ROBOTICS

STÄUBLI

Paint Range

Finding quality and making it accessible

Stäubli Robotics: advanced technology and valued experience

Automating the painting process: enhanced flexibility

Since 1982, the Stäubli group has developed its robotics activities to become one of the major players in the industry worldwide. It has built its success on the seamless quality of its products and services, and on its willingness to work with firms of all sizes in their automation processes. Thus each company can realize full or partial automation of its painting processes without having to shake up its organization.

Stäubli Paint and integrators: a win-win partnership

Since setting up its robotics activity, Stäubli has developed an advanced partnership procedure with integrators. This has led to enhanced efficiency in defining the offer, improved capacity for cooperative developments, and software tools designed to facilitate transfer of skills and integration processes. Our industrial customers thus obtain correct and complete solutions for their requirements.

With Stäubli, automation becomes an efficient, profitable solution.

Providing simple solutions
for complex production lines.

Making progress and ensuring continuous improvement together

Productivity, quality and flexibility of installation

With its unique combination of efficient equipment and software programs, Stäubli enables each customer to opt for a solution that brings together all the strengths of robotics:

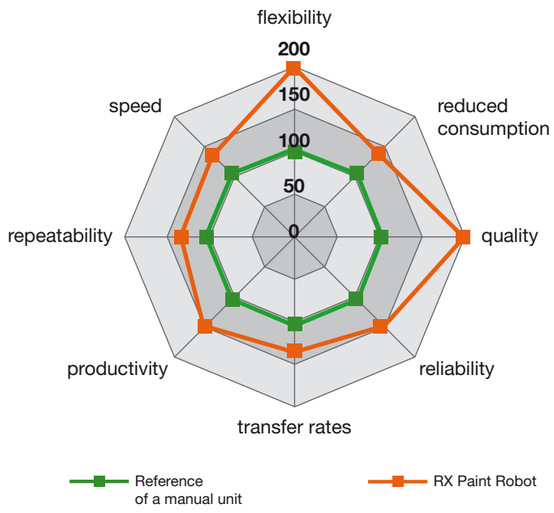
Enhanced process control
The PaintiXen software controls all painting parameters: electrostatic charge, atomization of air, jet width, product pressure, etc.

Saving paint and solvents
Automation reduces levels of paint and solvent waste, significantly lengthens filter service life and minimizes booth fouling. Transfer levels are increased by 30%.

Improving quality
Drift-free trajectories and fully controlled gun triggering provide the specified thicknesses with minimum levels of variation.

Enhancing flexibility
It is possible to paint parts with complex geometry or series of products of different sizes or colors, using the information provided by the automatic line controller. Furthermore, the simplicity of the programming system enables users to automate small part batches. A robotic paint line can be upgraded at any time during the years following the initial investment.

Increasing productivity
Fewer faulty parts or manual touch-ups are a given. Moreover, the reduction in oversprays enables users to do away with finishing and polishing stations. The painters can change paint parameters without stopping production. Lastly, Stäubli Paint robots are designed to operate for two or three eight-hour shifts a day without affecting their very high efficiency rates.



Comparison of performance levels before and after automation.

Good return on investment
Integrating a robotic paint system means:
- Bringing existing lines or booths into conformity with the current industry standards
- Reducing emissions of VOCs (volatile organic compounds)
- Avoiding risks of occupational illnesses.

Applications for each industry

From traditional applications to electrostatic processes, Stäubli Paint robots cover all finishing requirements in a very wide range of industries:

- Plastic or metal parts for motor vehicles
- Bicycle manufacturing
- Wood
- Farming equipment
- Household goods
- Leisure and electronic consumer goods
- Aerospace
- Optics
- Etc.

