devices provide the hardware to control, regulate and monitor vehicle functions and components. Wölfle offers a high-performance product range in this area, and is your point of contact for customised applications.





01

CONTROL UNIT FORKLIFT

- > Die-cast housing
- > 16-bit architecture
- > CAN- and LIN-Bus



03

CONTROL UNIT HYDROGEN TRUCK

- > Modular functional design
- > 32-bit architecture
- > 2x CAN-Bus



02

CONTROL UNIT EXCAVATOR

- Modular extruded aluminium enclosure (shown without enclosure)
- > 32-bit architecture
- > CAN-Bus



04

CONTROL UNIT FIELD SPRAYER

- > Die-cast housing
- > 32-bit architecture
- > 2x CAN-Bus
- > AUTOSAR®

CLEVER. EFFICIENT. CREATIVE

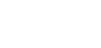
SAFETY ENGINEERING

RELIABLE, SOPHISTICATED AND STANDARD-COMPATIBLE INTEGRATION

The machine manufacture is obligated to complete risk and hazard assessments for their components. This enables potential risks that could occur during operation of the machines to be determined and assigned to a risk level. This classification be used to derive an appropriate Performance Level (PL) in accordance with EN ISO 13849–1 for the controller or its parts. Wölfle is the ideal partner for the development and production of custom solutions that are also suitable for retrofitting.

AN OVERVIEW OF SAMPLE SOLUTIONS

Our extract of implemented customer solutions will provide you with a brief overview of our range of services in the area of safety engineering:



SAFETY MONITORING ROAD PAVER

01

- > Optional module for retrofitting
- > Independent of the existing controls
- > PL d of EN ISO 13849-1





02

QUICK COUPLER CONTROL UNIT EXCAVATOR

- > With integrated safety control device
- > Stand-alone device
- > PL d of EN ISO 13849-1

SOFTWARE AND BUS SYSTEMS SAFE, INTELLIGENT AND NETWORKED

Software expertise is becoming the central discipline for functional scope, convenience, safety and innovation in vehicles. In order to support efficient and safe development processes, high-level software development in particular is model-based on MATLAB®/Simulink® and uses standard operating systems such as Autosar® or Codesys®. With over 25 years of in-house software development experience, we have accumulated extensive specialist and industry expertise and we have developed this area into a core competence.

The challenge of future E/E architectures lies in also mastering the increasingly powerful data streams. Data is generated by sensors, exchanged between control devices and must be delivered to actuators. Different bus systems exist for the different requirements of data transmission – such as transmission speed, availability, prioritisation, etc. With our development environments and various tools, we can also actively assist with commissioning on the vehicle and with fault analyses.

OVERVIEW OF THE USE OF MODERN SOFTWARE TOOLS AND PROTOCOLS



TOOLS

- > Codeworrier
- > Keil
- > Multisim
- > MATLAB/Simulink
- > INCA
- > ISOLAR
- > CANoe
- > CANalyser
- > E3.Series Formboard & Cable





OPERATING SYSTEMS

- > AUTOSAR® 4.3
- > OSEK-NM
- > Windows Compact CE
- > Wölfle OWN



LANGUAGES

- > C, C++, C#, Assembler, Java
- > STEP7, Codesys, Logo



PROTOCOLS

- UDS, XCP, FireCan, CANopen, J1939, ISOBUS
- Customer protocols: Liebherr, Wirtgen, Ford, Ziegler, Linde, and more besides

CLEVER. EFFICIENT. CREATIVE

THERMAL SYSTEMS / CONTROL SYSTEMS / E/E SYSTEMS / SPECIAL CABS



T +49(0)7352/929-0 **F** +49(0)7352/929-139 www.woelfle-gmbh.de vertrieb@woelfle-gmbh.de

