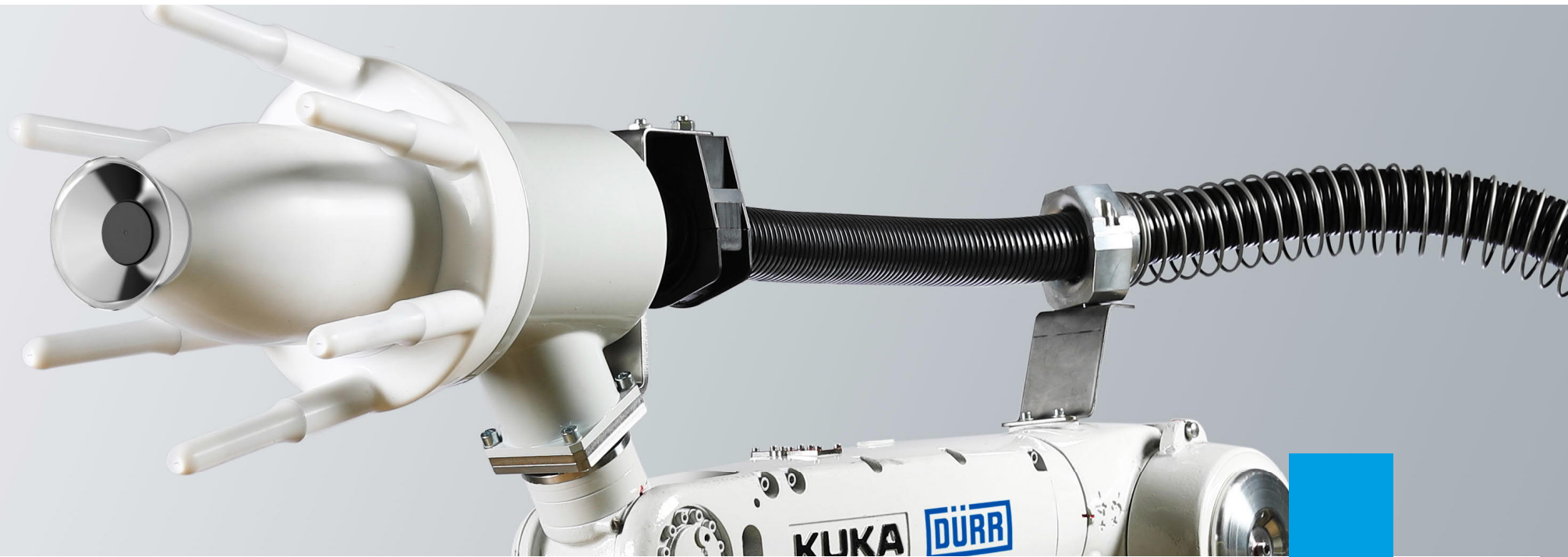


LEADING IN
PRODUCTION
EFFICIENCY



How to integrate the paint robot into the customer system

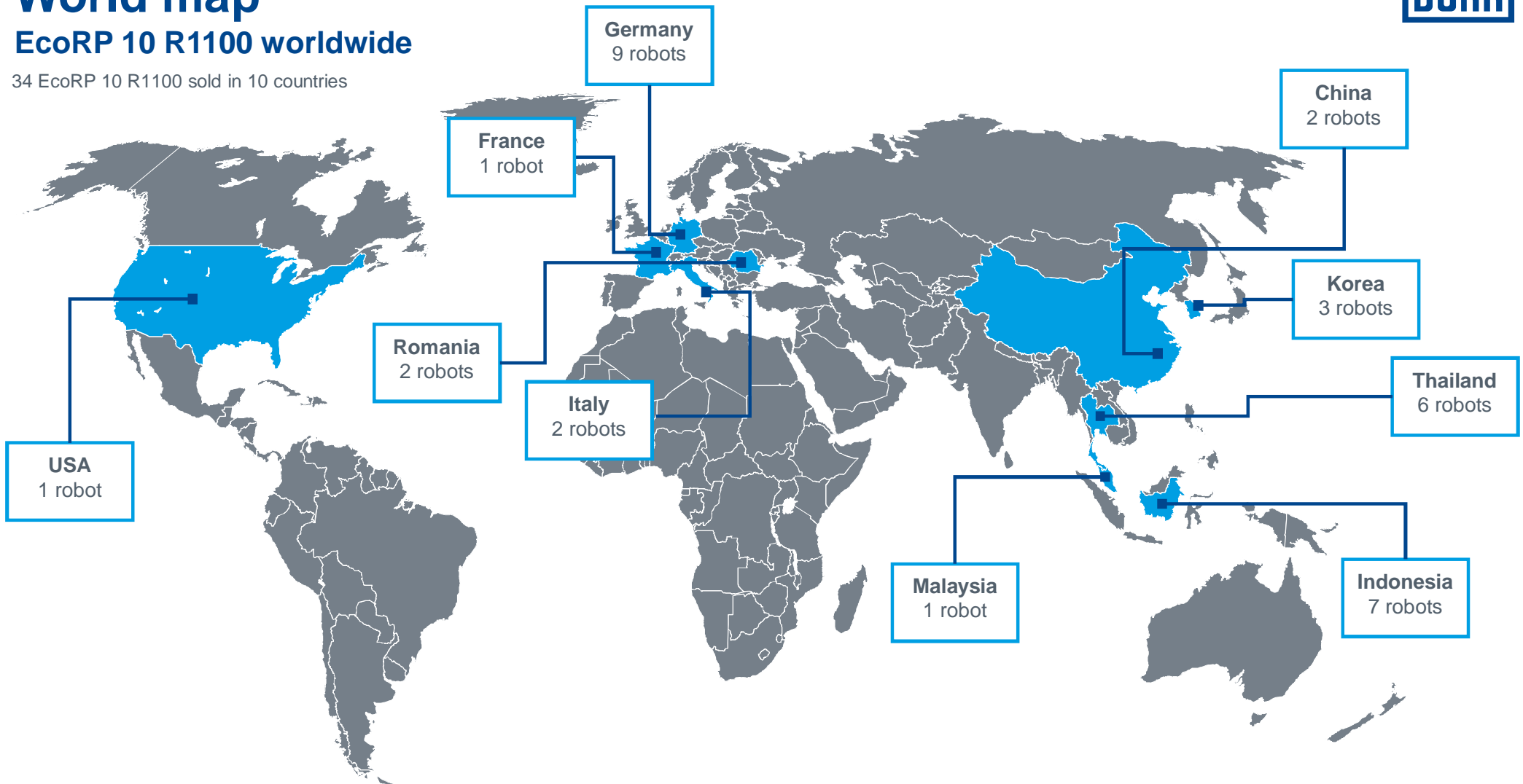
October, 24.2019
Bietigheim-Bissingen

Denis Stein, Roland Schipietz

World map

EcoRP 10 R1100 worldwide

34 EcoRP 10 R1100 sold in 10 countries

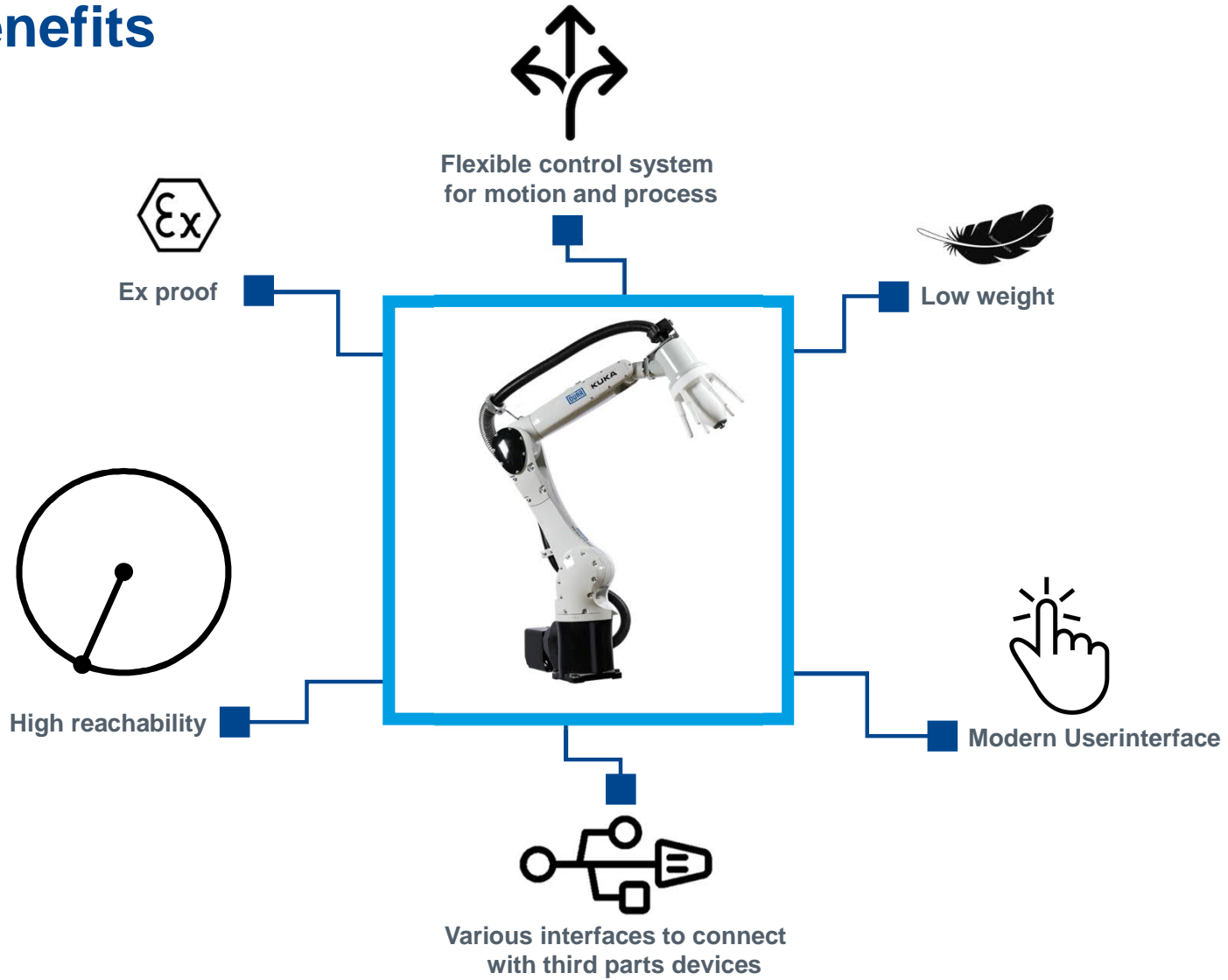


Customer Benefits

EcoRP 10 R1100



Ready2spray:
Pre-assembled
Pre-tested
equipment for
fast ramp up time



Product overview

Main components - Example

Process



Paint regulation



Color changer



