

FFT *igv* **AGILITY**

„Advancing AGVs to an *intelligent* level“

one step ahead in **INTELLIGENT** production systems



FFT *igv* AGILITY

Your intelligent transport solution

1

Overview

Key Facts and Dimensions

2

Technology

Vehicle Control, Fleet Control, Drive Control, Operation

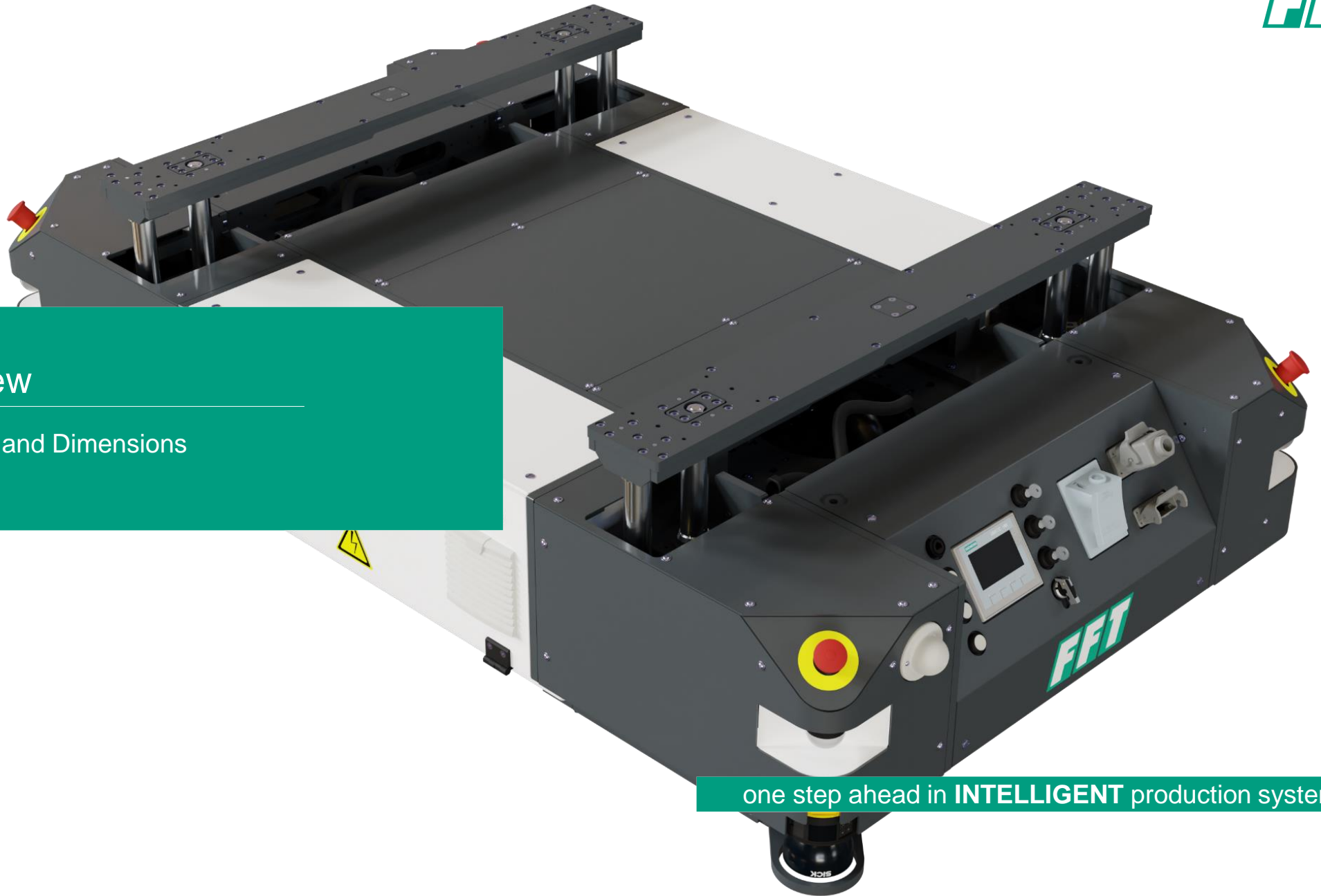
3

Modules

Navigation, Power Supply and Charging Concept, Various Options

1. Overview

Key Facts and Dimensions



one step ahead in INTELLIGENT production systems

FFT *igv* AGILITY

Overview

Integrated lifting function

Omnidirectional movement

Payload 1.5 or 3 tons

Length: 2000mm

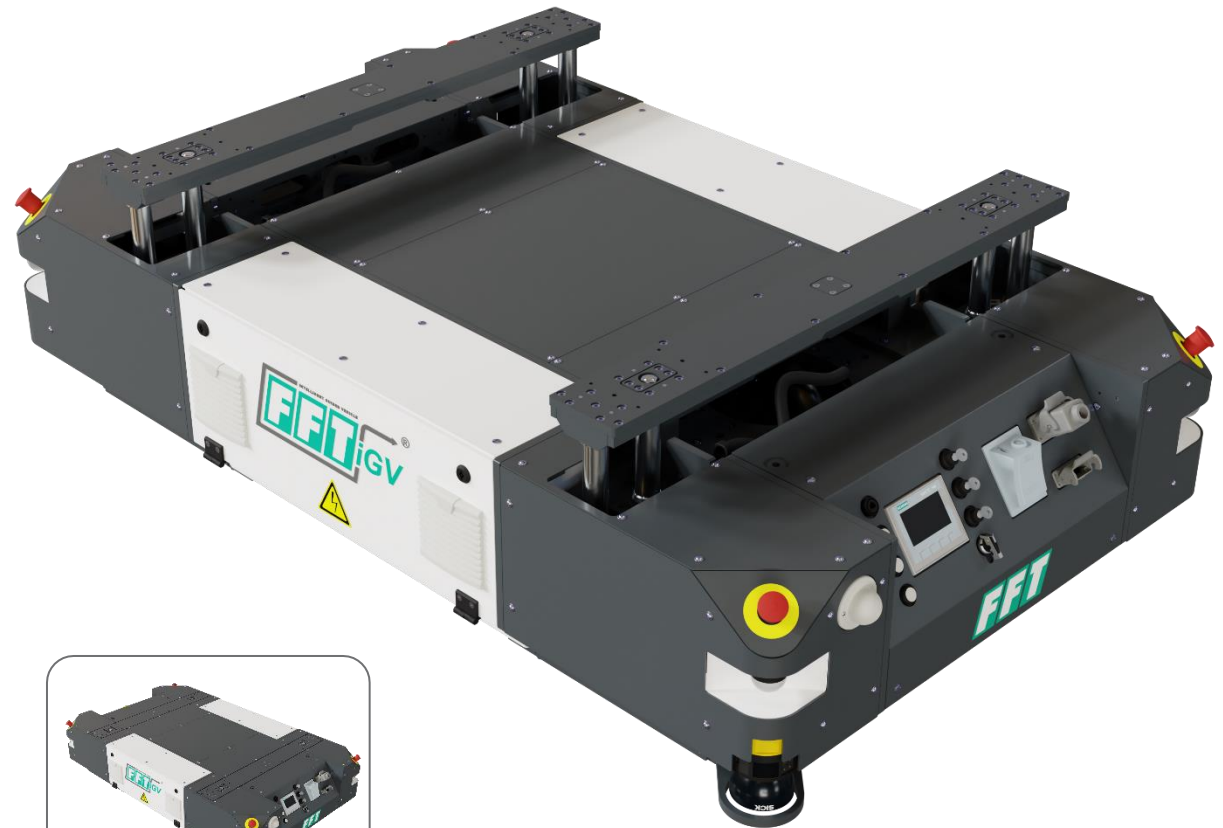
Width: 1200mm

Height: 450mm (lifting 150mm)

