



Dust Collection & Explosion Protection Solutions

Tailor-made for 3D Printing

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About Villo

18+
Years' Experience

100,000+
Installations

375
R&D Engineers & Technicians

100+
Countries & Areas' Presence

100,000+
m² Manufacturing Base

Established in 2007, Villo is a leading solution provider for industrial dust control and explosion protection system, serving for manufacturers of lithium-ion battery, 3D printing, photovoltaic etc.

Headquartered in China's manufacturing hub —— Dongguan city, Villo has two factories covering 100,000 square meters in South and East China, producing a wide breadth of product offerings including industrial dust collectors, vacuum cleaners and explosion protection devices.

Backed by its strong production capability, a professional R&D team and extensive experience of exporting more than 100,000 successful installations in the past years, Villo is capable to tailor-made ideal solutions to help you solve your dust, fume and mist collection challenges and thus produce dustless and safely.

Certified internationally by ATEX, UL, CE and etc., Villo's products manage to help your production line meet local regulations of your area. Villo's branches in Euro, the U.S. and Asia are also ready to provide instant and on-site service to you.

Villo Timeline

2025

Villotech Japan Co., Ltd. established

2023

Villo Global R&D Center groundbreaking
Villo Korea Technical Service Center established

2022

Villo Changzhou R&D Center established
Villo Envsave Testing Center accredited by CNAS
(China National Accreditation Service for Conformity)

2021

Villo Changzhou established

2020

Villo Hunan established
Villo Ningde Engineering established
Villo Innovation Institute established

2019

Villo Germany established

2018

Villo Envsafe Institute established
Drafted China's "Dust Explosion Pressure Relief Standard"
and "Explosion Protection Technical Standard for
Combustible Dust Process Systems"

2017

Villo USA established
Villo Hong Kong established
Villo Eastern China established

2016

TUV ATEX certified for both products and
company system CQCEX certified

2012

Villo's products got
CE certifications

2009

ISO9001 certified

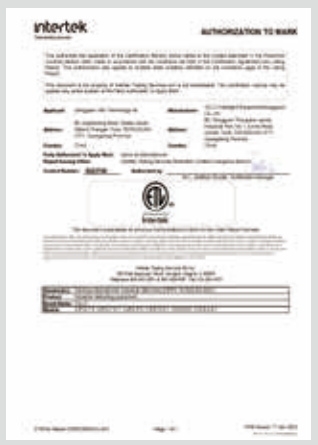
2007

Villo founded

Certifications & Compliance



Villo has obtained ISO9001 Quality Management System certification and offers a wide range of products compliant with international standards such as ATEX, UL, and CE.



3D Printing Powder Handling & Dedusting Solutions



Wet-Type Explosion-Proof Dust Collector
P1



Gas Circulation Cabinet
P2



Powder Sieving Machine
P3



Vacuum Feeder
P4



Suction & Sieving Integrated Unit
P5



Automatic Powder Cleaning Machine
P6



Powder Management System for Metal Additive Manufacturing
P7



Intelligent Auxiliary System for Metal Additive Manufacturing
P8

Challenges

- During 3D printing, residual metallic powders such as stainless steel, aluminum alloy, titanium alloy, and magnesium alloy remain in the chamber.
- These powders are flammable and explosive, posing a high safety risk if not properly handled.

Solutions

- Equipped with a 2.2 kW explosion-proof motor and multi-stage water filtration system.
- Certified for explosive dust collection with reliable dust suppression performance.
- Compact design (830 × 743 × 1629 mm) with swivel casters for easy mobility and maintenance.

Applicable Scenarios

- Suitable for stainless steel, magnesium alloy, titanium alloy, aluminum alloy, aluminum powder, and graphite.
- Ideal for post-printing chamber cleaning and removal of residual combustible powders.



Technical Parameters

Item	Specification
Model	VK0-220RZ
Power Supply (V/Hz)	380 / 50
Rated Power (kW)	2.2
Maximum Airflow (m³/h)	250
Maximum Vacuum (mbar)	260
Noise Level (dB(A))	≤75
Dust Collector Capacity (L)	100
Filter Media	Antistatic PTFE Membrane
Filter Area (m²)	2.2
Filtration Accuracy (µm)	0.3 – 1
Filtration Efficiency (%)	99.15
Dimensions (mm)	820 × 970 × 1660

Challenges

- During the printing process, fine powder particles are inevitably generated.
- If not removed in time, they can reduce product quality and even lead to explosion risks.

Solutions

- Designed to meet powder characteristics and inert atmosphere requirements.
- Uses VJS series high-sealed industrial dust collectors with antistatic filter media.
- Provides excellent dust removal efficiency, high air-tightness, and stable oxygen control.

Applicable Scenarios

- Suitable for high-temperature nickel alloys, stainless steel, aluminum alloys, titanium alloys, and pure metal powders.
- Ensures safe and stable powder handling in additive manufacturing environments.



