

# **FFT** *igv* **ONE S**

*„Advancing AGVs to an **intelligent** level“*

one step ahead in **INTELLIGENT** production systems



## FFT *igv* ONE S

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* ONE S

## Overview

Bidirectional movement

Up to 1,5 tons payload

Length: 1800mm

Width: 1200mm

Height: 450mm

Weight: 1.500kg

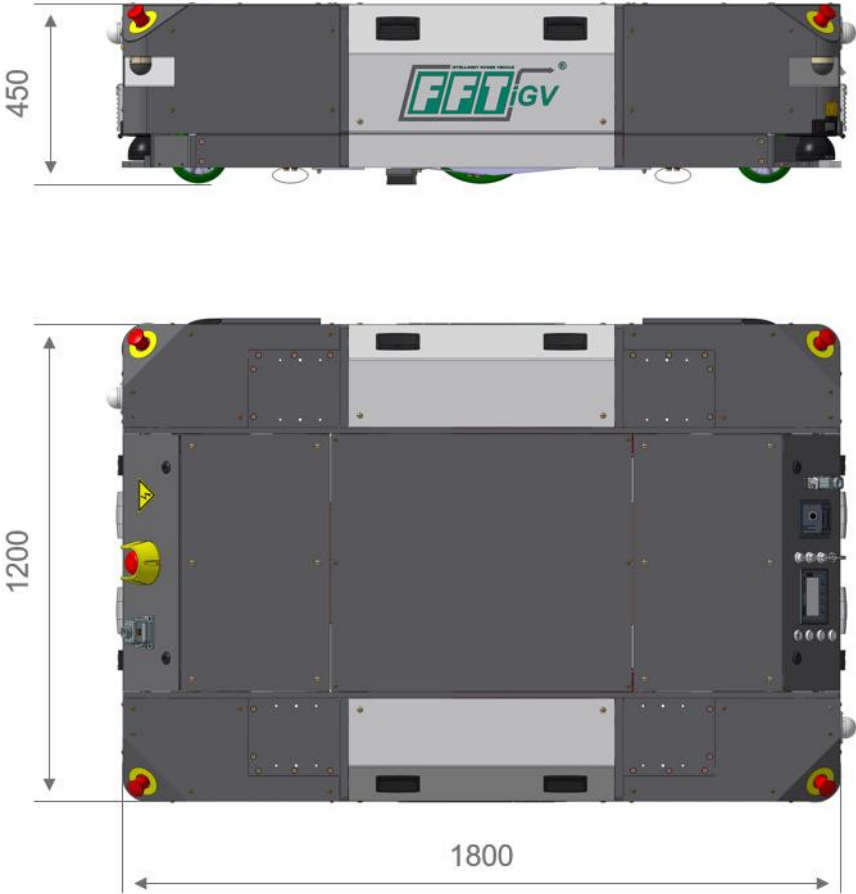
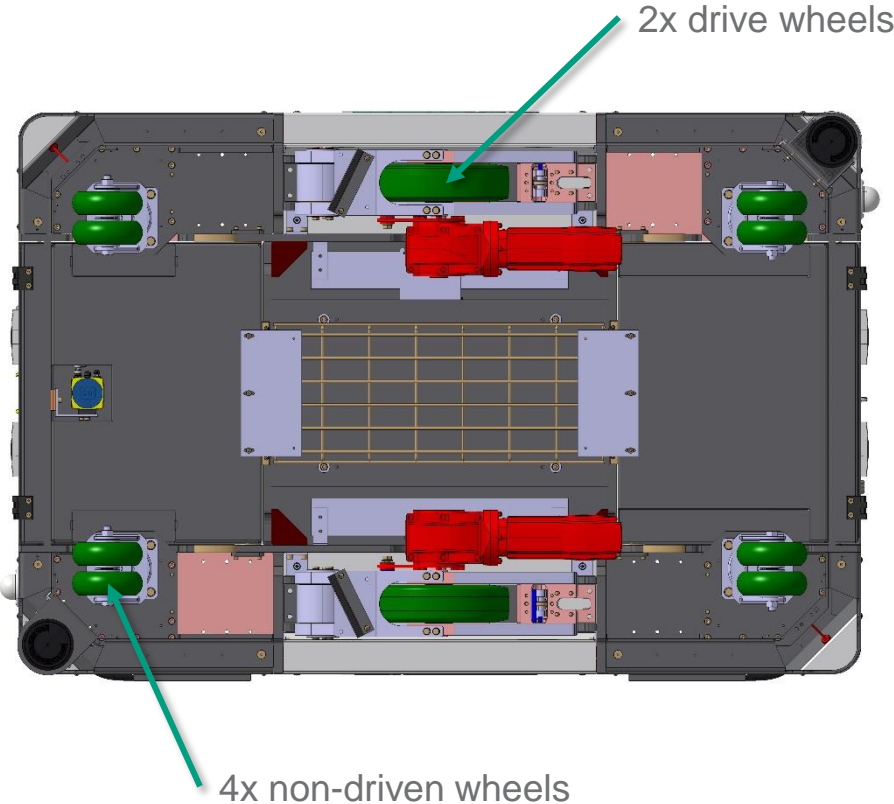
*Optional: Safe 3D camera*