Weight: 1.500 / 2.000kg

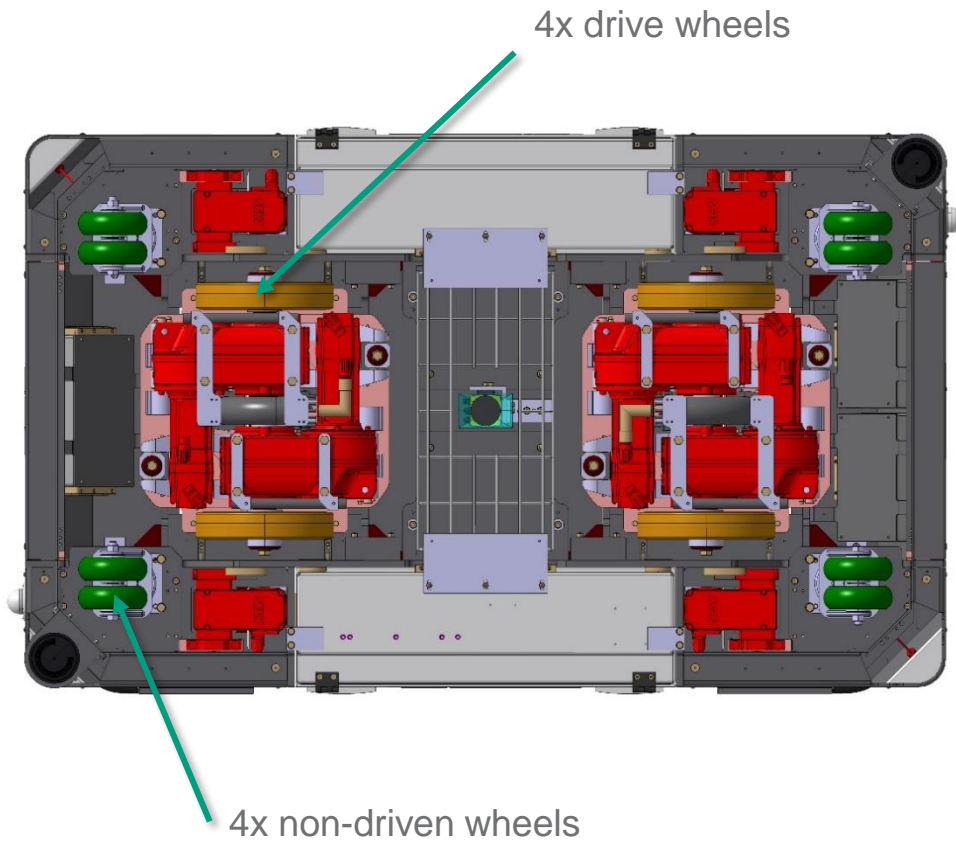
Optional: Safe 3D camera

*Optional:
Robot, Roller Conveyor*



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Dimensions



2. Technology

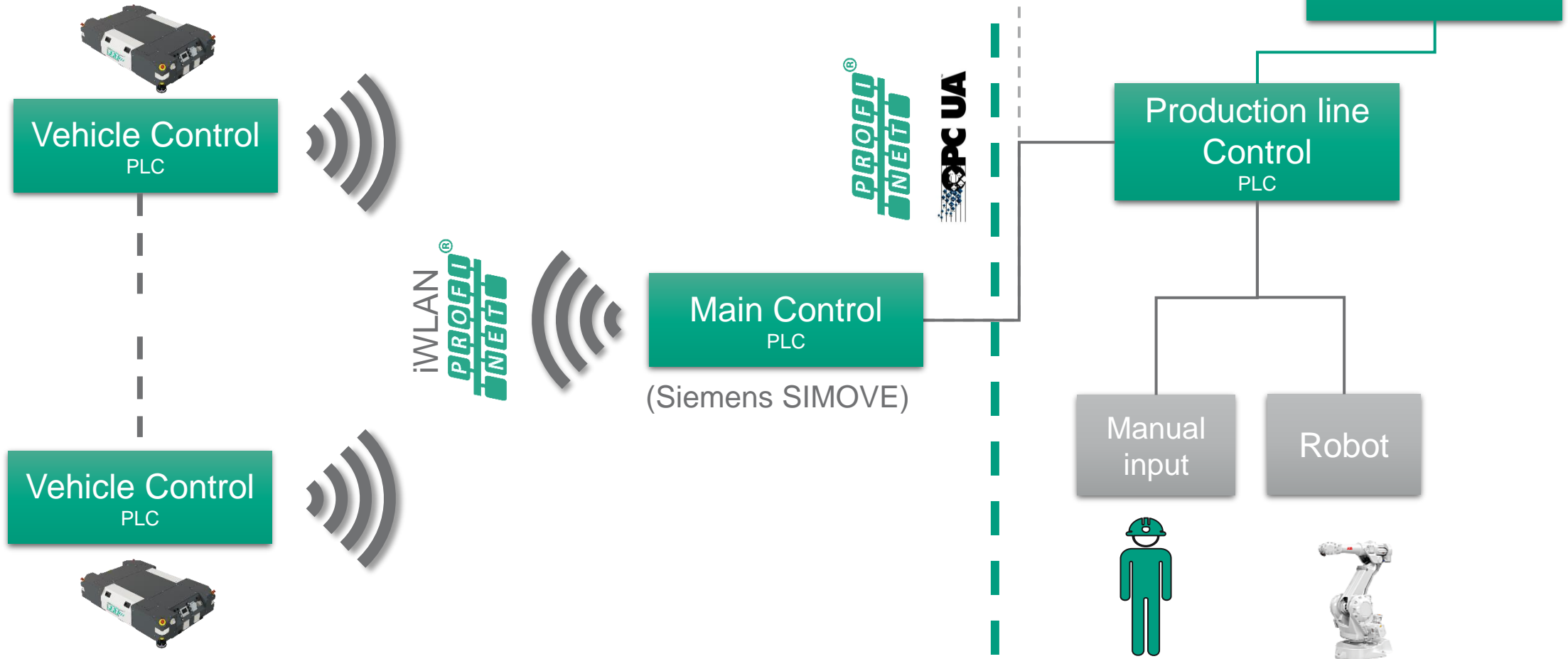
Vehicle Control, Fleet Control, Drive Control,
Operation



one step ahead in **INTELLIGENT** production systems

Technology

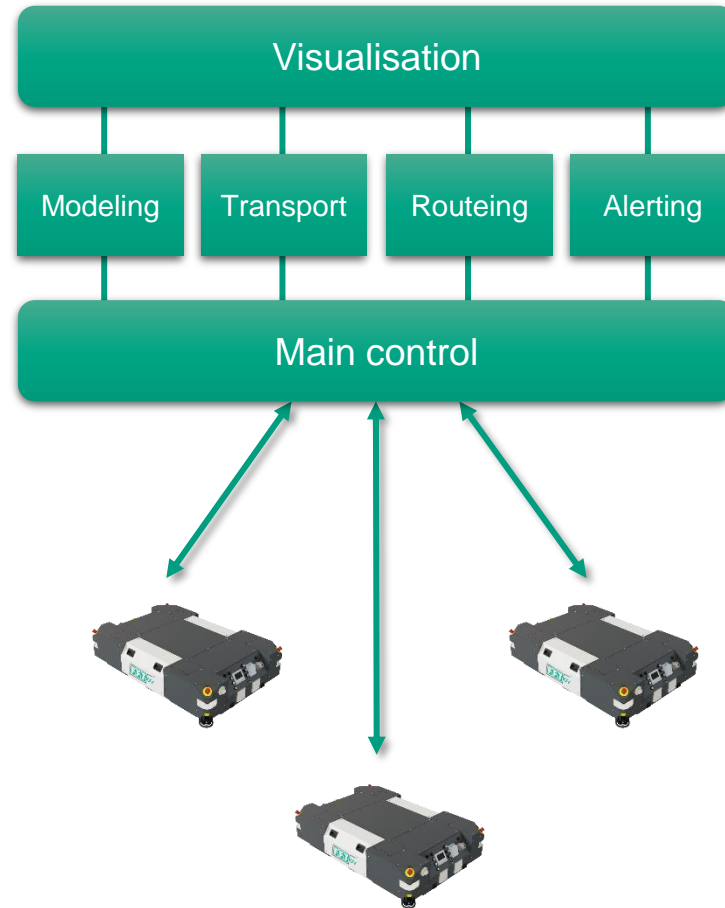
General



Technology

Fleet control – Siemens SIMOVE Main Control

- Control of AGV applications via PLC with automation standards and integrated safety functions
