

## **Product Data Sheet**

# Metco LSF 800 Liquid Suspension Feed System for Thermal Spray

**The Metco LSF 800 accurately and continuously feeds suspension feedstock materials for thermal spray processes in production environments.**

Feeding of micron and nanostructured powders is challenging for traditional thermal spray powder feeders that use carrier gases to convey the powder. However, feeding these materials is crucial to achieve the advanced coating structures required by today's industries. It is essential to be able to feed these liquids without pulsation while ensuring that the powder particles remain suspended for consistent and reliable coating results.

The LSF 800 stands out in the thermal spray industry due to its high pressure capability, making it suitable for a wide range of applications and suspensions. This feature greatly enhances deposition efficiency, particularly for Thermal Barrier Coatings (TBC). The Metco LSF 800 suspension feeder provides pulse-free operation and maintains a consistent suspension without sedimentation. It can be used with water or ethanol suspensions and can feed solid phase powders of ceramics, metals, alloys, carbides, and cermets. The Metco LSF 800 suspension feeder is designed for quick and simple maintenance and trouble-free operation. The built-in cleaning system prevents clogging of the suspension injectors.

Additionally, advanced controller integration with UniCoat3 and MultiCoat5 provides enhanced precision, control, and monitoring of the coating process, ensuring superior performance and reliability of the LSF 800. The Metco LSF 800 can be operated as a standalone feeder with any existing atmospheric plasma spray system. The Metco LSF 800 can feed continuously, making it the ideal suspension feeder for R&D, prototyping, and production operations.



Metco LSF 800 Liquid Suspension Feeder

## 1 General Description

The Metco LSF 800 employs pneumatic pressure to deliver the suspension through the feed line and to the spray gun. This ensures pulse-free operation. The operating pressure of up to 15 bar can be specified by the user, thereby allowing for a range of solutions with different solid loadings and viscosities to be used as the feedstock.

The Metco LSF 800 will feed at rates of 10 to 200 g/min (1.3 to 26.5 lb/h). The maximum loading of solid phase to liquid phase is 60 wt. %.

Operating pressures up to 15 bar (218 psi) allow for improved deposition efficiencies and can be achieved with argon or nitrogen to prevent a reaction of the pressurization gas with the solution.

### 1.1 Dual Canister Design

The dual canister design allows feeding from one canister while the other is being filled. When one canister is empty, the feeder automatically switches to the second canister, thus achieving continuous operation. It is also possible to operate both canisters simultaneously if application requires. Each canister holds up to 4 l (1.06 gal) of suspension.

The canisters employ an electric driven stirrer to ensure thorough agitation that maintains the suspension while the feeder is in operation.

### 1.2 Operator Interface

The feeder's operations can be carried out using the touch panel or seamlessly integrated into the UniCoat3 or Multi-Coat5 controller for control via their respective control panels. This allows the operator to input feed parameters, initiate or halt feeding, and oversee the feed processes.

The feeder E-stop on the operator interface must be integrated into the thermal spray system E-stop circuit via a connection on the feeder electrical panel.

### 1.3 Modes of Operation

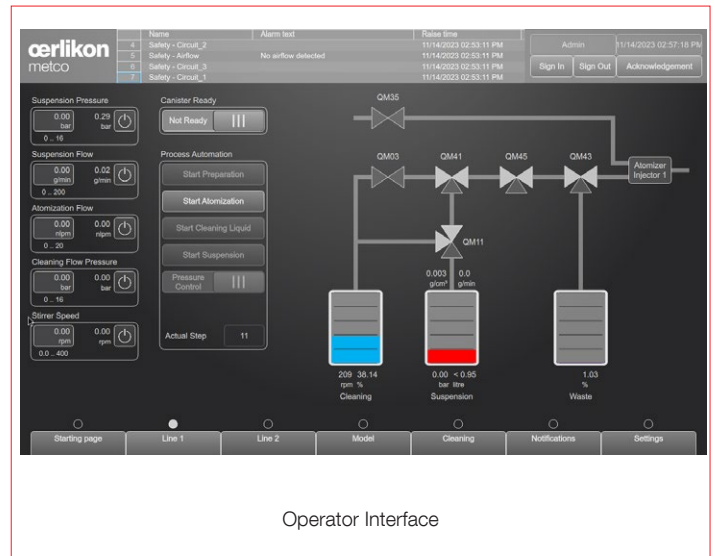
The Metco LSF800 optionally features two independent feed lines equipped with a Coriolis mass flow controller (Coriolis MFC) to measure and control the mass flow rate of the suspension for accurate feed rates. The feeder can be operated in two different modes:

- **Open Loop, Feed Pressure Set Point:** The feed rate is calculated from the Coriolis MFC. In this mode, the feed rate is dependent on the injector orifice diameter, feed hose length and suspension properties and the hopper pressure set point.
- **Closed Loop, Feed Rate Set Point:** In this mode, the canister pressure will automatically adjust to achieve the desired feed rate based on Coriolis MFC setpoint.

