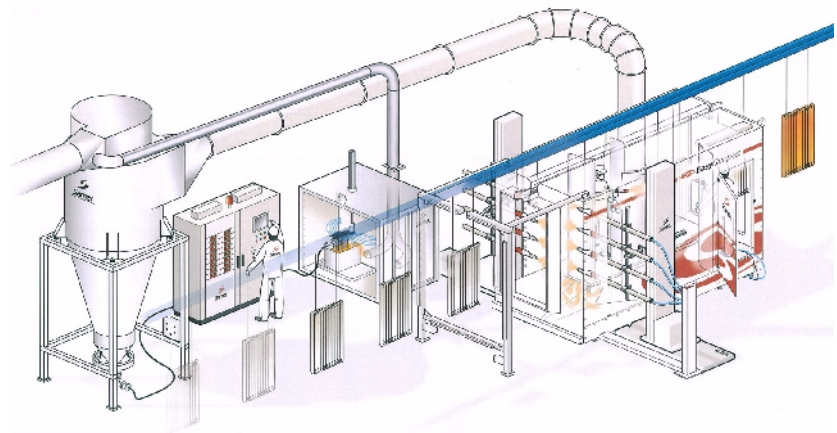




From February 1st, 2017 SAMES Technologies SAS becomes SAMES KREMLIN SAS  
A partir du 1/02/17, SAMES Technologies SAS devient SAMES KREMLIN SAS



# User manual

## EasyCompact automatic powder-coating system

**SAMES Technologies.** 13 Chemin de Malacher 38243 Meylan Cedex  
Tel. 33 (0)4 76 41 60 60 - Fax. 33 (0)4 76 41 60 90 - [www.sames.com](http://www.sames.com)

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Training Department :  
Tel.: 33 (0)4 76 41 60 04  
E-mail : formation-client@sames.com

EasyCompact  
automatic powder-coating  
system

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# 1. Safety

## 1.1. Associated documents

**Note:** This document contains links to the following user manuals:

[see RT Nr 6336](#) For the “Mach-Jet Gun” spray gun.

[see RT Nr 6366](#) For the “Auto Mach-Jet” automatic spray gun.

See supplier's notice for filtering unit.

[see RT Nr 7022](#) For the EasyCompact powder-coating booth.

[see RT Nr 7023](#) For the EasyCompact recycling system

[see RT Nr 7024](#) For the EasyCompact powder station.

[see RT Nr 6368](#) For the CS 127 powder pump.

## 1.2. Safety Regulations



**WARNING :** It is essential for operators to be aware of the back-end risks involved in using the equipment [see § 1.4 page 7](#).

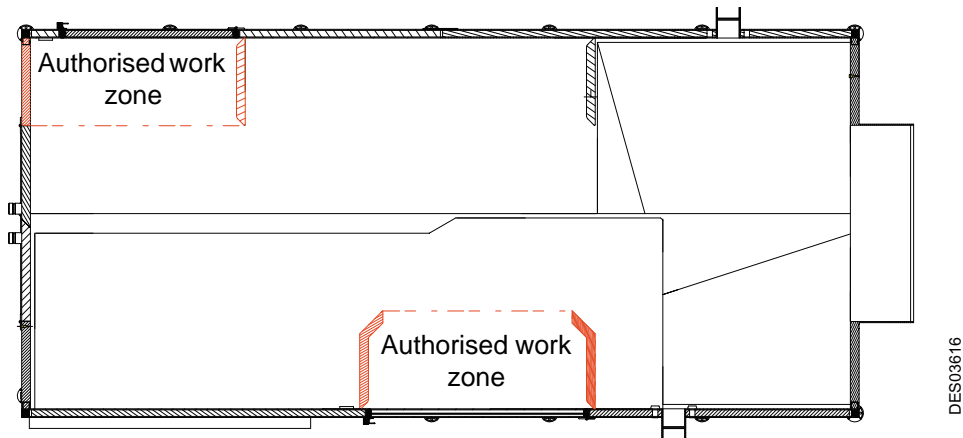
The rules below apply to installation, maintenance and operation of the equipment.