*Optional:  
Robot, Lift, Roller Conveyor*



# FFT *igv* ONE S

## Dimensions





## 2. Technology

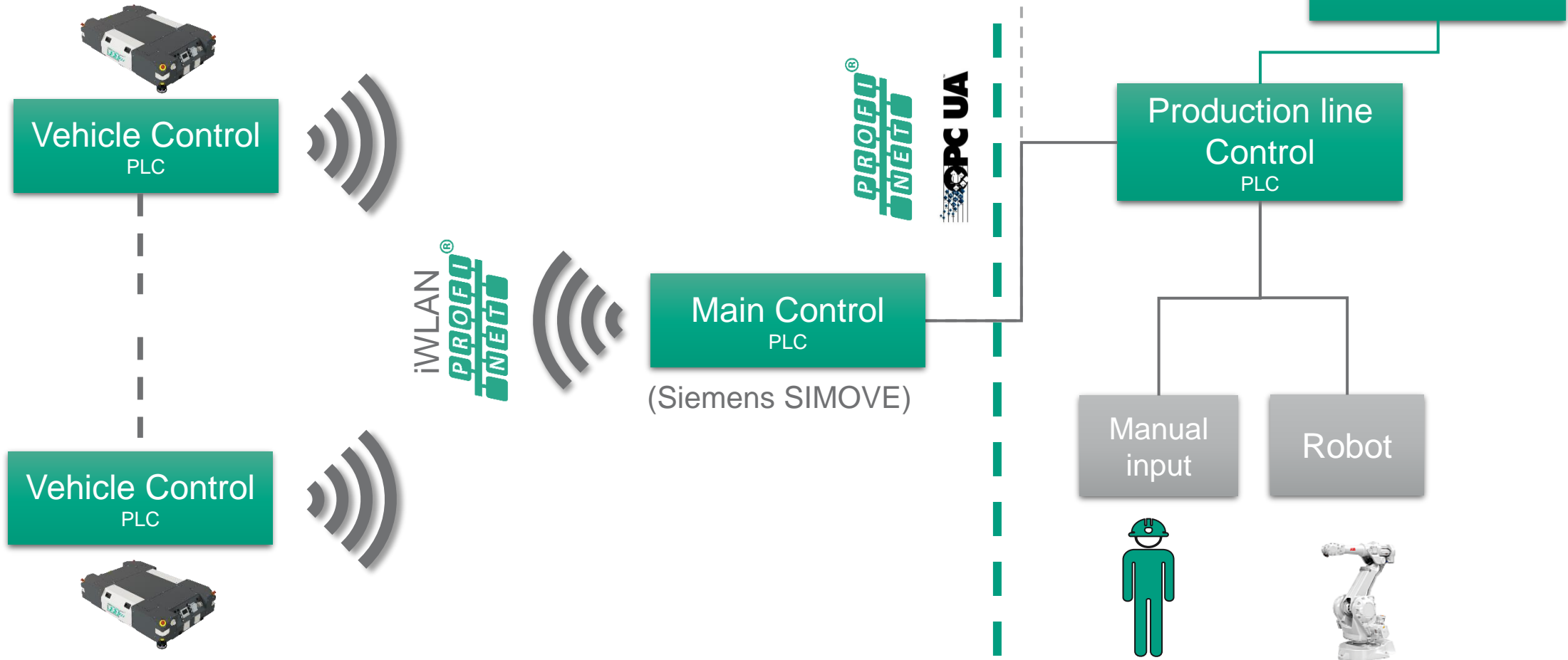
Vehicle Control, Fleet Control, Drive Control,  
Operation