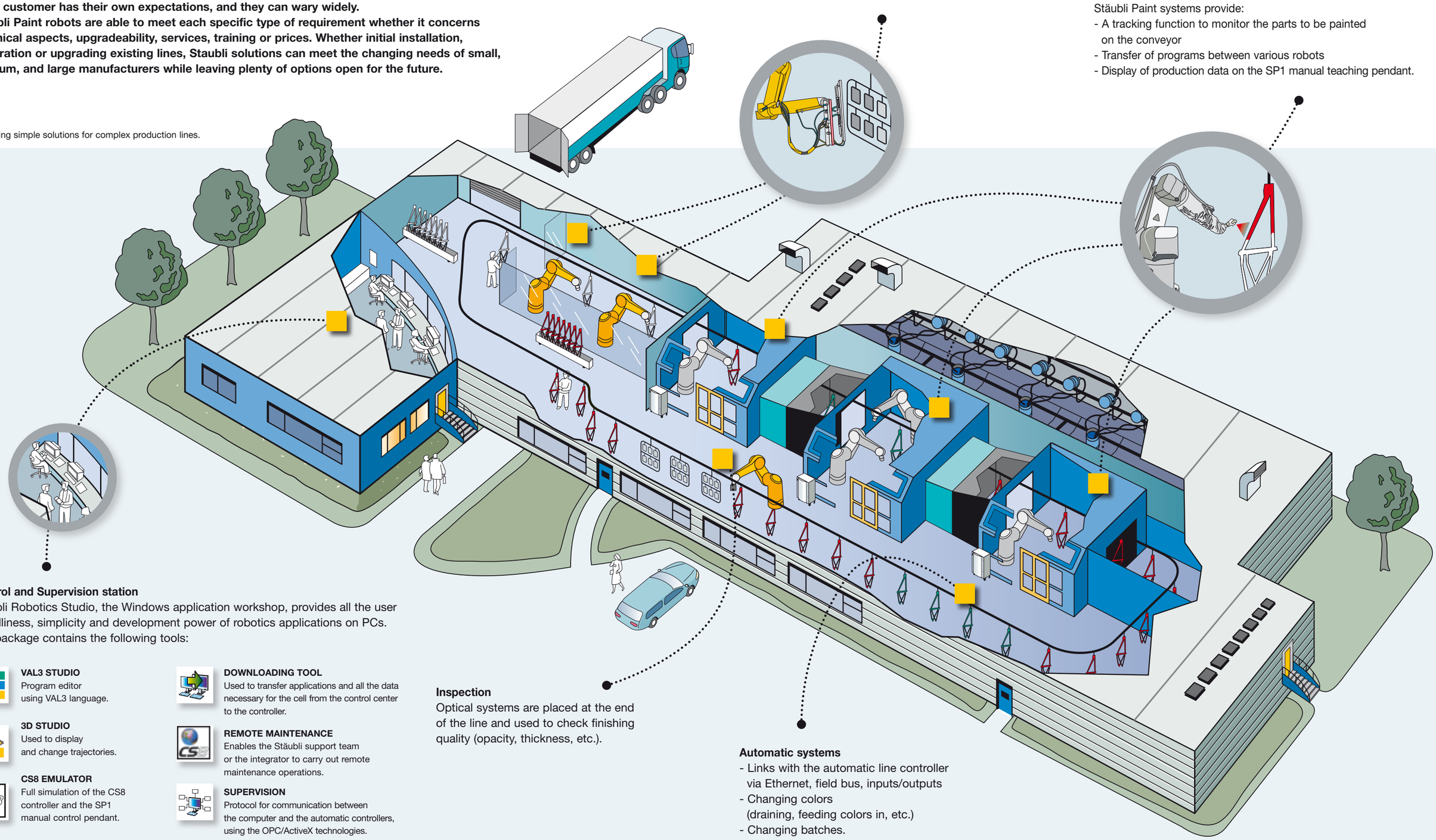
To better meet industrial requirements, Stäubli is also able to provide equipment for applications such as enameling, mold coating, glue spreading, glazing, etc.

Stäubli Paint systems can be used for all types of surfaces: plastic, metal, wood, etc.

Stäubli Paint solutions right down the line

Each customer has their own expectations, and they can wary widely. Stäubli Paint robots are able to meet each specific type of requirement whether it concerns technical aspects, upgradeability, services, training or prices. Whether initial installation, integration or upgrading existing lines, Staubli solutions can meet the changing needs of small, medium, and large manufacturers while leaving plenty of options open for the future.

Providing simple solutions for complex production lines.