**WARNING :** The electrostatic paint spraying equipment must only be used by qualified personnel fully informed of the following safety rules:

- 1 The floor in the working area must be anti-static (generally, ordinary bare concrete floors are anti-static).
- 2 The ground terminal for the electro-pneumatic control module and all conducting structures (floors, walls of powder-spraying booths, ceilings, barriers, parts to be painted, etc.) that are inside or near the work station must be electrically connected to the ground system protecting the electrical power supply.
- 3 Grinding or welding of metal products carried out less than 5 metres from the booth is forbidden unless the following safety measures are implemented:
  - The booth must be protected by a non-flammable tarpaulin.
  - An employee equipped with a fire extinguisher must patrol the area surrounding the booth during the work.
- 4 The booth must not support any weight other than that of equipment originally intended to be installed on or around it.
- 5 Only use spray guns approved by SAMES Technologies in the booth.
- 6 The surface of the floor on which the booth is installed must be perfectly horizontal.
- 7 The floor on which the booth is installed must have a resistance greater than 400 kN /m<sup>2</sup>.
- 8 The temperature of any heat source in contact with the walls must not exceed 40°C.
- 9 The booth must only be used for electrostatic application of approved thermoplastic or thermosetting powder paints.
- 10A warning notice written in a language that the operator understands and summarising the safety rules indicated in this manual must be placed next to the workstation where it can be clearly seen.
- 11The operator must make sure that the high-voltage power supply has effectively been switched off before working in the spraying area, particularly during the cleaning stage.
- 12Shoes worn by operators must be antistatic and comply with publication ISO 2251. It is recommended to wear slippers or overshoes when entering the booth. If it is necessary to wear gloves, use only antistatic gloves or gloves with the palms removed.
- 13Due to the risk of fire, it is strictly forbidden to use flammable products for cleaning the booth and

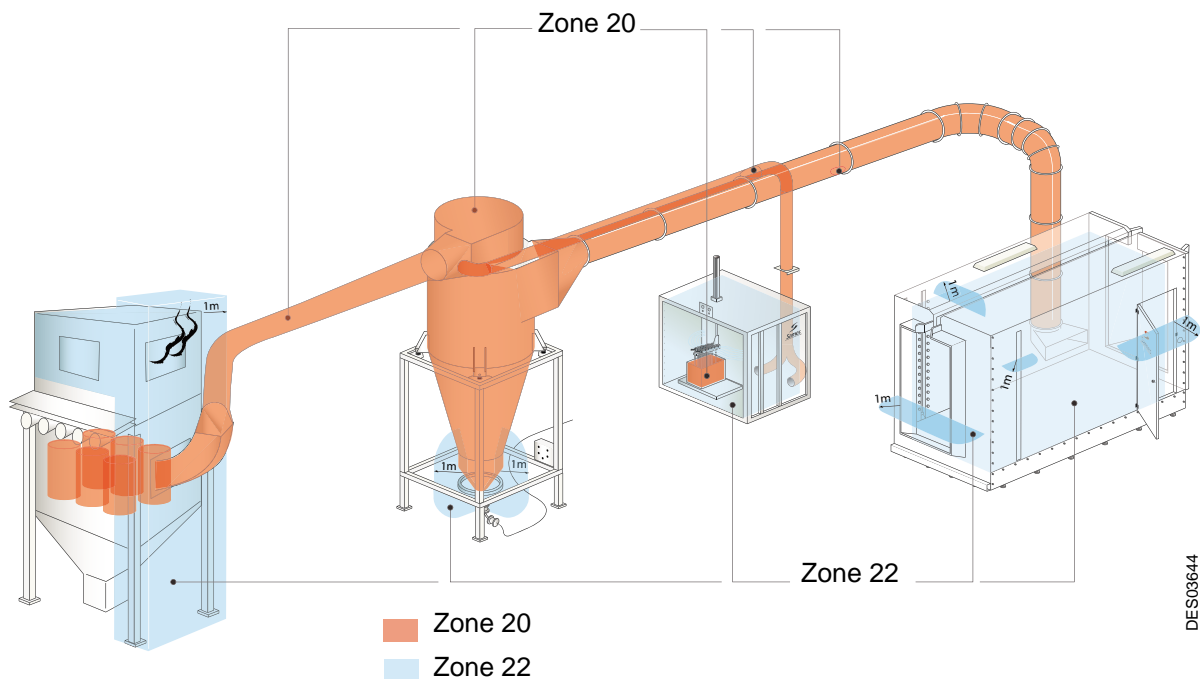
- its equipment. It is recommended to use only cleaning products approved by SAMES Technologies.
- 14 It is strictly forbidden to smoke or use devices producing a flame at a distance of less than 5 metres from the booth.
  - 15 Each part to be painted must have a resistance of less than 1 Mohm/ground: hooks and supporting devices used to hang parts in the booth must therefore be perfectly scoured and connected to the ground system.
  - 16 Powder spraying operations must be executed under optimum ventilation conditions. For this reason, the powder-coating equipment is interlocked with electric fan operation: powder can not be sprayed unless the electric fan is running.
  - 17 Booth doors must be assembled and disassembled using appropriate lifting equipment on account of their considerable weight (approximately 30 kg/m<sup>2</sup>).
  - 18 The automatic zone of the booth must only be accessed when the powder-coating phase is not in progress and only for maintenance purposes.
  - 19 The booth must only be cleaned from the outside.
  - 20 It is strictly forbidden to jump inside a booth installed in a pit. Impacts of this type could break welds.
  - 21 The operator must never move beyond the ends of the side deflectors during powder-coating operations (see illustration below).
  - 22 Travel speed of parts in the booth must not exceed 10 m/min.
  - 23 Periodically check the equipotential ground connection of the sifter, cyclone, screen, filter unit and powder station.