### 1.4 Purge System

Metco LSF 800 feeders are equipped with an automated purge system designed to clean the entire feed line starting at the canister to the gun injectors preventing sedimentation and conglomeration of the solid phase that would otherwise clog the feedline and gun injector.

An auxiliary purge canister stores the cleaning fluid (de-ionized water). Prior to feeding and after feed stop, the purge system automatically cleans the feeding line.



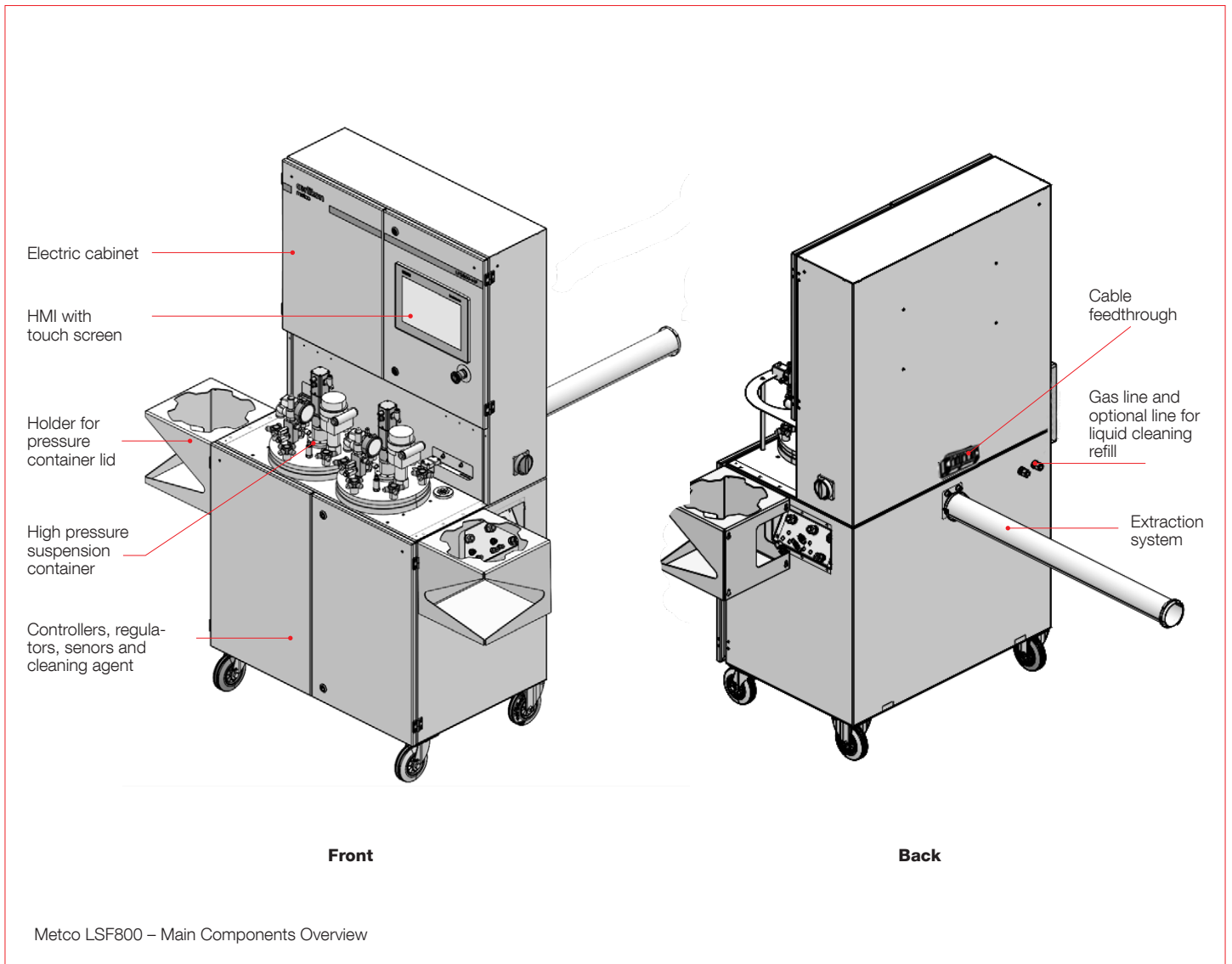
Operator Interface

### 1.4 Configuration

Our liquid suspension feeder is designed for optimal performance and ease of use. The unit features two pressure vessels, one cleaning water reservoir, and one waste container. It includes an advanced dosing system for precise suspension delivery, with easy adjustments for flow rates and concentrations. The feeder has either one or two active feedlines for suspension flow control, allowing for co-injection of two suspensions simultaneously. A robust mixing mechanism ensures uniform suspension, preventing sedimentation. Built with durable materials, our feeder guarantees reliable operation in demanding environments.