Blowing/Flame treatment
- Processes used to ensure good finishing quality:
- Blowing to remove any dust
- Flame treatment to improve paint adherence

These actions are fully integrated in robotic lines, and they can also be programmed using the PaintiXen software.

Primers/Undercoats/Varnishes
For all types of booth and paint applied, Stäubli Paint systems provide:
- A tracking function to monitor the parts to be painted on the conveyor
- Transfer of programs between various robots
- Display of production data on the SP1 manual teaching pendant.

Control and Supervision station
Stäubli Robotics Studio, the Windows application workshop, provides all the user friendliness, simplicity and development power of robotics applications on PCs. The package contains the following tools:

VAL3 STUDIO
Program editor using VAL3 language.

3D STUDIO
Used to display and change trajectories.

CS8 EMULATOR
Full simulation of the CS8 controller and the SP1 manual control pendant.

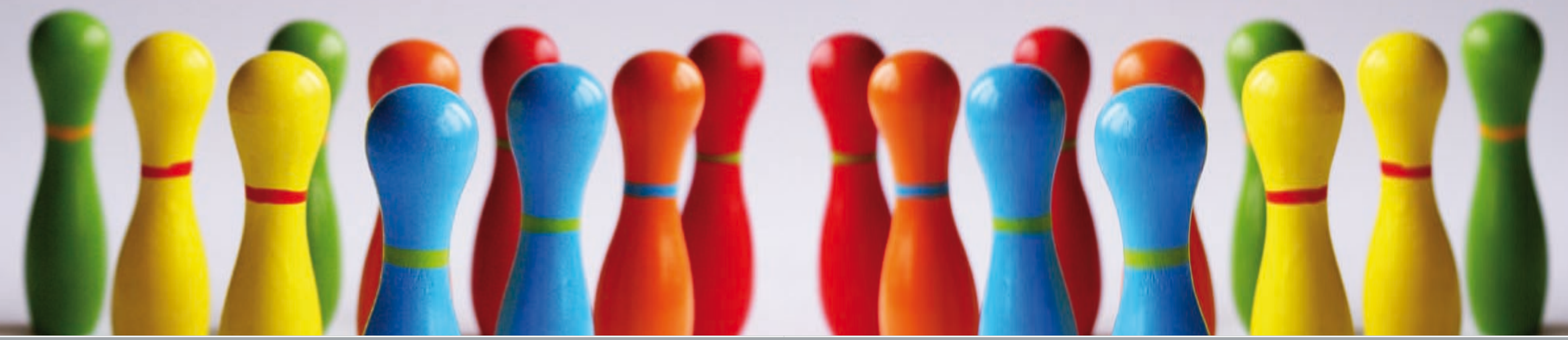
DOWNLOADING TOOL
Used to transfer applications and all the data necessary for the cell from the control center to the controller.

REMOTE MAINTENANCE
Enables the Stäubli support team or the integrator to carry out remote maintenance operations.

SUPERVISION
Protocol for communication between the computer and the automatic controllers, using the OPC/ActiveX technologies.

Inspection
Optical systems are placed at the end of the line and used to check finishing quality (opacity, thickness, etc.).

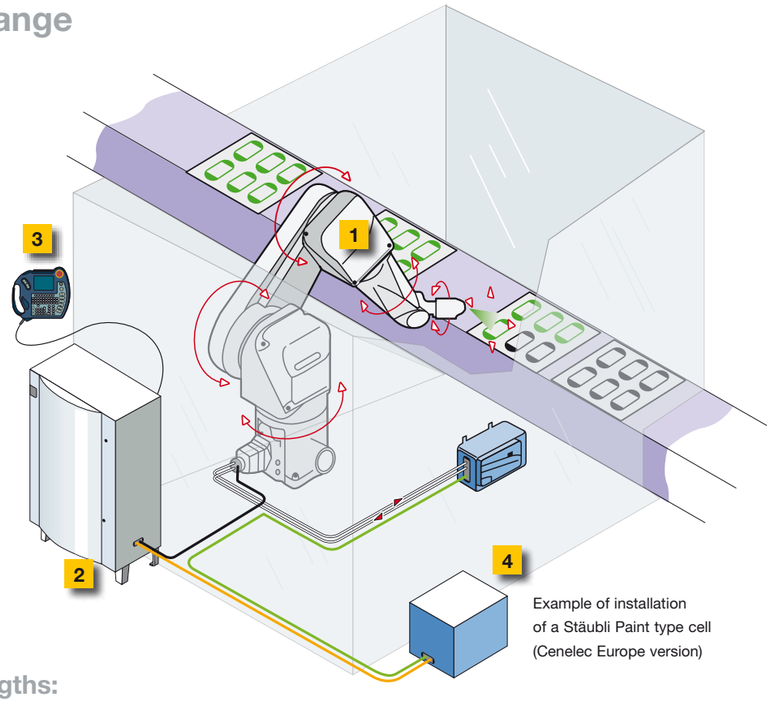
Automatic systems
- Links with the automatic line controller via Ethernet, field bus, inputs/outputs
- Changing colors (draining, feeding colors in, etc.)
- Changing batches.