- Visualization via WinCC Scada and operator panels
- Interface via PROFINET
- For safety communication use of iWLAN with iPCF configuration
- Available capacity for additional modules and superstructures



- Adaptation to customer automation standards
- Identification points
- Block areas
- Functional groups
- Safety areas



Technology

Software Overview

Master Control

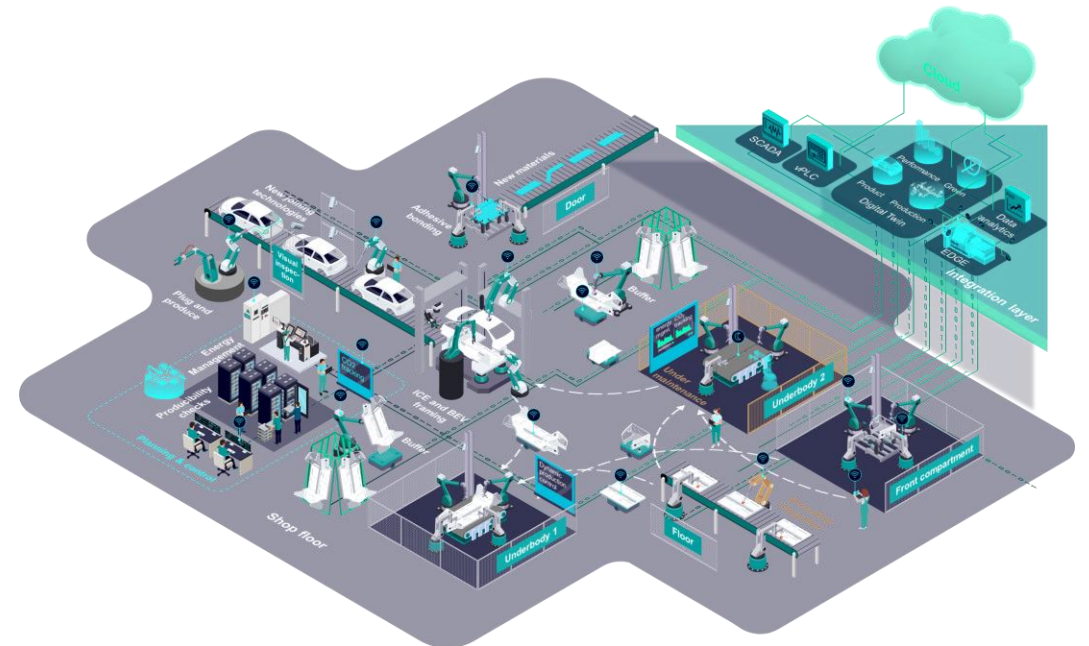
- ◆ Siemens „Simove Master Control“ – PLC based (adapted)
- ◆ Siemens „Fleet management“ – Server based
- ◆ VDA 5050 certified