### 1.3. Compliance with ATEX directive

According to Directive 1999/92 EC, the user is responsible for defining ATEX zones. In accordance with standard EN 12981, Sames Technologies has designed the EasyCompact system taking the following areas into account:

- **Powder-coating booth:**
  - Zone 22 for inside volume and 1 metre around all openings.
- **Powder feed centre:**
  - Zone 22 for the internal volume of the centre.
  - Zone 20 for the internal volume of the powder fluidisation tank.
- **Cyclone and ducting:**
  - Zone 20.
- **Filter unit:**
  - Zone 20 for the internal volume after filters.
  - Zone 22 for the internal volume before filters and 1 metre around and perpendicular to the air outlet down to the floor.
- **Sifter:**
  - Zone 20 for the internal volume.
  - Zone 22 for the volume between 0 and 1 metre around its opening.



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#### 1.4. Back-end risks

It is essential to be familiar with the risks specific to each component of the EasyCompact **system**; refer to corresponding user manuals [see § 1.1 page 4](#).

The main risks linked to operation or maintenance of the system are described in the following table:

Risks	Severity	Extent of damage	Frequency and duration of exposure	Methods implemented to eliminate damage
Noise-related risks (see noise measurement sheet).	Slight	All operators working on the installation	During the booth cleaning phase	Use individual protection equipment (ear defenders, etc.).
Risks of electric shock while working on the control cabinet.	Serious	One or more operators	During cabinet maintenance operations; for the purpose of repairing electrical faults (converter fault).	Limit access to the inside of the cabinet exclusively to people qualified to work on live installations and who are wearing the appropriate personal protection. Open the general isolating switch if work is to be carried out with the power supply switched off.
Risk of retinal detachment with detector cells (LASER class II in compliance with standard CEI825).	Serious	One or more operators	In the case of prolonged exposure of eyes to the beam during work on detector cells.	Warn the operator against staring into the beam.