Taking a broader view to see further ahead

Stäubli offers a full Painting robotics range

Well known for the quality of its products and services, Stäubli has developed a standard package comprising of a robot 1, its controller 2, the PaintiXen professional software interface on the SP1 manual teaching pendant 3, and a pressurization system for explosive atmospheres 4. All Staubli painting robots meet the CE ATEX (Europe) and FM or cCSAus (USA) standards.



Example of installation of a Stäubli Paint type cell (Cenelec Europe version)

A combination of technical strengths:

Rigid closed structure
The arm is protected by an air overpressure system in the aluminum structure. The high levels of dynamic performance, together with the precision and repeatability of the trajectories, lead to savings in time and products.

Multiple fixing modes
The robots can be mounted on the floor, a wall or the ceiling, to optimize layouts on all types of lines or machines.

User connections on the arm
The Paint robots are already fitted with pneumatic inlets and anchoring points for paint equipment.

Compactness of the base and wide working envelope
Because of their small footprint and their wide working envelope, Stäubli Paint robots facilitate integration and enable use of smaller booths.

A full range of 6-axis arms

The range of ten Paint robots covers all industrial requirements, with working envelopes ranging from 0.6 to over 2 meters.

MODEL	RXPaint 60	RXPaint 60 L	RXPaint 90	RXPaint 90 L	RXPaint 160	RXPaint 160 L	RXPaint 130 XL	TXPaint 90	TXPaint 90 L	TXPaint 90 XL
Range of motion (mm) (R.M)	665	865	985	1185	1710	2010	2185	1000	1200	1450
Nominal payload (kg)	2.5	1.5	6	3.5	20	14	6	7	6	5
Maximum payload* (kg)	10	6	11	6	34	28	10	20	15	12
Maximum working speed	1.8 m/s	1.8 m/s	2 m/s	2 m/s	2.5 m/s	2.5 m/s	1.8 m/s	2.5 m/s	2.5 m/s	2.5 m/s
Degrees of freedom	6	6	6	6	6	6	6	6	6	6
Solvent/Water-based/Powder	❍/❍/❍	❍/❍/❍	❍/❍/❍	❍/❍/❍	❍/❍/❍	❍/❍/❍	❍/❍/❍	❍/❍/❍	❍/❍/❍	❍/❍/❍
Fixing modes	Floor/Wall/Ceiling		Floor/Ceiling					Floor/Wall/Ceiling		
Operating zones Cenelec (Europe) CE Factory Mutual or cCSAus (USA)	Group II Category 2,3 Zone 1,2,21,22 Class I, II, III Div 1&2							Group II Category 3 Zone 2,22		
Stäubli CS8 series controller	CS8				CS8C		CS8	CS8C		

(*) Subject to specific conditions of use: consult us.