Carrier Control

- ◆ Siemens „Simove Carrier Control“ (adapted)
- ◆ VDA 5050 certified

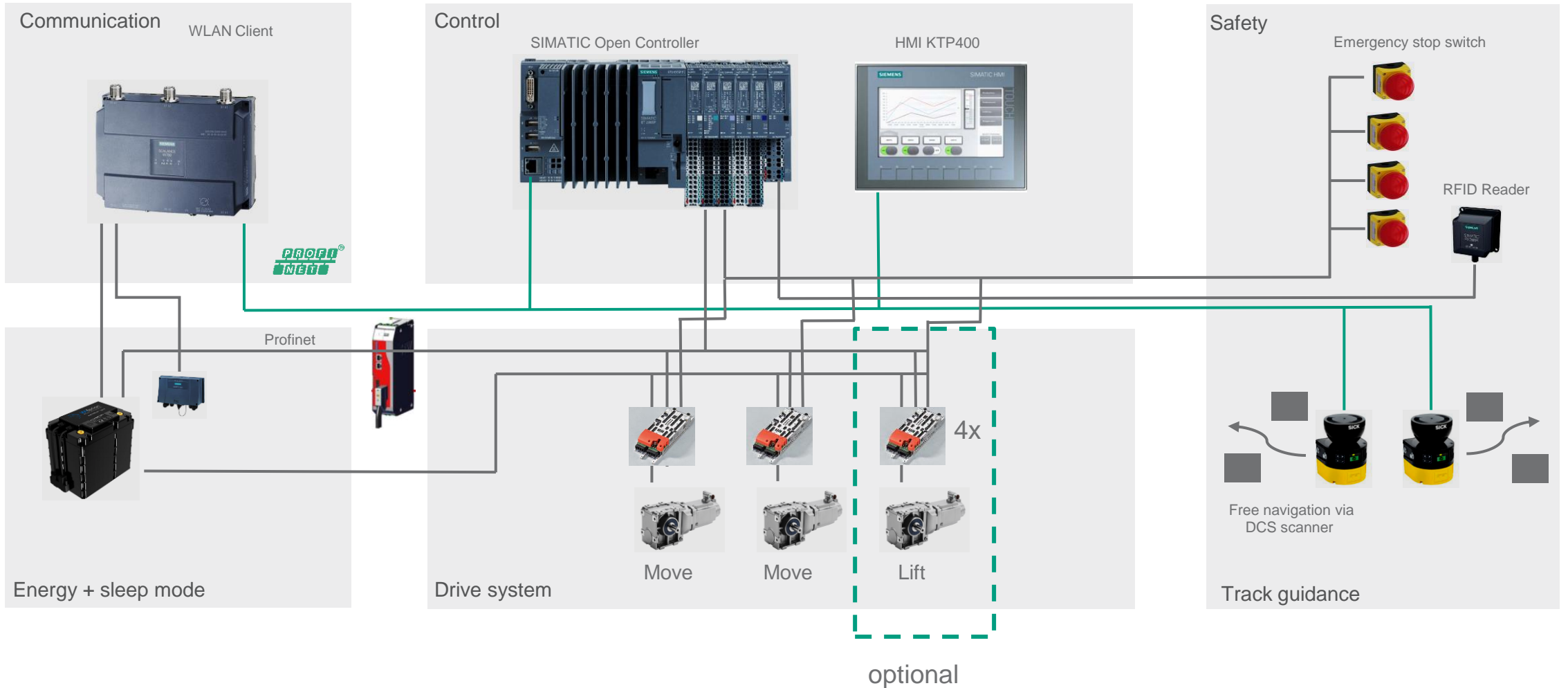
Navigation (SLAM)