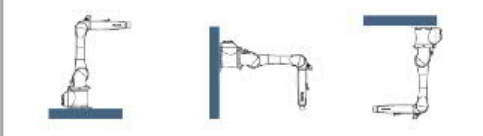
Paint Robot EcoRP 10 R1100



Fluid board

Technology cabinet

Mounting

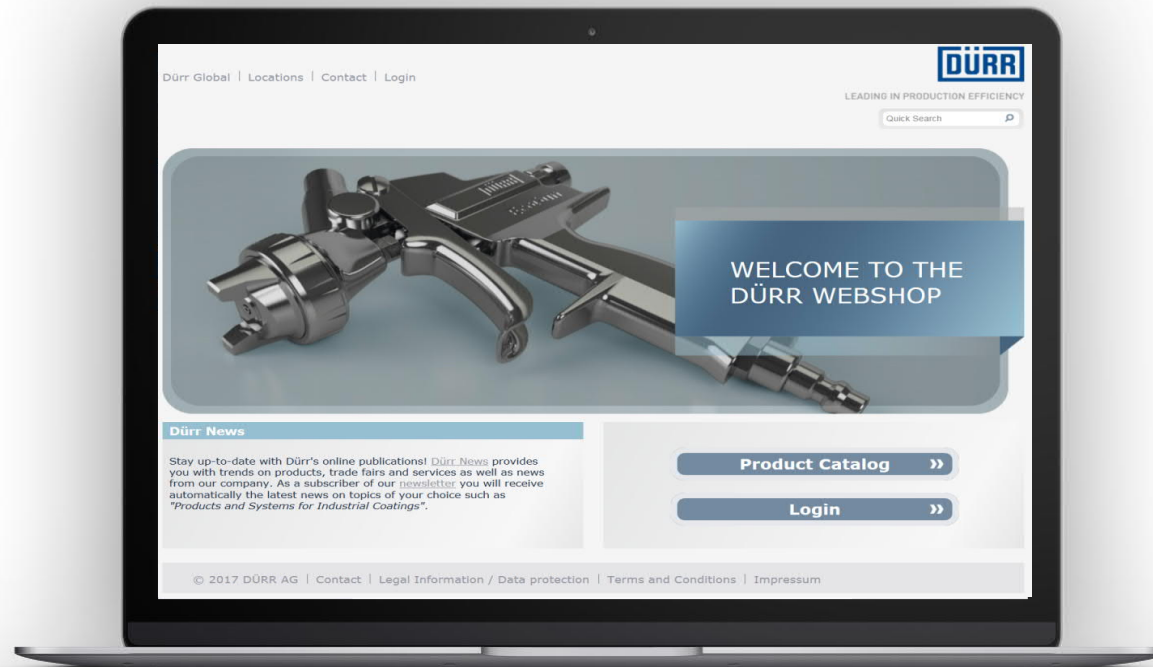


Application



Configuration Via Webshop

<https://webshop.durr.com>



Production, Assembly, Testing and Audit, Transport

Before shipping to integrator – Dürr scope



Internal Audit

- Serial numbers applications
- Check assembly KRC4, AUC, electric and pneumatic
- Check assembly application: Atomizer and mechanic
- Potential equalization, Test programm, measurement robot axis
- High voltage test in case of HV equipment
- Process tests (Turbine revolutions, Motors, Valves)
- Atex (Check system pressure)
- Packaging and Transport

EcoRP 10 R1100 – ready2spray

Basic requirements for installation

- **Material supply system, thinner supply**
- **Compressed air supply:** A feed connection for compressed air (6-8 bar dynamic at 1,600 NI / min) is provided. The following compressed air quality shall be provided by the customer: ISO 8573-1: 2010 Class 1: 4 (≤ -3 ° C) *: 1
 - **Technical ventilation**
 - **Grounding facility**
- **Firm and flat ground meeting the static and dynamic requirements**
 - For wall-mounting the fluid board: Wall that withstands the weight of the fluid board
 - For wall mounting the paint robot: Cover that can withstand the static and dynamic load of the paint robot
 - For ceiling mounting the paint robot: Cover that can withstand the static and dynamic load of the paint robot
- Set up painting control unit AUC and robot control KR C4 outside potentially explosive areas.
- Maintain
 - The operating temperature
 - Relative humidity
 - Input pressure
 - Compressed air quality
 - Connection voltage