### 1.5 Metco LSF 800 Models

Model No.	Feed Line	Order Number
LSF800-SL	Shared Line	2439876
LSF800-DL	Dual Line	2435994



## 2 Features and Benefits

- Pulse-free consistent feed of suspensions
- It can be used with water or ethanol suspensions and can feed solid phase powders of ceramics, metals, alloys, carbides, and cermets
- Coriolis mass flow controller to measure and control the mass flow rate of the suspension for accurate feed rates
- Allows for closed loop or open loop feed pressure set point
- Integrated touch panel or UniCoat3 or MultiCoat5 integrated controls all aspects of the feeder
- Standalone suspension feeder can be used with any plasma spray system
- Feeds micron and nanostructure powders
- Dual canister design with automatic switching between canisters allows for continuous operation
- Built-in automatic purge system to prevent caking of the solid phase in the feedlines
- High pressure feed system to enable higher deposition efficiencies

### 3 Accessories and Options

Oerlikon Metco offers injectors designed for liquid suspension feeding for the following plasma spray guns:

- TriplexPro-210
- SinplexPro series
- F4MB-XL
- Metco 9MBM

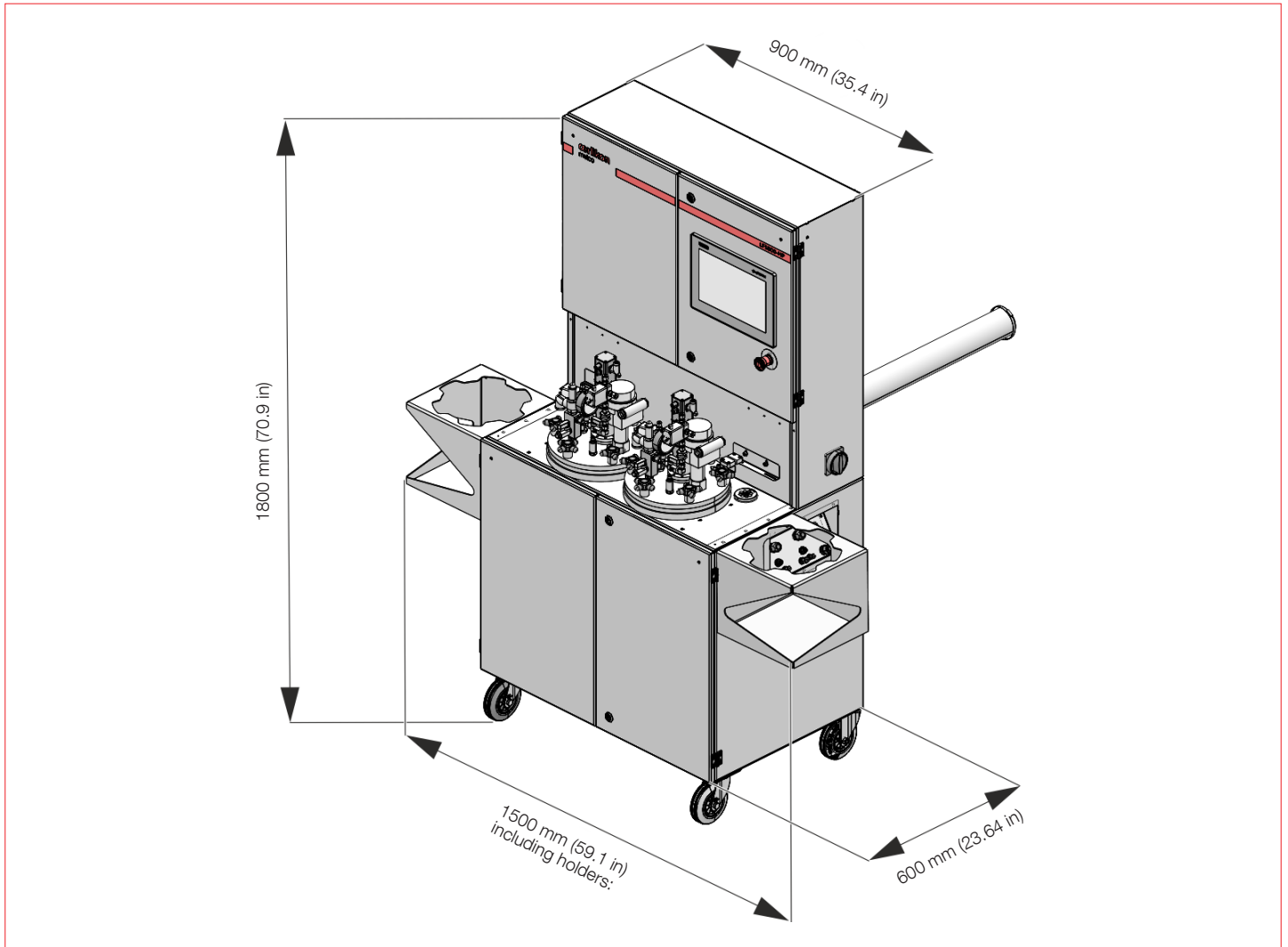
In addition, various injectors and feedhose can be ordered separately. The injectors are compatible with standard injector holders. Please contact your Oerlikon Metco account representative for further information.