- ◆ Siemens „ANS+“



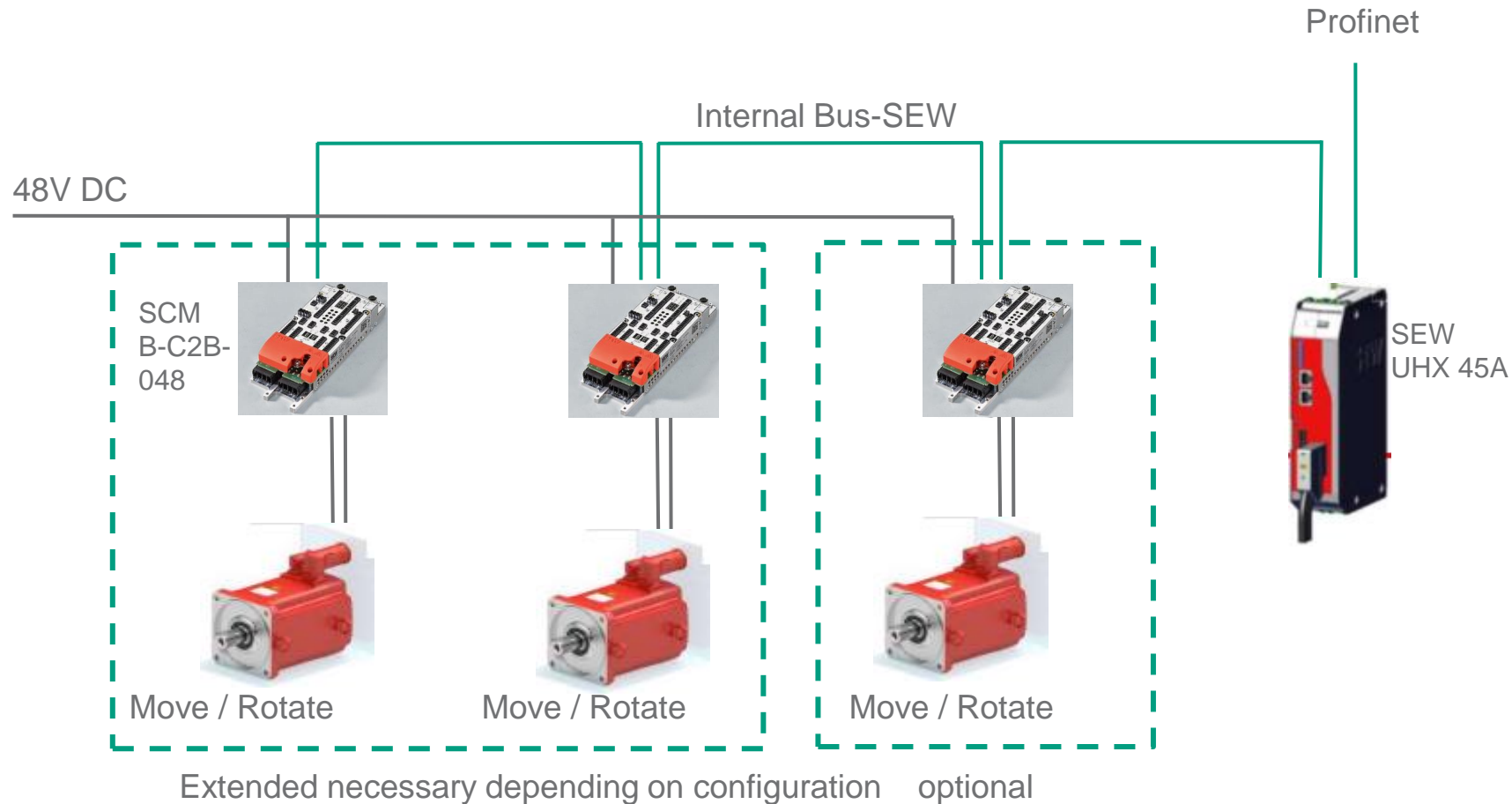
Technology

Controls Overview **AGILITY**



Technology

Drives Overview (SEW 48V DC) **AGILITY**



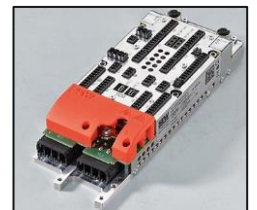
SEW
-Servo -geared motors
-48V



SEW
- Axis controller
-UHX 45

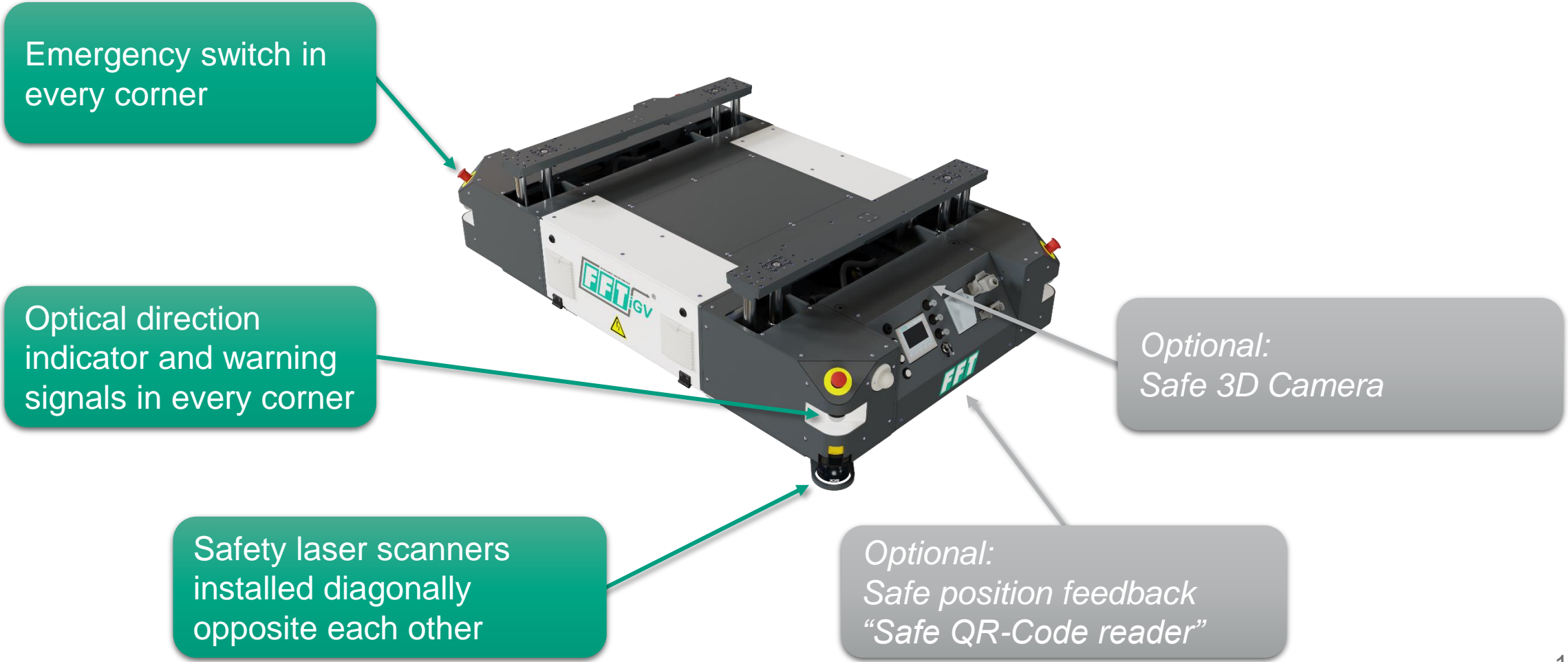


SEW
-Inverter 48V
-SCM B-C2B-048



Technology

Safety Features



Technology

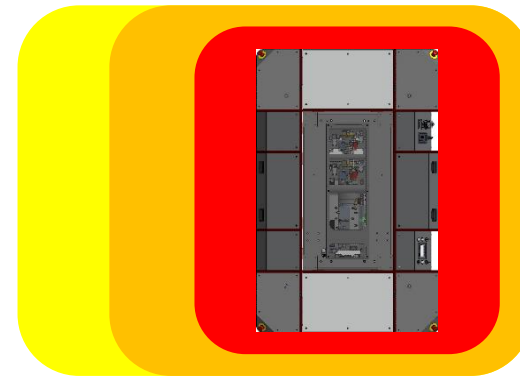
Safety Areas

Safety scanner:
360°-degree
monitoring

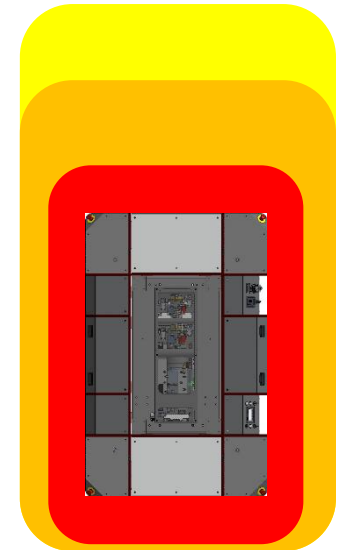
Protective fields size:
Dependent on vehicle
size or the dimensions