EcoRP 10 R1100 – ready2spray

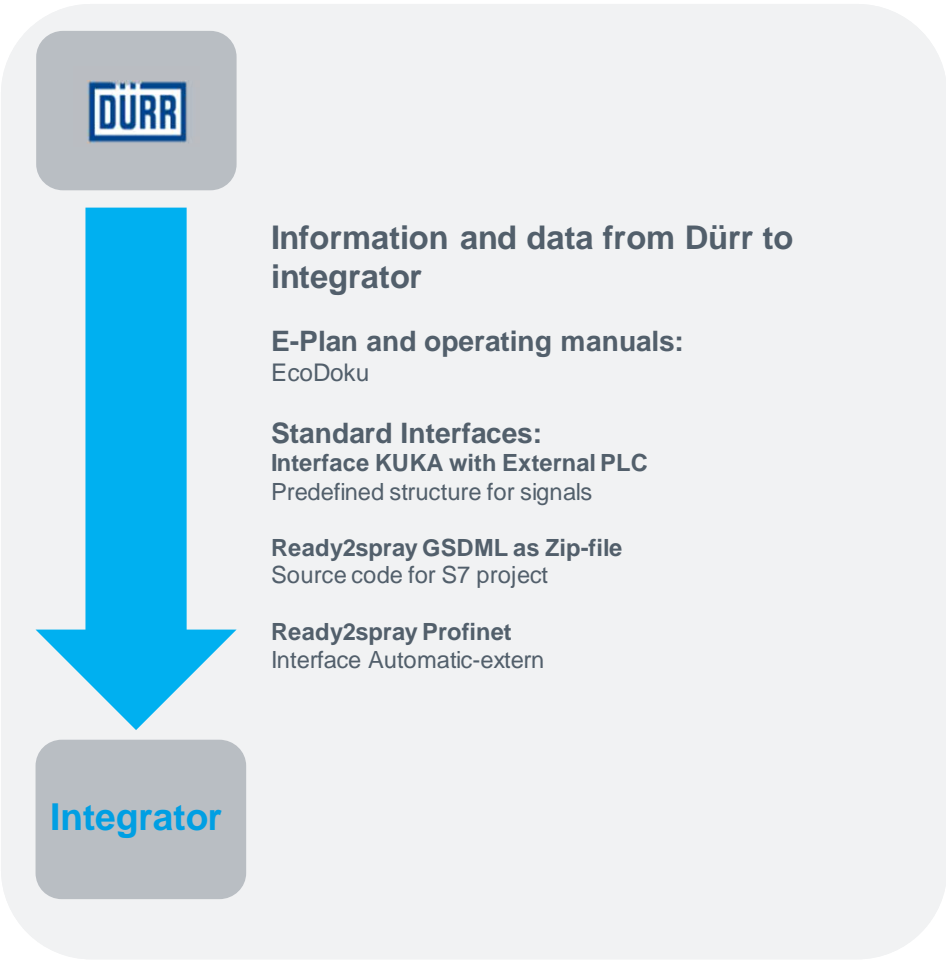
Following safety devices needs to be implemented by integrator

- **Closed booth**
- **Protection against mechanical dangers** due to bell disk with 70,000 RPM for rotating atomizer
 - Protection from robot movements
 - Limitation of the Ex zone
- **Warning light** “High tension on/off” and entry protection with bolt (only for versions with high tension) according to EN50176
- **Integrate entry protection in the emergency stop** circuit of the system.
- **Entry protection for performance level d**
 - Fire safety with extinguisher device and fire detection system for performance level d
 - Fire safety valve with delayed switch off to prevent damage, ensure turbine bearing air for the turbine to run down.
- **Mechanical ventilation** according to DIN EN 12215 or country-specific operating specifications for thinning of Ex atmosphere
- **Delayed release for access doors** (min. 15 seconds) based on caster of the bell disk (valid for versions with rotating atomizer)
- **Installing additional selection switch** for the Teach release “External switching function”.