one step ahead in **INTELLIGENT** production systems

# Technology

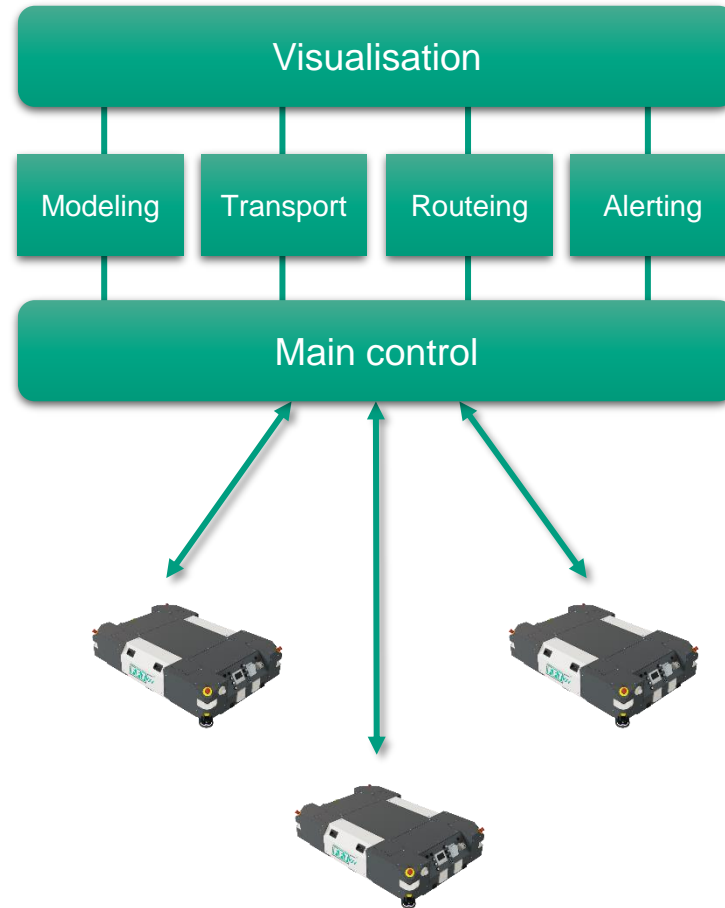
General



# 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

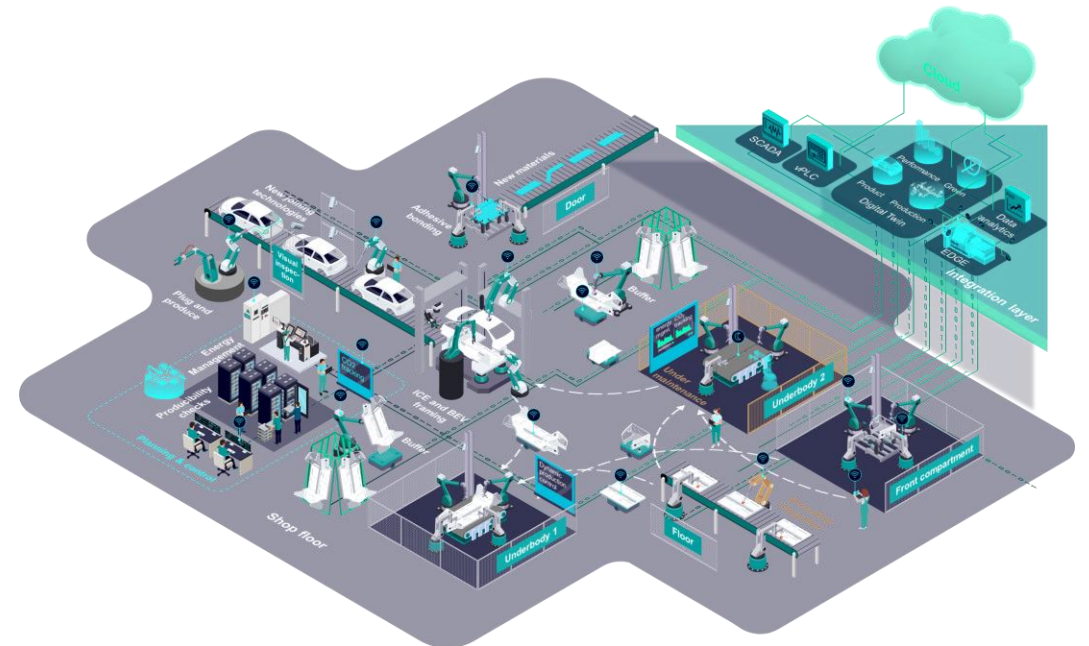
- ◆ Siemens „Simove Master Control“ – PLC based (adapted)
- ◆ Siemens „Fleet management“ – Server based
- ◆ VDA 5050 certified