of the loaded part and
the driving speed



Sideways Movement



Forward Movement



3. Modules

Navigation, Power Supply and Charging Concept,
Various Options



INTELLIGENT GUIDED VEHICLE

one step ahead in **INTELLIGENT** production systems

Modules

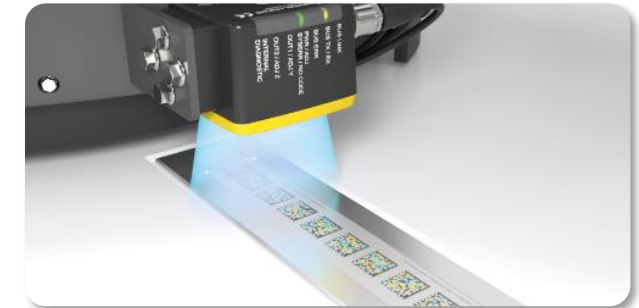
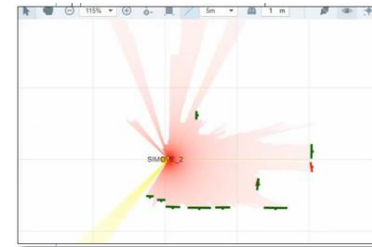
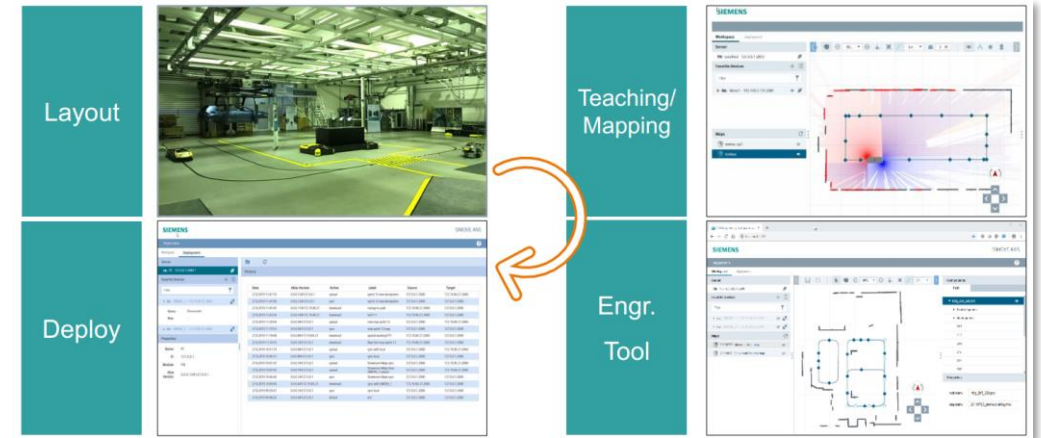
Navigation Options

Laser Navigation (SLAM)

Track guided Navigation

- ◆ QR-Code
- ◆ QR-Code (Safe)
- ◆ Coloured Tape
- ◆ Magnetic Tape
- ◆ RFID

Combination of Laser and Track guided navigation possible!