**WARNING** : The booth must only be cleaned from the outside.

## 2. Equipment description



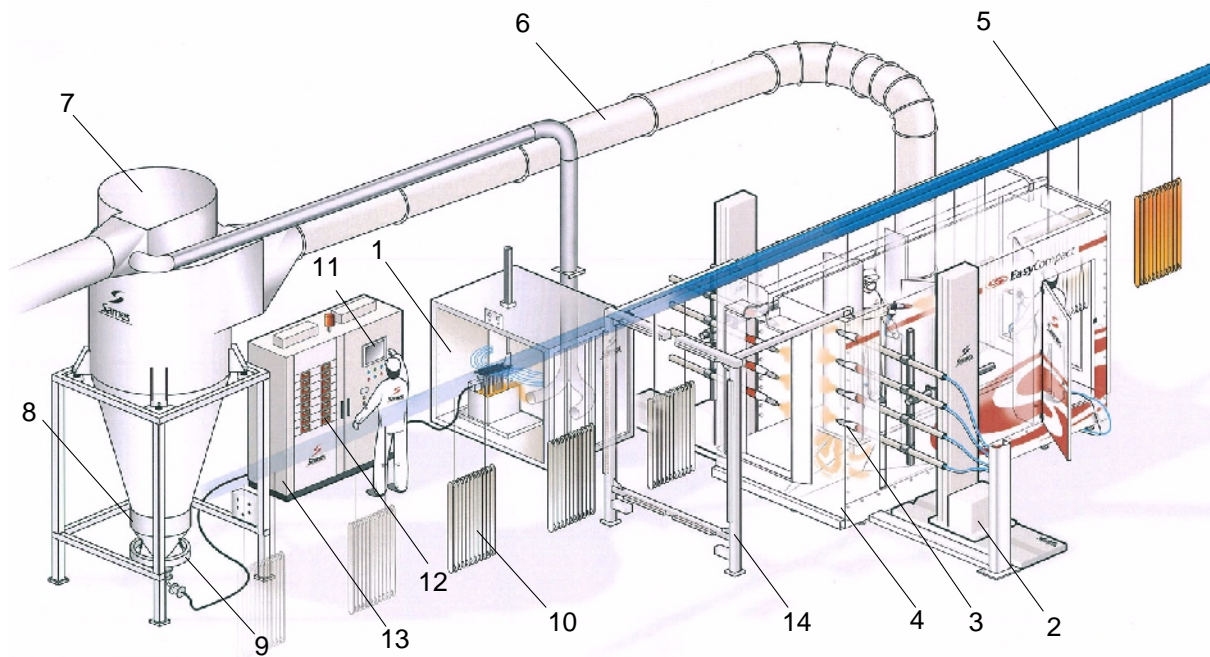
**WARNING** : Powder-coating equipment must be installed by a **SAMES** technician. It is essential to comply with **SAMES Technologies** recommendations for all modifications concerning the EasyCompact PVV automatic powder-coating system.

### 2.1. System description



**WARNING** : The EasyCompact PVV system may be dangerous if it is not used in compliance with the rules indicated in this manual. It is intended for powder-paint spraying only.

2.1.1. Presentation  
**(Non-contractual illustration)**



2.1.2. System composition

It consists of:

- Powder-spraying and recycling elements.
- Control devices.

2.1.2.1. Spraying and recycling elements

Definition:

- Spray gun: Auto Mach-Jet type automatically triggered powder spraying device.
- Spray gun: Mach-Jet Gun type manually triggered powder spraying device (trigger-operated).

Including:

- The powder-coating booth (4), equipped with one or more robots (2) on which the spray guns (3) are mounted (each single or double-axis, lateral robot may be equipped with a maximum of 12 spray guns). There can be a maximum of 24 powder-coating devices (spray guns) per installation.
- The cell gantry (14), located at the booth entrance, which detects incoming parts to be painted (10) on the conveyor (5).
- The powder station (1), which supplies the booth with new powder and recovers recycled powder.
- The cyclone/sifter unit (7, 8 and 9), which recycles powder not deposited on parts to be coated.
- The sleeve-valve recycling system, which transfers powder from the sifter to the powder station.
- The filter unit (not shown).
- The electric fan (located on filter unit, not shown), which ensures air flow throughout the system.
- The duct (6), which carries unused powder from the booth to the cyclone.
- One or more manual powder-coating units (one or more spray guns) can be installed.
- The electrical cabinet containing control and safety devices.



#### 2.1.2.2. Control devices

Opening the general isolating switch, located on the side of the electrical cabinet, switches off the electrical and pneumatic power supplies to the system.

The control devices are:

- The PLC (11), located inside the electrical cabinet (13).
- CRN 457-type control modules (12).

To synchronise operations, information is exchanged between:

- The conveyor control system.
- The PLC.