### Carrier Control

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

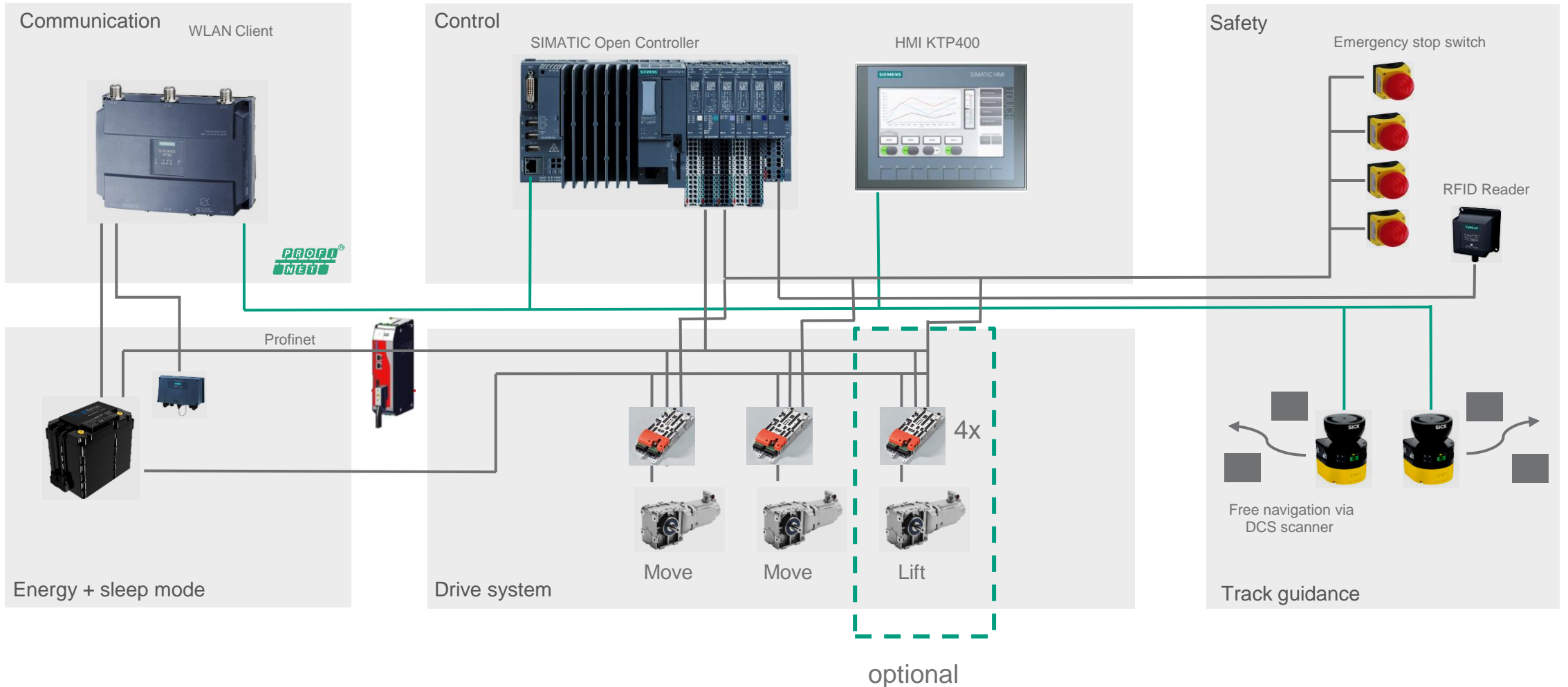
### Navigation (SLAM)