Installation and Commissioning - Interfaces

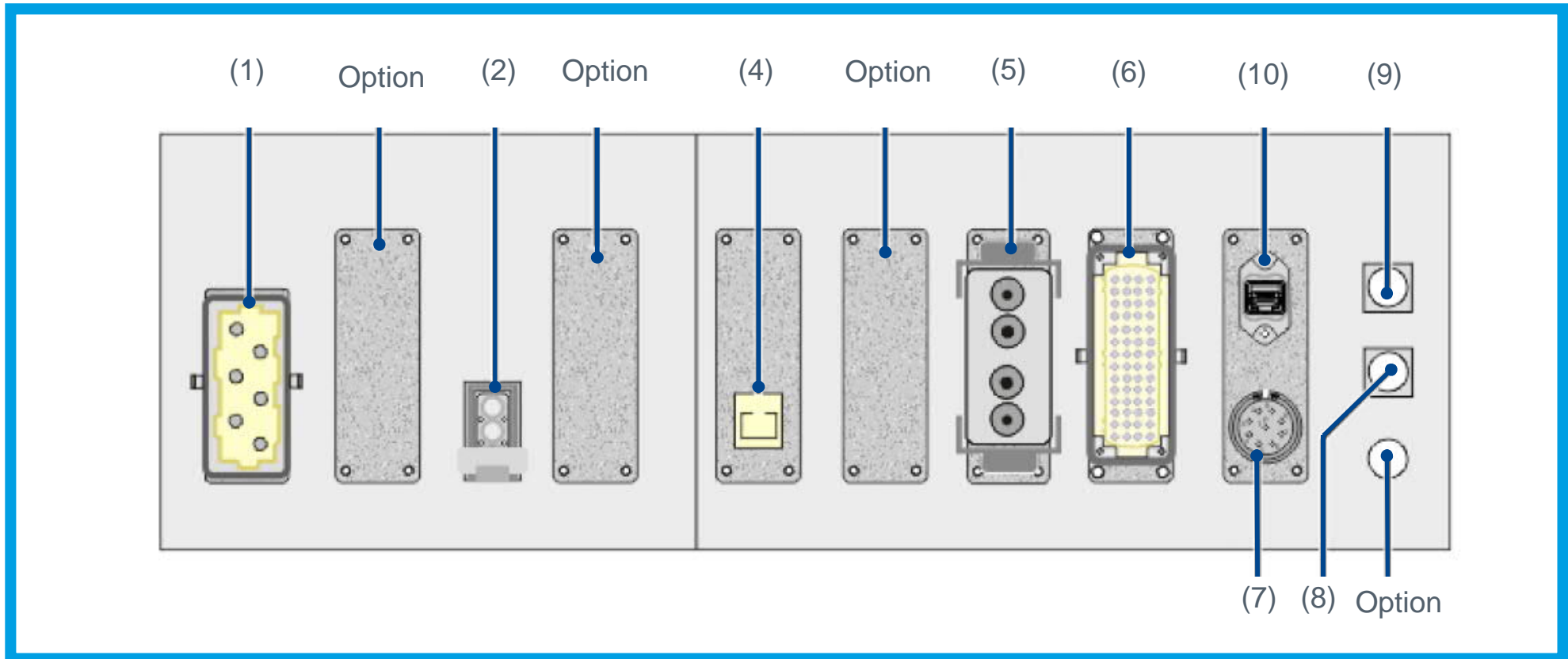
Three areas with sub items that should be considered for the electrical installation

- Interface between the robot control cabinet and third components**
 - Infeed
 - X11-Security interface
 - ProfiNet-interface to communication of overall PLC
 - Potential equalization
- Interface between the process control cabinet to the application**
 - Connection of
 - dosing pump motors with enclosed cables
 - optoelectronic transducer to the atomizer with enclosed cable
 - intrinsically safe pressure sensors to the dosing pumps with enclosed cables
- Interface between the robot control cabinet and the robot**
 - Connection of
 - the enclosed motor cable
 - intrinsically safe flush controller with enclosed cables
 - Potential equalization
 - Connection techpendant to robot