A single family of controllers for all the Paint robots

A common programming language with VAL3

Designed to simplify development, operating and maintenance tasks, the CS8 family of controllers commands the full range of Stäubli Paint arms in the VAL3 programming environment:

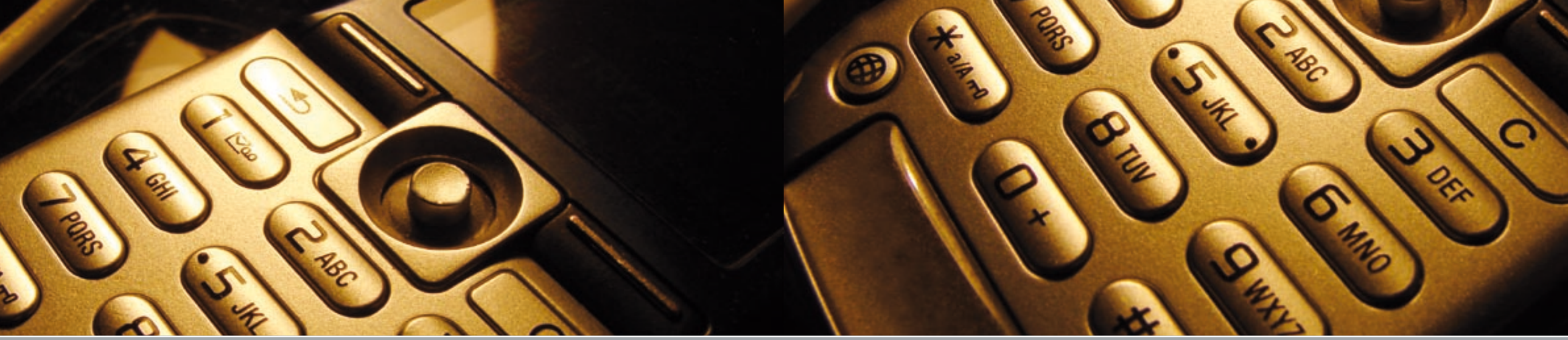
Open architecture
Ethernet, field bus, digital and analog inputs and outputs, series links, data exchange via OPC.

Proven reliability
Integral digital technology.

Ease of operation
Integrated management of the operating and cycle repeat modes.

Integrated diagnostic tools
Records of events and errors, debugging.

Factory network compatible
Option of linking CS8 and CS8C controllers to a factory network.



An efficient, upgradeable IT environment

Changing paint parameters without having to stop production.

Efficient and user-friendly, the Stäubli IT environment provides plenty of advantages to:

- **facilitate integrators' work**
- **reduce operator training times**
- **optimize system productivity.**

PaintiXen, the control software from Stäubli Robotics

This software package is designed to simplify use and programming of the applications of conventional or electrostatic powder and liquid paints. It integrates perfectly in the Stäubli Robotics Studio software workshop (VAL3 Studio, Remote maintenance, PLC Studio, etc.).

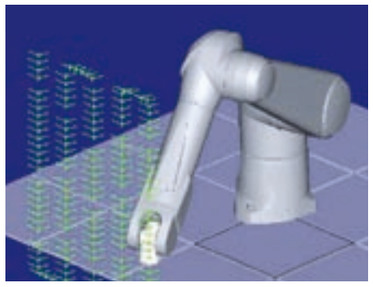
Strengths in simplicity

Interactive menus
directly interfaced on the SP1 manual control pendant, they facilitate human interventions and do not require any efforts to memorize all the PaintiXen commands.

Professional terminology
helps painters handle the robot directly.

Built in scenario and event programmability
(Presets, time delay systems, combinations of inputs/outputs, etc.), PaintiXen makes a fast job of teaching and optimizing paint trajectories.

The paint parameters
Electrostatic charge, atomization air, jet width, and product pressure are piloted through plug&play analog inputs/outputs whose values are taken into account via the presets.



Display of trajectories with 3D Studio.

Strengths in performance

Communication with automatic line controllers
Thanks to the VAL3 multitask system, communication with automatic line controllers is managed via predefined exchange functions that can be modified as required. For autonomous units, the automatic systems can be managed by the robot controller.

Optimized programming
Management of exports and imports of programs, trajectories and presets between robots via Ethernet/FTP or USB sticks shortens application development time and enables everyday optimization of existing programs.

Line homogeneity
This fast file exchange method provides homogeneous trajectories and parameterization on all the robots working on the same parts. Moreover, 3DStudio plays an active part in development of applications.

Extended functions
The tracking function is integrated in PaintiXen and management of external axes or associated rotary axes is possible as an option, with an interface on the SP1 manual control pendant.