- ◆ Siemens „ANS+“



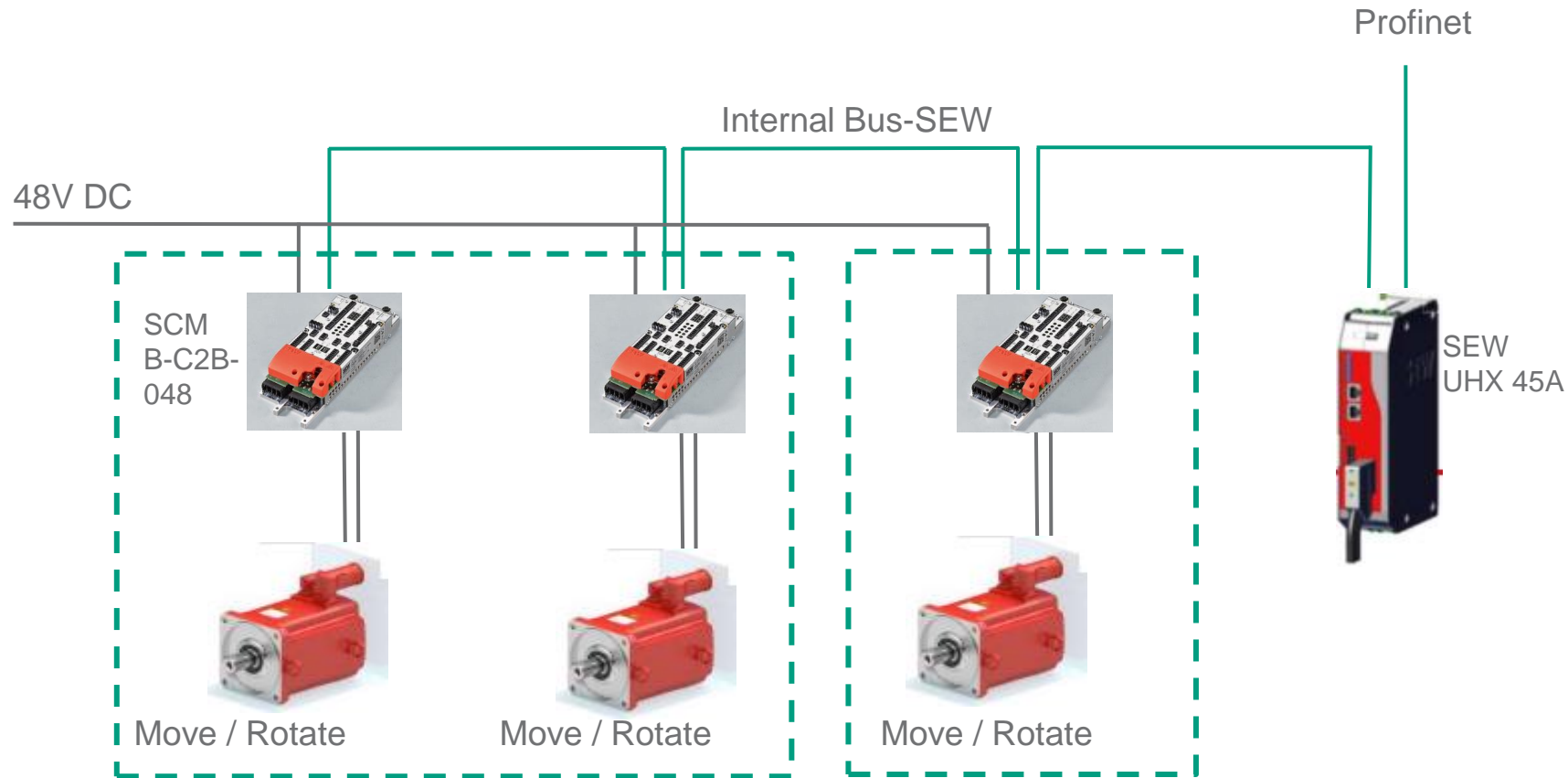
# Technology

## Controls Overview ONE S



# Technology

Drives Overview (SEW 48V DC) **ONE S**



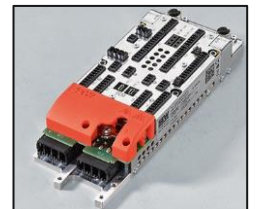
**SEW**  
-Servo -geared motors  
-48V



**SEW**  
- Axis controller  
-UHX 45



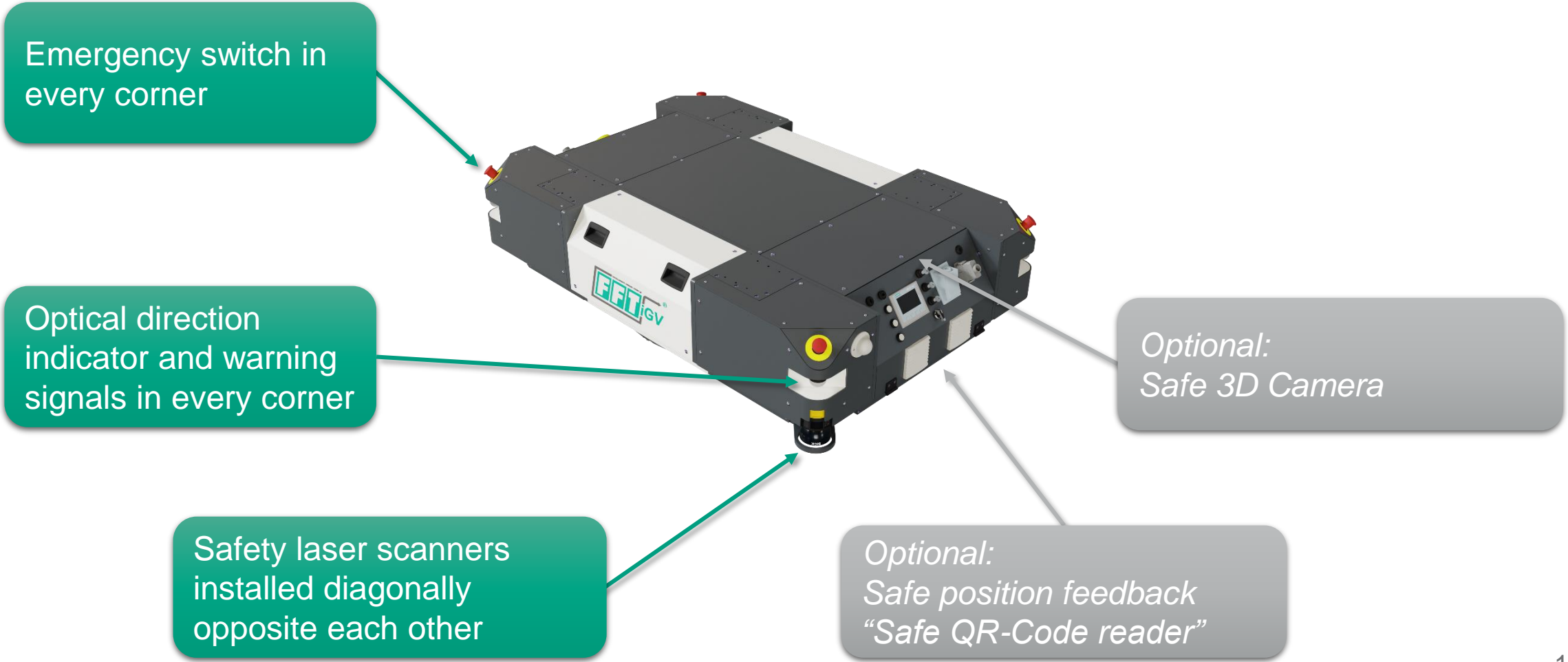
**SEW**  
-Inverter 48V  
-SCM B-C2B-048