Control cabinet

Interface to integrator

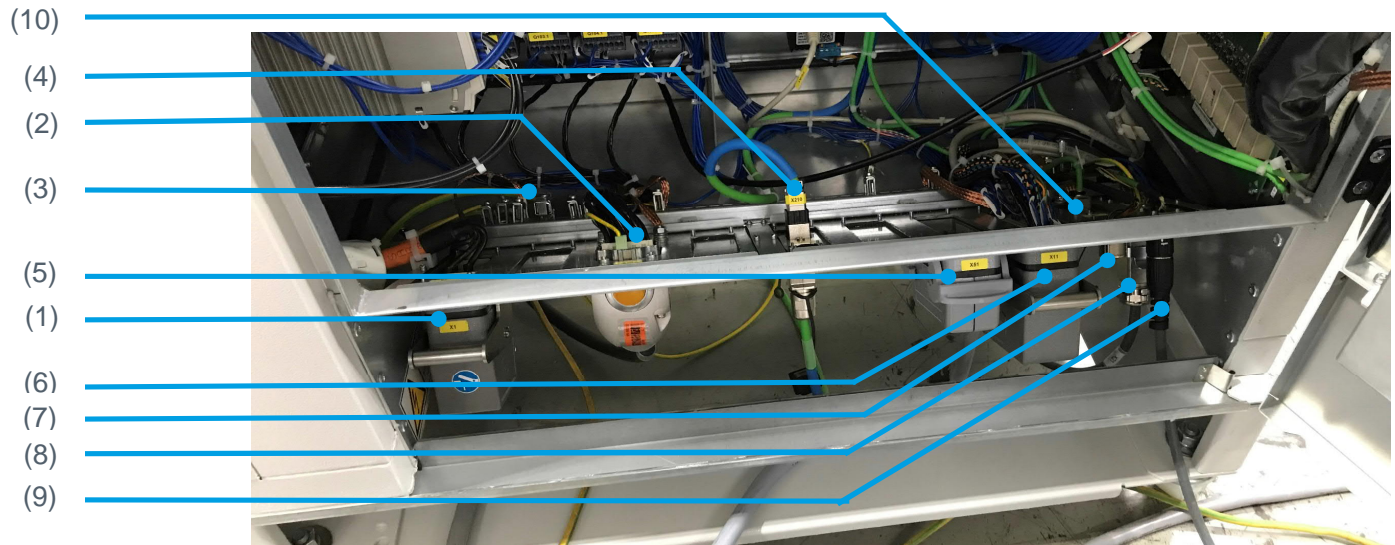


Control cabinet

Interface to integrator

Interfaces to integrator

- (1) X1 – Powersupply
- (2) X20 – Axis power
- (3) PE – Potenzial equalization
- (4) X210 – Cable for purge controller
- (5) X51 – for example cleaner interface
- (6) X11 – Safety
- (7) X33 – Fast inputs
- (8) X21 – Encoder for Axis
- (9) X19 – SmartPad
- (10) X66 – Communication



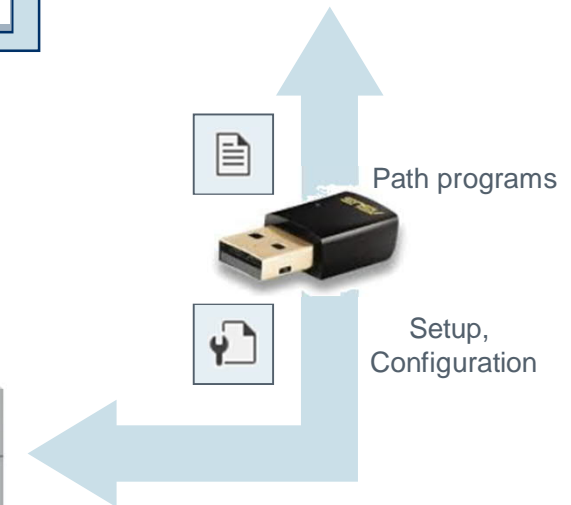
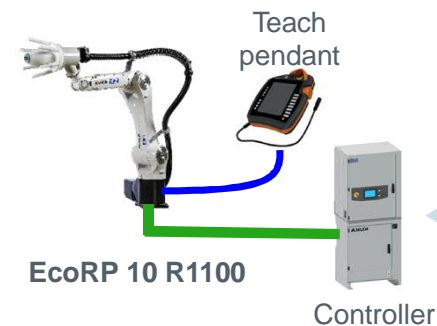
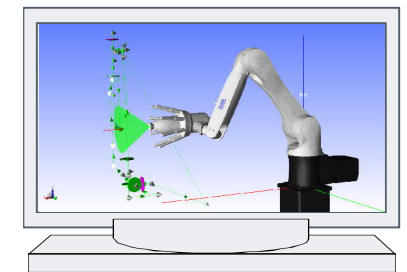
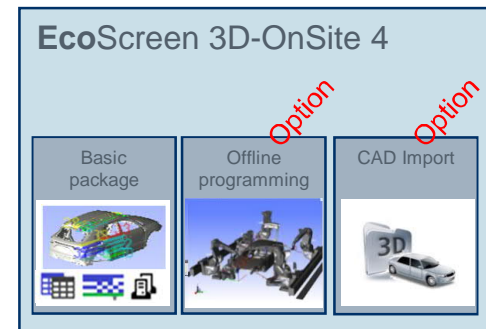
Application area

