

## NanoFeed™ Suspension Plasma Spray Feeder

The **Mettech NanoFeed Models 350 Suspension Feeder** is designed to deliver nano scale, fine micron or sub micron powders to thermal spray coating equipment. Utilizing Mettech's experience in ultra-fine powders and nano-engineered coatings, all aspects of the suspension delivery, such as flow rate and injection pressure are precisely controlled.



NanoFeed 750™

The NanoFeed system has been engineered for use in thermal spray to produce nano structured coatings for emerging nano materials as well as established industrial applications to produce high performance surfaces. It delivers a stable, pulse-free suspension stream, to achieve repeatable, high quality coatings.

### Features

- Suspension Powders from 10nm to 10µm
- Mass Flow Control of Suspension Feed
- Graphical Flow Rate and Operator Display
- Stand Alone Suspension Feed Unit, or Integrated into Plasma Torch Control Unit
- Re-circulation loop between the torch and suspension tank
- Optional HMI for standalone use
- In Tank Agitation

Mettech Liquid Suspension Feeder is a fully automatic computer controlled system for delivering nano or fine powder suspensions for coating applications.

- **Stability:** The closed loop system has mass flow control of the suspension feed and atomizing gas providing very stable feedback control.
- **Feed rate:** up to 0.2 l/min at a suspension concentration up to 40%
- **Robust Design:** stainless steel construction
- **Industrial and Development Models** available depending on your needs
- **Automation:** Automatic start up, washing cycles and sequential shut down operation
- **Powder Size** ranging from 10 nanometers to 10 microns.

### Description

**Award winning design:** Chosen by SmallTimes™ as Best of Small Tech Micro/Nano Tool in 2007.

**Enabling Nano materials:** The NanoFeed Suspension Feeders enable ultrafine powders to be fed into the Axial III torch to achieve nano structured coatings with enhanced properties.

**Performance Coatings:** Nano engineered coatings with superior properties can now be applied with high precision at industrial scale as a cost effective alternative process to EBPVD.

**Process Control:** Closed-loop control is included for stand-alone operation or for integration with existing Axial III controllers. A standard interface is provided for operation with the Mettech Axial III plasma torch system.

**Process Experience:** The NanoFeed systems are supported by Mettech's 25 years experience in the application and development of plasma-deposited industrial coatings for specific customer requirements.

**Industrial Design:** All Mettech equipment is designed to operate in harsh industrial environments.

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## Specifications

<b>Powder Size</b>	10nm to 10 $\mu$ m
<b>Powder Composition</b>	Metal, ceramic, cermet
<b>Suspension Concentration</b>	To 40% solids
<b>Operating Liquids</b>	Aqueous and organic solvents
<b>Suspension Feed Flow</b>	Adjustable, 10–200mL/min, mass flow control
<b>Suspension Tank Volume</b>	Model 350=1 USG
<b>Injection Pressure</b>	Adjustable, 1–7 bar (15–100 psi)
<b>Atomizing Gas Flow Rate</b>	0–30 slpm, Air or Argon
<b>Operation</b>	Stand alone or integrated with external controls
<b>Power</b>	120VAC, 50/60Hz, 20A (240VAC option)



NanoFeed 350™

## Summary

Mettech is a privately owned company established in 1990 and headquartered in Vancouver, Canada. It maintains a global network of sales agents and system support.

- **Proprietary plasma technology** backed by strong IP.
- **Nano-engineered coatings** capable of providing superior ceramic and composite coating properties.
- **Highly controlled processes** delivering precision in industrial environments with sophisticated controls quality assurance.
- **Coatings Development Support**

## Industries Served

- Aerospace – engine repair maintenance and overhaul – heat resistant coatings, jet engines and turbines, air seals, blade tips
- Defense industry applications (ballistics)
- Energy sectors: gas turbines, power generation, manage thermal efficiencies, wear and tear etc.
- Pulp & Paper industry – industrial coatings on rollers – abrasion coatings
- Solid Oxide Fuel Cells
- Oil and Gas sectors – corrosion protection
- Automotive – wear resistance, enhanced electrical properties
- Medical Implants
- Catalyst
- Industrial – control dimensions or rebuilt industrial equipment
- Semi-conductor coatings

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