Extended necessary depending on configuration optional

# Technology

## Safety Features



# Technology

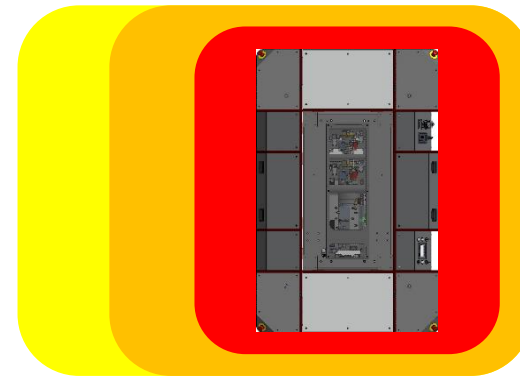
## Safety Areas

Safety scanner:  
360°-degree  
monitoring

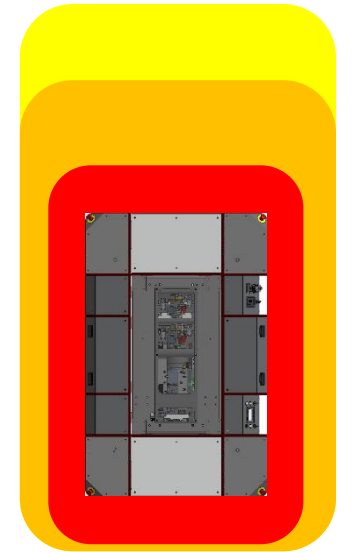
Protective fields size:  
Dependent on vehicle  
size or the dimensions  
of the loaded part and  
the driving speed



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

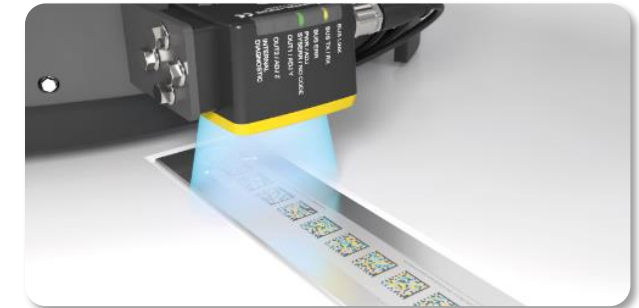
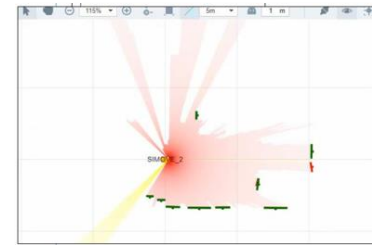
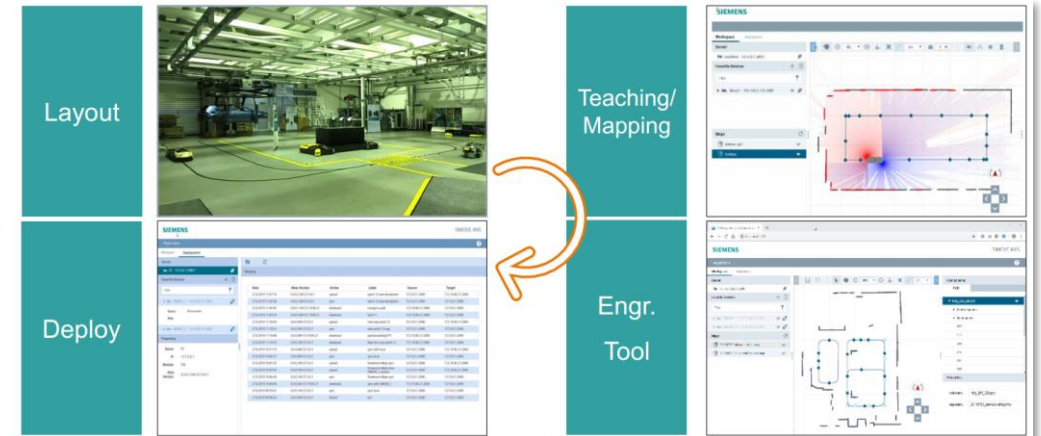
Navigation Options

Laser Navigation (SLAM)

Track guided Navigation

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

Combination of Laser and Track guided navigation possible!