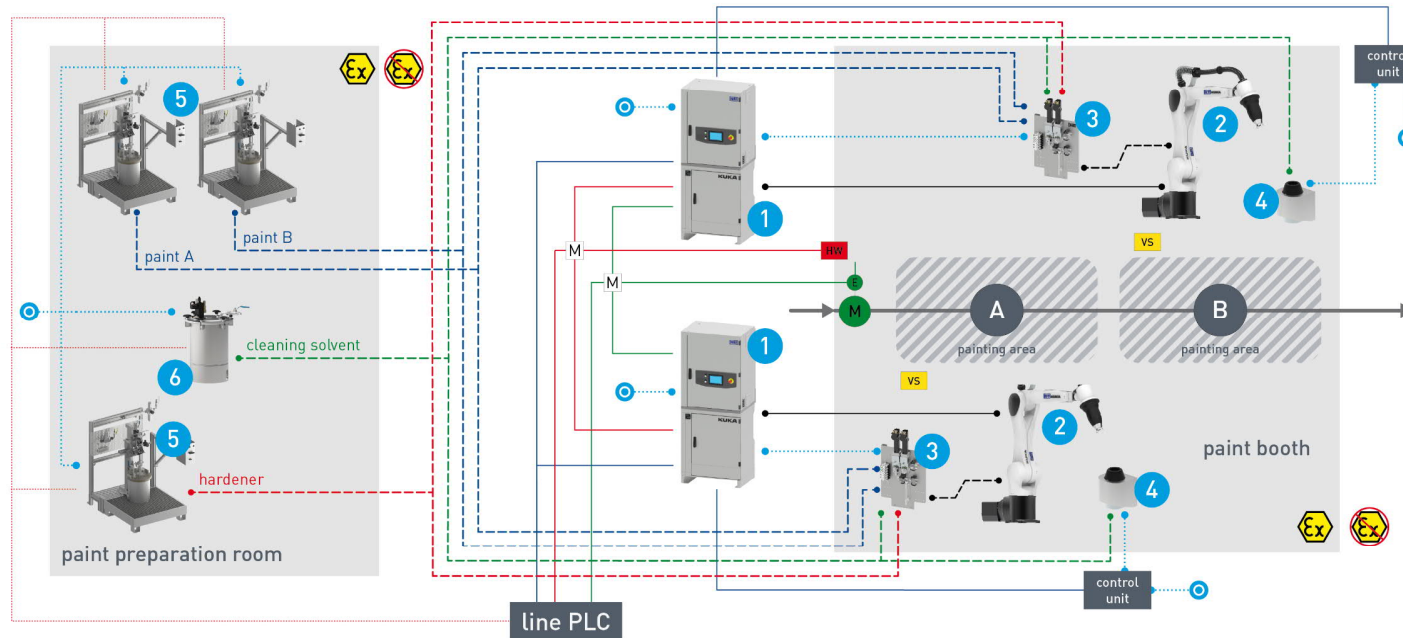
DXQ3D.onsite



- Universal toolbox for Dürr **EcoRP10 R1100** application robots to:
 - Path programming of KRC programs with 3D-CAD models of conveyor, robot, applicator and workpiece
 - Reachability check for path points
 - Realistic simulation of all robots from one station (Beta)
- Direct use of the original control configuration and software
- Edit data in Offline modus
 - Program transfer via USB stick and teach pendant
- Enables the shortest transfer time in the production process:
- Reduces the risk of program changes

Efficient working with Dürr robot systems for plant operators and programming experts





Painting robot integration scheme

SCHEME SETUP

- Process: 2K
- No. of colors: 2
- No. of solvents: 1
- No. of hardeners: 1
- Application: rotating atomizer
- EcoBell cleaner
- Conveyor: continuous [Line tracking]

APPLICATION COMPONENTS

- 1 Robot Controller
- 2 Painting robot
- 3 Fluid board
- 4 EcoBell cleaner
- 5 Small paint supply
- 6 Pressure pot

ELECTRIC COMPONENTS

- M** Multiplexer
- HW** Hardware-Sync
- VS** Virtual-Sync
- M** Motor with encoder

ELECTRIC LINES

- Part detect signal
- Ethernet & Safety
- Encoder electric signal
- Robot connection
- Sensor signal

MEDIA

- - Fluid
- Compressed air
- ⊙ Compressed air source

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24.10.2019
Bietigheim-Bissingen
www.durr.com

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