### 3. Spare Parts

#### 3.1. Fuses

##### Fuse cartridges in PVV cabinet

Format	Calibre	Qty
10 x 38	1 A gG	3
10 x 38	2 A gG	4
10 x 38	4 A gG	1
10 x 38	6 A gG	1
10 x 38	10 A gG	1
10 x 38	16 A gG	4
10 x 38	1 A aM	3
10 x 38	2 A aM	6
10 x 38	10 A aM	21
5 x 20	0.5 A fast	2
5 x 20	2 A fast	1
5 x 20	5 A fast	1
5 x 20	6.3 A fast	1
22 x 58	80 A aM	3
22 x 58	100 A aM	3
22 x 58	125 A aM	3

#### 4. Check on safety requirements and noise protection measures

The sound pressure measurements listed in section 4.3 were conducted under the conditions defined in section 4.1 in the Sames Technologies test laboratory. Laboratory characteristics are described in section 4.2.

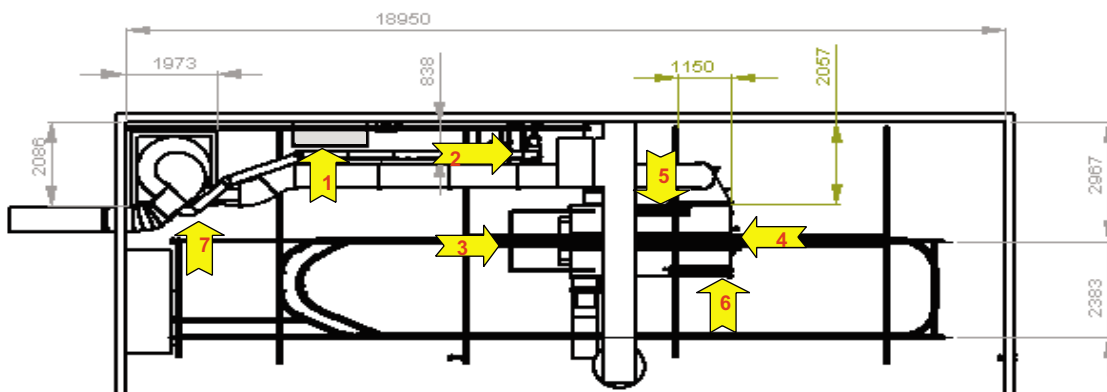
##### 4.1. Operating conditions

Booth air flow rate (nominal: 15,500 m <sup>3</sup> /h)	15,300 m <sup>3</sup> /h maximum
Powder station air flow rate (nominal: 2,500 m <sup>3</sup> /h)	2,500 m <sup>3</sup> /h
Number of spray guns	24
Background noise	75 dB(A)
Compressed-air network pressure	8 bar

##### 4.2. Characteristics of room in which system is installed

Length	18.95 m
Width	11.80 m
Height	6.1 to 6.95 m
Volume	1,463 m <sup>3</sup>
Surface of walls (concrete)	850 m <sup>2</sup>
Nature of wall and floor surfaces	Bare concrete

##### 4.3. Measuring points



All measurements are taken at a height of 1.5 m above the floor (or floor of booth).

**Note: noise generated by the filter group is not taken into account in these measurements.**

**During powder application:**

<b>Point N°</b>	<b>Position</b>	<b>Measurement in dB(A)</b>
1	In front of electrical cabinet and next to its screen	76.6
2	1 m away from front panel of powder station	80
3	1 m away from entrance airlock (at cell gantry level)	76.7
4	1 m away from exit airlock	75.3
5	Inside booth at centre of red plate	77.2
6	Inside booth at centre of red plate	76.5
7	1 m away from sifter	78.5

**During automatic cleaning (cleaning of 24 spray guns, i.e. 48 nozzles):**

<b>Point N°</b>	<b>Position</b>	<b>Measurement in dB(A)</b>
1	In front of electrical cabinet and next to its screen	89
2	1 m away from front panel of powder station	88.8
3	1 m away from entrance airlock (at cell gantry level)	97.4
4	1 m away from exit airlock	-
5	Inside booth at centre of red plate	-
6	Inside booth at centre of red plate	-
7	1 m away from sifter	-