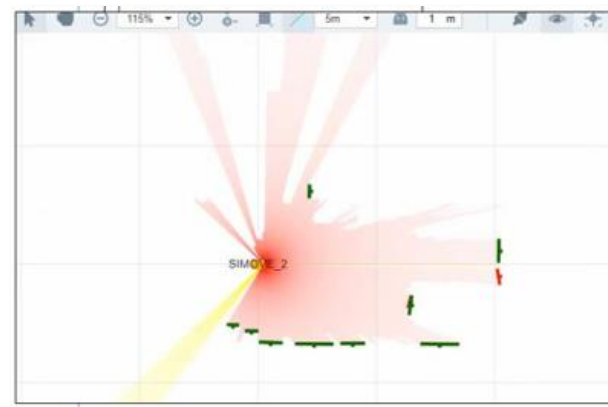
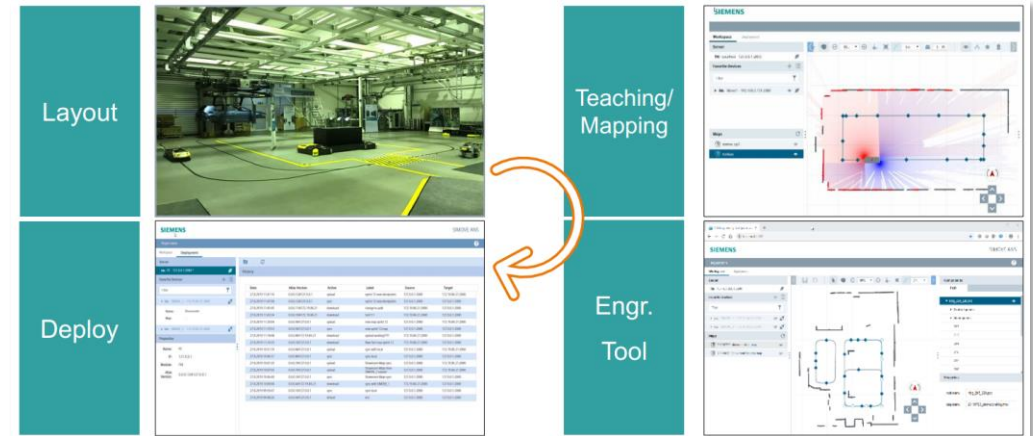


# Modules

## 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

HMI – Manual Control

## HMI control panel on the vehicle (Siemens KTP 400)

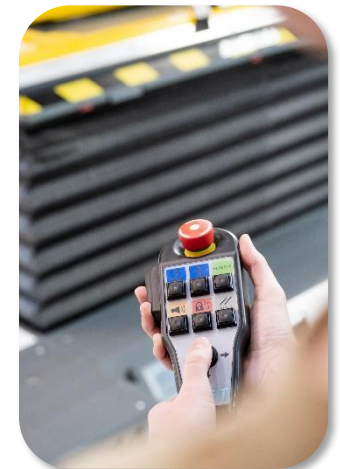
- ◆ Error handling
- ◆ Status display
- ◆ Diagnosis

## Mobile HMI control panel (Siemens KTP 700F)

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

## Mobile joystick

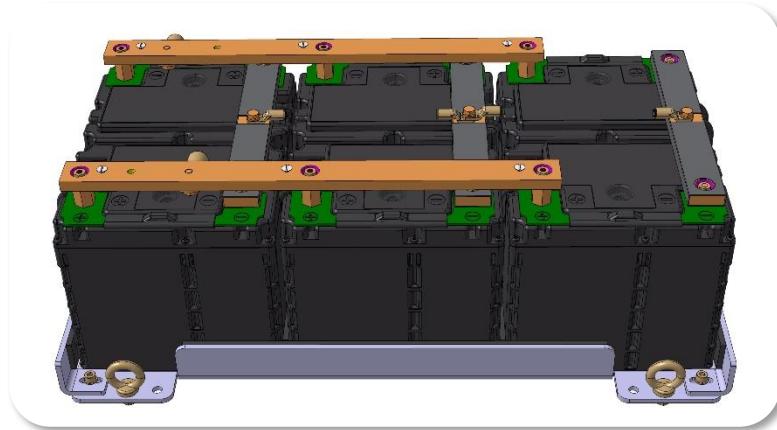
- ◆ Manual movement of the vehicle (commissioning, maintenance)