Strengths in safety

Three user levels
(Programmer/integrator/operator) ensure optimum status for each automated installation and avoid risks of drift due to programming errors. This also enables modulation of the training provided for painters and operators.

Trajectory tests
Can be automatic or manual, with activation or disablement of the gun.

Maintenance programs
(Drain position, paint equipment maintenance position or stopping position for booth cleaning) are included to facilitate equipment maintenance.

The open architecture of the PaintiXen software
Enables integrators and industrial customer companies to make changes using VAL3 language.

PaintiXen

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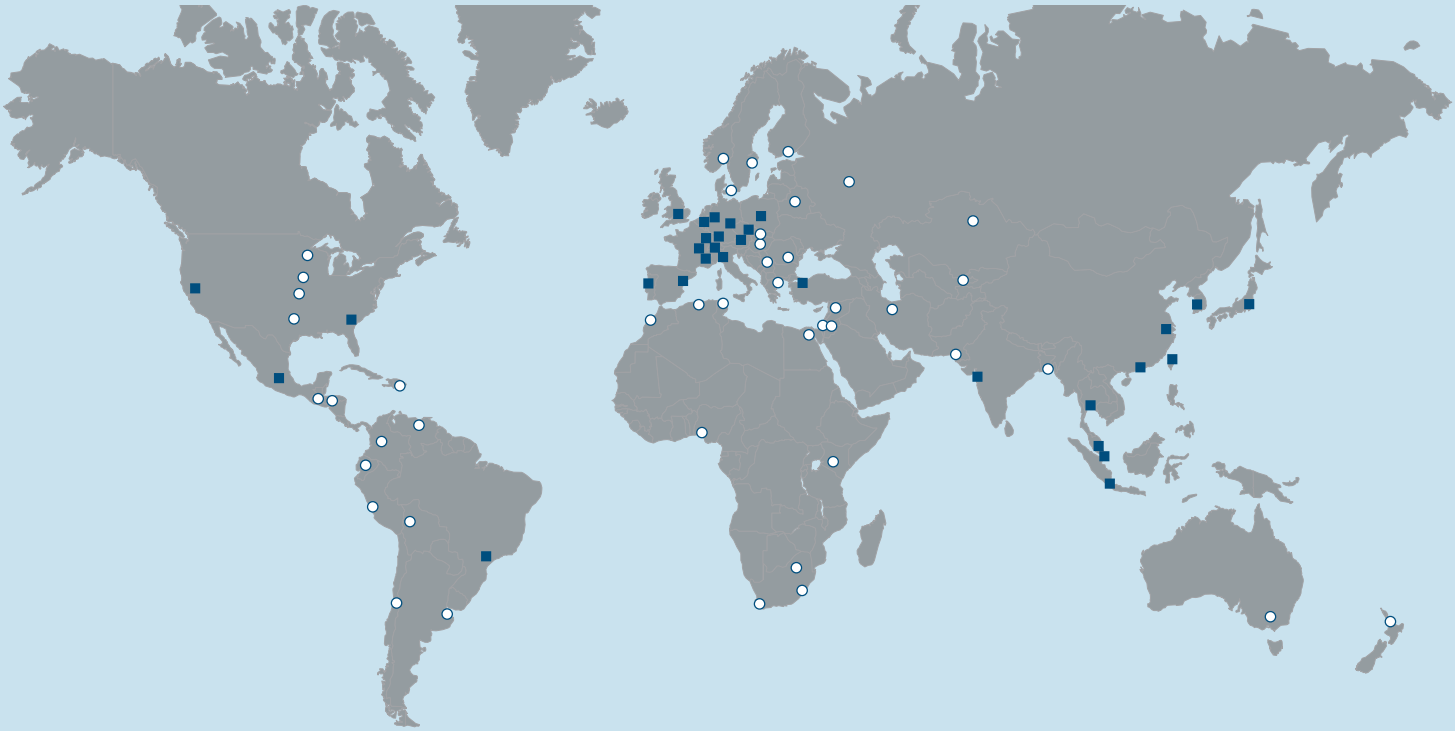

International: priority to proximity

■ Stäubli Units
○ Partners

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