#### 3.1 Metco LSF 800 Accessories

Item No.	Order Number
Injector 0.200 mm	2440984
Injector 0.250 mm	2381521
1/8 inch Feeder hose	2407559

### 4 Technical Data

#### 4.1 Dimensions



## 4.2 Specifications

### Power Requirements

Voltage	100 to 240 VAC ( $\pm 2\%$ )
Frequency	50/60 Hz
Power Consumption	500 W
Fusing	16 A

### Pressurizing Gas

Type	argon or nitrogen		
Connection	1/2" clamp ring - pipe connection		
Supply Pressure	minimum	12 bar	174 psi
	maximum	20 bar	290 psi

### Feeding Characteristics

Feed Rate <sup>a</sup>		10 to 200 g/min	1.3 to 26.5 lb/h
Feed Pressure	maximum	15 bar	218 psi
Canister Volume	2 canisters	4 liters per canister	1.06 gal per canister
Feed Rate Accuracy		$\pm 0.5\%$	
Density Measurement		$\pm 5\text{ g/cm}^3$	$\pm 0.124\text{ lb/in}^3$
Time to Reach Nominal Feed Rate <sup>b</sup>		30 s	

### Weight

Without Hoses or Cables	350 kg	771.6 lb
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### Operating Environment

Temperature	+10 to +40 °C	+50 to +104 °F
Humidity	< 75%, non-condensing	

### Housing Protection Class

Housing Protection Class	IP42
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### Safety Regulations

Safety Regulations	CE, low voltage directive, EMC directive 55011:2016 Class A
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### Compatibility

Suspension Liquid Phase	Water and Ethanol	
Solid Phase Compositions	micron or nano-scaled	Ceramics, Metals, Alloys, Carbides, Cermets
Solid Phase Concentration	25 to 60 %	
System Platform	UniCoat3, MultiCoat5, or local operation mode	
Spray Guns <sup>c</sup>	TriplexPro-210, SinplexPro series, F4MB-XL	

<sup>a</sup> Depending suspension solid phase material composition and concentration

<sup>b</sup> Operating in closed-loop mode and closed-loop initialization

<sup>c</sup> Equipped with liquid suspension spray injectors

## 5 Life Cycle Status and Support Options

Our four-phase life cycle model keeps you informed about available services and support options throughout the life span of your equipment.



### 5.1 LSF 800 Status

- Current Life-Cycle Status: Active
- Inception Date: July 2024

During the Active phase, you have our full support and range of services. Using our life-cycle services will keep your equipment in the best operating condition.

### 5.2 Keeping You Informed

We will notify you early and transparently about your options as your equipment enters into the next life-cycle phase, providing your equipment is registered with Oerlikon Metco.

#### 5.2.1 Life-Cycle Notification

Provides early information about the upcoming life-cycle phase change and how your equipment can be best supported.

#### 5.2.2 Life-Cycle Status Statement

Provides information about the current life-cycle status and all available options and services to maintain your equipment in best condition.

### 5.3 The Oerlikon Metco Difference

Benefit from our selection of comprehensive services designed to ensure:

- Consistent spray quality, with little to no parameter shift
- Compliance with your ISO quality requirements
- Maximized equipment uptime
- Extended overall equipment lifetime
- Fast availability of spare parts

### 5.4 Your Best Value for Peak Performance

Choose from our broad portfolio of services to keep your equipment in top condition now and in the future.

- Calibrations
- Preventive maintenance
- Breakdown support
- Spare parts
- Remote diagnostics
- Health / safety checks and consultancy
- Customer training
- Update, upgrade or modification projects

Take advantage of an Oerlikon Metco Service Agreement tailored to your specific needs.

For more information on your service and support options, please contact your Oerlikon Metco Account Manager.