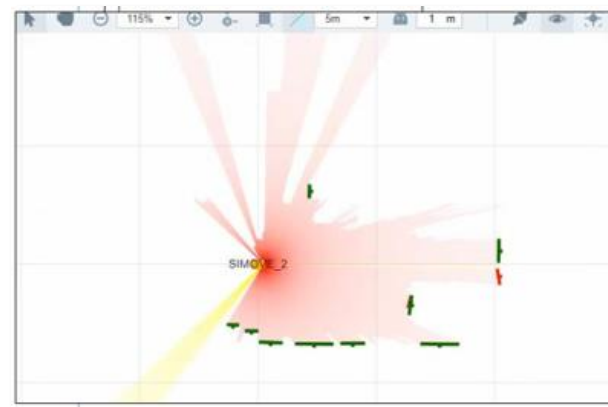
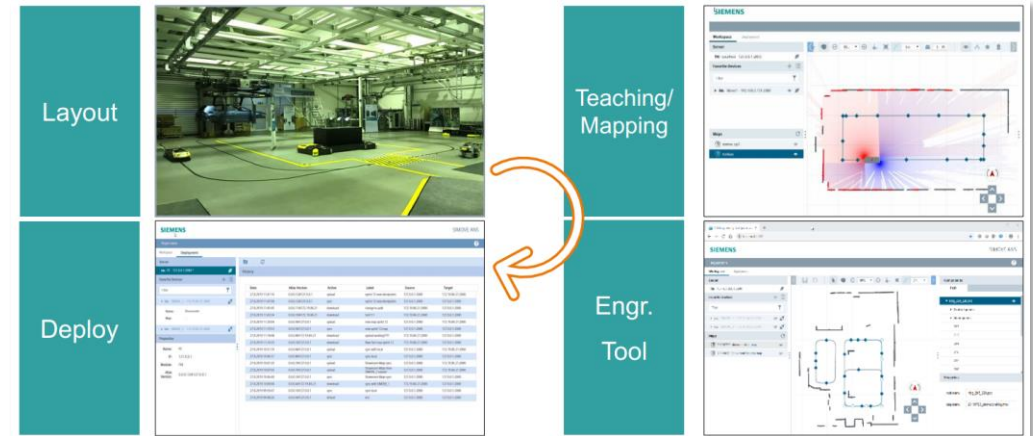


Modules

Navigation Options

Laser Navigation (SLAM)

- ◆ Based on predefined routes within the digital map
- ◆ SIMOVE ANS+ can use existing features for navigation (edges, walls, reflectors, etc.)
- ◆ Outlook: Automatic obstacle bypass (mid-2023)
- ◆ No extra sensors required
- ◆ Maximum possible precision: $\pm 1\text{cm} / 1^\circ$
Precision in driving mode: $\pm 5\text{cm}$



Modules

Navigation Options

Track guided – QR-Code

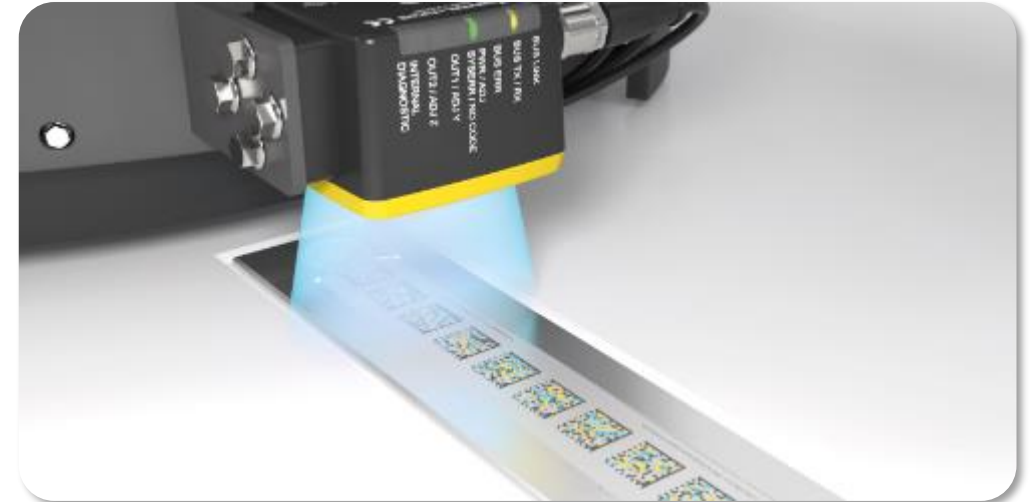
- ◆ Detail positioning
- ◆ QR-Code installation standard: aluminum protective rails
- ◆ Safe positioning as an option
- ◆ Maximum possible precision: $\pm 5\text{mm} / 1^\circ$

Further Options:

QR-Code Tape

Colored Tape

Magnetic Tape



CE

Modules

HMI – Manual Control

HMI control panel on the vehicle (Siemens KTP 400)

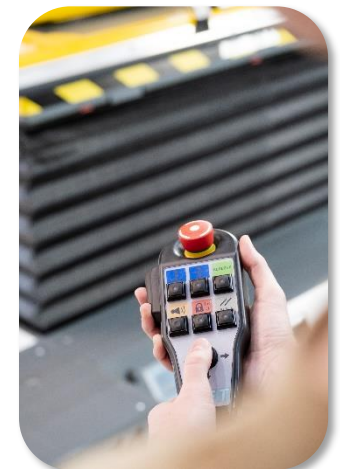
- ◆ Error handling
- ◆ Status display
- ◆ Diagnosis

Mobile HMI control panel (Siemens KTP 700F)

- ◆ Manual control of the vehicle (if necessary)
- ◆ Error handling
- ◆ Status display
- ◆ Diagnosis

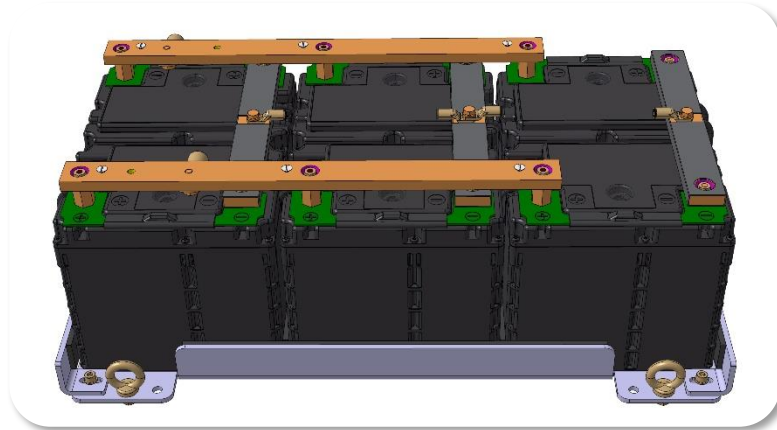
Mobile joystick

- ◆ Manual movement of the vehicle (commissioning, maintenance)



Modules

Energy Supply



Battery: 6x per vehicle

Capacitance total	63Ah
Voltage	48V
Charging rate	up to 2C
Cycles	> 7.500
Charging current	60 – 120A
Communication	CAN-Bus
Battery type	Lithium iron phosphate