Technical Parameters

Item	Specification		
Model	VJS-QB-055LNZ-N1R	VJS-QB-075LNZ-N1R	VJS-QB-110LNZ-N1R
Power Supply (V/Hz)	380 / 50	380 / 50	380 / 50
Rated Power (kW)	5.5	7.5	11
Maximum Airflow (m³/h)	500	800	1050
Maximum Vacuum (mbar)	200	220	220
Applicable Workpiece Size (mm)	460 × 360	460 × 460	720 × 720
Oxygen Concentration Environment (ppm)	≤72 (under normal operating conditions)	≤72 (under normal operating conditions)	≤72 (under normal operating conditions)
Noise Level (dB(A))	≤72	≤72	≤72
Primary Filtration	Front cyclone separator	Front cyclone separator	Front cyclone separator
Secondary Filtration	Permanent flame-retardant antistatic filter cartridge	Permanent flame-retardant antistatic filter cartridge	Permanent flame-retardant antistatic filter cartridge
Tertiary Filtration	H14 high-efficiency filter	H14 high-efficiency filter	H14 high-efficiency filter
Optional Configuration	Cooling & dehumidification unit, powder neutralization unit	Cooling & dehumidification unit, powder neutralization unit	Cooling & dehumidification unit, powder neutralization unit
Operating Pressure (Pa)	200–5000	200–5000	200–5000
Cleaning Time (min)	≤60	≤60	≤60

Challenges

- Metal 3D printing requires highly precise sieving of powders with excellent airtight performance.

Solutions

- Equipped with ultrasonic sieving technology driven by a motor with high-frequency vibration.
- Adapts to powder characteristics and process requirements, ensuring stable sieving efficiency.
- Maintains a sealed structure to keep oxygen levels low inside the chamber, preventing the risk of spontaneous combustion and ensuring operator safety.

Applicable Scenarios

- High-temperature nickel alloys, stainless steel, aluminum alloys, titanium alloys, and other metal powders.



Technical Parameters

Item	Specification	
Model	VJS-SN-008LNZ-N1R	VJS-SN-008LNZ-N2R
Power Supply (V/Hz)	220 / 50	220 / 50
Power (kW)	2 × 0.04	2 × 0.04
Noise Level (dB(A))	≤75	≤75
Nozzle Diameter (mm)	Φ360	Φ360
Filtration Precision (mesh)	Standard: 260 mesh (other mesh sizes optional)	Standard: 260 mesh (other mesh sizes optional)
Air Tightness	Withstands 3000 Pa pressurization, pressure drop ≤100 Pa within 30 minutes	Withstands 3000 Pa pressurization, pressure drop ≤100 Pa within 30 minutes
Oxygen Detection	√	√
Pressure Detection	√	√
Dimensions (mm)	850 × 720 × 2010	850 × 720 × 2010
Domestic Ultrasonic	√	×
Imported Ultrasonic	×	√

Challenges

- During 3D printing start-up or powder loading, manual feeding can lead to contamination, poor airtightness, and operator exposure risks.
- Automated, intelligent feeding is required to ensure safety and efficiency.

Solutions

- Designed according to powder properties and inert atmosphere requirements.
- Integrated with the VJS series sealed vacuum conveying system, featuring antistatic PTFE filter media.
- Delivers efficient dust removal, excellent airtightness, and low oxygen content.

Applicable Scenarios

- High-temperature nickel alloys, stainless steel, aluminum alloys, titanium alloys, and pure metal powders.
- Supports synchronized multi-printer powder feeding systems.



Technical Parameters

Item	Specification
Model	VJS-LN-022LNZ-N1R
Power Supply (V/Hz)	220 / 50
Rated Power (kW)	2.2
Oxygen Concentration Environment (ppm)	≤5000
Powder Feeding Rate (L/min)	3
Noise Level (dB(A))	≤72
Operating Pressure (Pa)	200–5000
Cleaning Time (min)	≤20
Standard Inlet Diameter (mm)	Ø51
Mobility	Equipped with casters
Dimensions (mm)	1200 × 680 × 1350

Suction & Sieving Integrated Unit

Challenges

- Excess powder inside 3D printers often requires manual suction and transfer to storage tanks.
- This manual process is inefficient, labor-intensive, and prone to secondary pollution and powder loss.
- There is an urgent need for an automated and intelligent solution to collect and sieve powders simultaneously.

Solutions

- Operates in an inert atmosphere to achieve both powder suction and sieving functions.
- Minimizes manual handling, reduces contamination risks, and improves production efficiency.

Advantages & Features

Ultrasonic Vibrating Sieving Unit:

- Combines high-frequency and low-frequency vibration to uniformly sieve powders to the mesh surface, ensuring high sieving accuracy.

Integrated Sieving & Storage:

- Residual powders are directly stored in the sieving tank after separation, reducing handling steps.

Inert Atmosphere Operation:

- Equipped with oxygen monitoring and airtight control to ensure safe powder handling and minimize explosion risks.