# 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

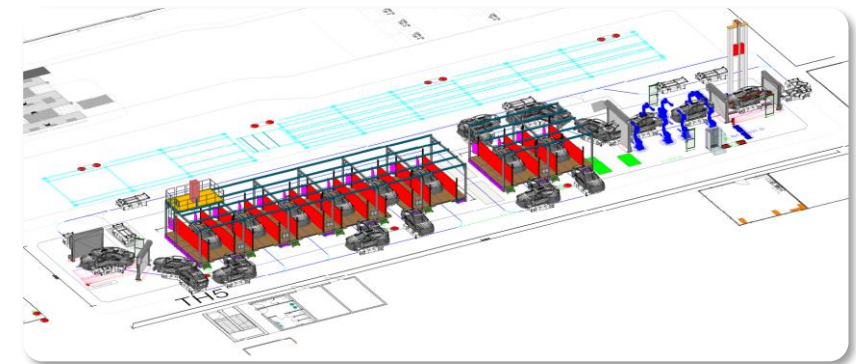
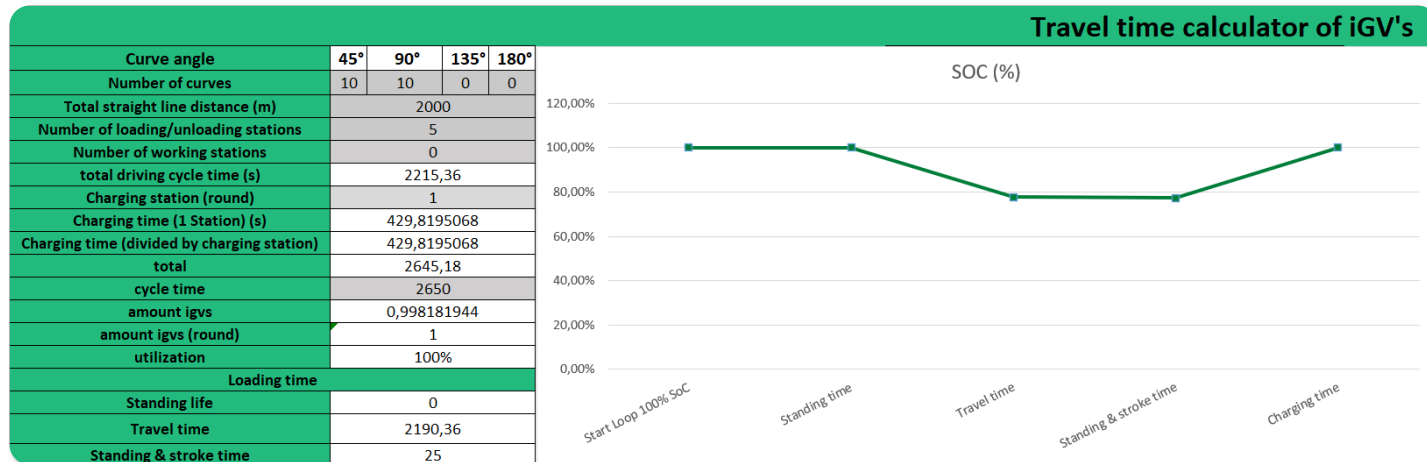
# Modules

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)

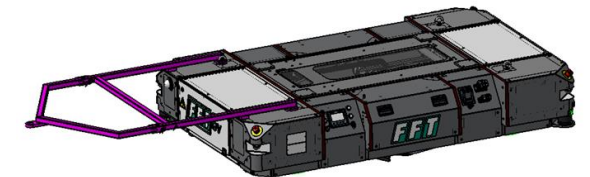
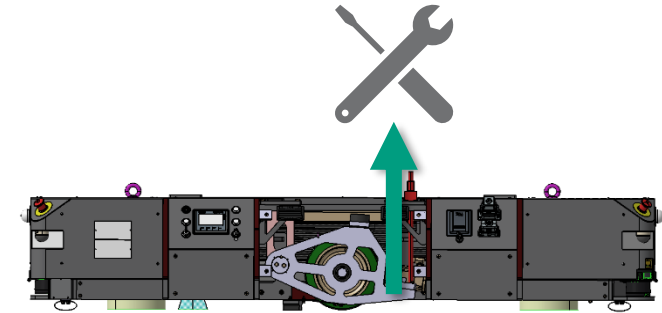
- ◆ Enables manual movement of the vehicle

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 <sup>2</sup>





# CONTACT

## Your personal contact person

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# THANK YOU

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