Wireless Charging: 2x per vehicle

Charging power	3000W
Charging voltage	15 – 60V
Charging current	60A x 2=120A maximum
Optimal distance	15 – 40mm
Positioning tolerance	± 30mm

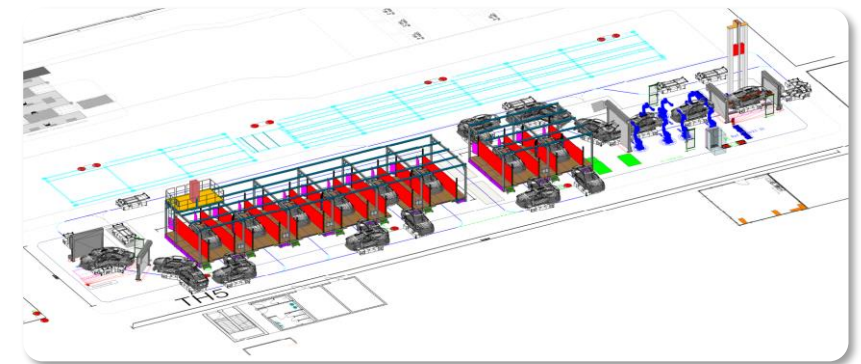
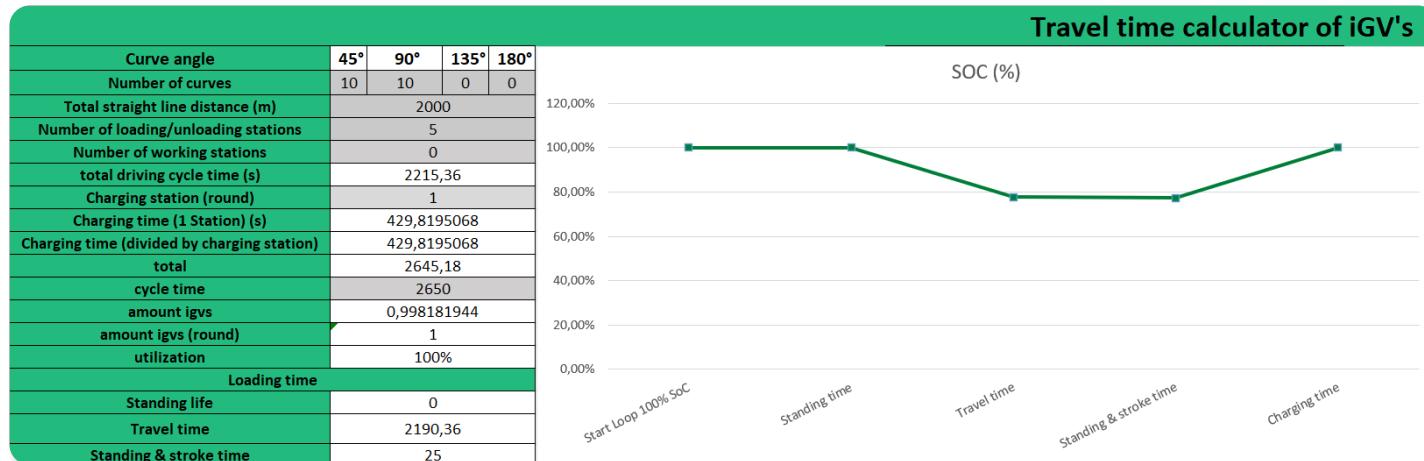
Modules

Energy Supply – Capacity Simulation

The charging concept will be designed precisely to meet customer needs

Target: Verification of an uninterrupted production process (24/7) through simulation and placement of charging stations or **charge in process** if possible

Example:



Modules

Sleep Modes

Sleep Mode & Wake up

- ◆ Activation via the Master Control via Wifi
- ◆ Activation directly at the iGV (buffer time up to 7d)

Deep Sleep Mode

- ◆ Activation via the Master Control via Wifi
- ◆ Activation directly at the iGV
- ◆ Waking up only possible directly at the iGV (buffer time several months)



Modules

Optional: Virtual Commissioning

Option: Virtual Commissioning

- ◆ Vehicle Control
- ◆ Laser Navigation
- ◆ Track guided Navigation
- ◆ Master Control (SPS)



Modules

Optional: Backup Solutions

Setup-Tool (Lift of drivetrain)

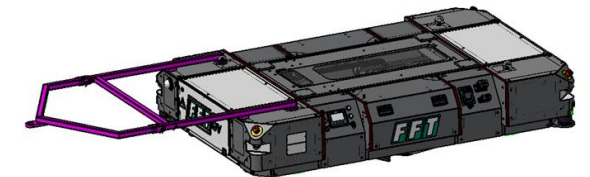
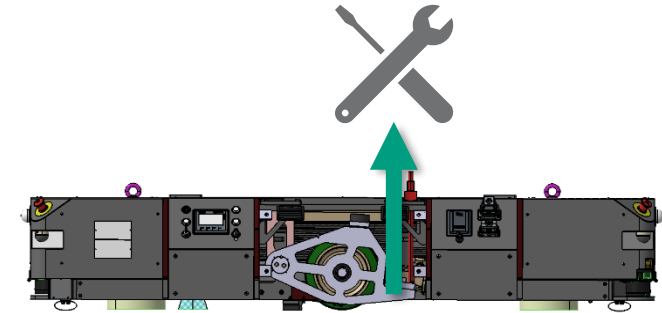
- ◆ Enables manual movement of the vehicle

Brake of the drive wheels can be opened by use of key switch

Towing device

- ◆ Towing of the iGV (e.g., with the help of a forklift)

Portable Battery charger



Modules

Required Floor Conditions

Floor condition requirements	
Maximum height ground obstacles	5mm
Maximum gap width	20mm
Maximum road gradient <i>*only track guided*</i>	2%
Required floor stability	C 20/25
Required floor load capacity	1500kg/qm
Surface pressure	23N/mm ²





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THANK YOU

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