Applicable Scenarios

- Specifically designed for automated cleaning of residual powders inside metal 3D printing equipment.

Technical Parameters

Item	Specification
Model	VJS-BN-010LNZ-N1R
Power Supply (V/Hz)	380 / 50
Rated Power (kW)	1
Maximum Airflow (m³/h)	300
Maximum Vacuum (mbar)	50
Standard Inlet Diameter (mm)	Ø51
Noise Level (dB(A))	≤73
Oxygen Concentration Environment (ppm)	≤5000
Operating Pressure (Pa)	200–5000
Cleaning Time (min)	≤20
Dimensions (mm)	1266 × 711 × 2345

Automatic Powder Cleaning Machine

Challenges

- Residual powders inside complex 3D printed parts are difficult to remove manually.
- Inefficient cleaning may leave metallic powders such as titanium and aluminum inside cavities, posing combustion and explosion hazards.

Solutions

- Custom-designed automatic powder cleaning technology tailored to complex powder removal needs.
- Combines high-efficiency air-blowing and vacuum suction to remove powders thoroughly while maintaining an inert atmosphere.
- Ensures safe, reliable, and efficient cleaning for various metal powders.

Advantages & Features

- Equipped with a rotary platform, enabling 360° rotation, tilt, and oscillation to achieve high-efficiency cleaning of complex part geometries.
- Integrated with a closed-loop inert gas circulation and purification system to ensure low oxygen concentration during cleaning.
- Automatic dust collection and filtration efficiency up to 99.95% @ ≥0.3 μm.
- Multiple safety designs including explosion venting, pressure sensors, and oxygen monitoring for maximum operator safety.

Applicable Scenarios

- Ideal for cleaning residual powders inside titanium, aluminum, and other metal additive manufactured components.

Technical Parameters

Item	Specification	
Model	VCT-3DP-F400	VCT-3DP-F1000
Power Supply (V/Hz)	380 / 50	380 / 50
Rated Power (kW)	6	15
Maximum Workpiece Size (mm)	≤450 × 450 × 500	≤800 × 800 × 1200
Maximum Load Capacity (kg)	400	1000
Dimensions (mm)	2100 × 1400 × 2300	4700 × 3500 × 3600
Compressed Air Pressure (MPa)	0.5 – 0.8	
Inert Gas Pressure (MPa)	0.5 – 0.7	
Inert Gas Flow Rate (L/min)	≥200	
Exhaust Filtration Level	H-class	
Applicable Powders	Nickel alloys, stainless steel, aluminum alloys, titanium alloys, and other metal powders	





Product Introduction

- The powder management system integrates RGV automated conveyor systems with AGV powder handling vehicles, achieving full automation of powder flow and logistics. With advantages in safety and intelligent operation, it ensures safe, stable, and efficient powder processing. Highly functional and modular, it can efficiently handle powder tasks such as sieving, conveying, suction, storage, and distribution.

Advantages & Features

- Safety: Designed in compliance with strict safety standards, ensuring operator and equipment safety.
- Efficiency: Optimized powder handling workflow to minimize manual intervention and enhance operational efficiency.
- Flexibility: Compatible with different types of powder storage tanks, conveying pipelines, and 3D printing systems, meeting diverse production requirements.
- Automation: Significantly reduces manual handling, improves consistency and reliability, and ensures long-term stable operation.

Technical Parameters

Item	Specification
Supported Printer Quantity	One printer per feeding unit
Powder Feeding Rate (L/min)	3
Powder Sieving Rate (L/min)	3
Maximum Vertical Feeding Distance (m)	≤8
Maximum Horizontal Feeding Distance (m)	≤25
Automation Functions	AGV interface
	New powder supply
	Sieving
	Residual powder storage
	Powder recycling
	Adaptive powder recovery



Product Introduction

- This innovative auxiliary system, developed in-house, features high safety, efficiency, and intelligence. It integrates modules such as gas circulation filtration, powder suction, sieving, and loading into a comprehensive 3D printing powder management solution. Already successfully implemented in large-scale additive manufacturing enterprises, the system demonstrates excellent performance and reliability, making it the preferred choice for industrialized additive manufacturing.

Technical Parameters

Item	Specification
Module	External air circulation filtration module
Filtration Method	Permanent filter (>5 years)
Applicable Powders	High-temperature nickel alloys, aluminum alloys, titanium alloys, cobalt alloys, pure metal powders
Applicable Chamber Size (m)	≤2000
Filtration Efficiency	≥0.3 μm, three-stage filtration, 99.99%
Filtration Stages (Optional)	① Pre-filter
	② Permanent filter
	③ High-efficiency filter
Safety Functions (Optional)	① Powder neutralization
	② Explosion venting device

Item	Specification
Module	Feeding / Sieving Module
Speed (L/min)	≤3
Vertical Height (m)	≤8
Horizontal Distance (m)	≤25
Operating Mode	Closed loop

