

# ***Fine dosing***

## *The fine art of fine dosing*

Based on an innovative technology, ***Fine dosing*** system offers a range of high quality products with incomparable performances.

Thanks to the continuous improvements, backed by our proven product engineering, ***Fine dosing*** products are recognized among the best in the world in their market.

Every ***Fine dosing*** feeder is an example of strict design, simplicity and optimized process function. All details are well finished as dosing accuracy results of them.

All feeders are built in our workshop. Production is made by specialists; involved in high quality standards in all manufacture stages.

At the end of the process, each feeder is carefully inspected and performance tests are carried out with final application conditions. So, the results obtained by every feeder are in accordance with our commitments

Whether you are in pharmaceutical, food, material, chemical industries, benefit from our experience, flexibility and creativity.

***Fine dosing*** is probably the fastest, most efficient and flexible feeding system available today.



## A Fascinating Technology

Thanks to an exclusive principle of extraction, highly developed, *Fine dosing* system is creating a new standard in term of accuracy, speed and flexibility.

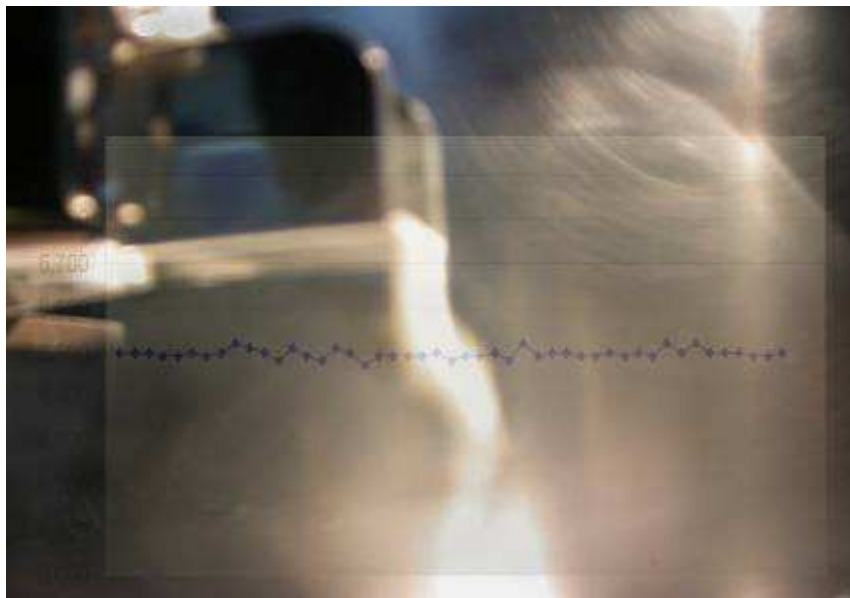
How does this exceptional technology works?

Take a coin on a paper sheet, and move it with an alternate movement whom return speed is higher than forward way. You can see that the coin is moving to the right side of the sheet...Based on this principle; MCPI has developed an advanced and ever expanding range of feeders and solutions.

On the basis of our experience, various movements were selected in a way has to obtain an optimal efficiency following the rheological properties of powders. The association of the mastery of the extraction of powders and metrological solutions of high quality allow to reach a very high level of feeding performance in term of precision and speed.

Movement is given by a mechanical mechanism working in oil bath, designed for long term operation with low maintenance needs. This reliable technology is associated with a first class weight controller for a full master of the process.

*Fine dosing* is an exclusive technology protected by numerous international patents.



***Fine dosing* : Because every gram counts.**

***Fine dosing:* PRODUCTS OVERVIEW.**



**Loss-in-weight feeders (continuous or batch process)**



**Micro feeders with high accuracy**



**Accurate filling machines**



**Linear powdering machines**



**Multi-heads feeders**

## Advantages of *Fine dosing* feeders

Technical advantages	Batch process	Continuous process
<b>Short reaction time</b>	Short dosing time : From 0.2 sec in volumetric feeding.	Good relationship between flow rate and motor rotation speed. Very accurate mass flow regulation.
<b>Low overshoot</b>	High accuracy with good repeatability and short dosing time.	
<b>Powdering capacity</b> (up to 2000 mm ...)	Good powdering profile and stability.	
<b>Flexibility</b>	The same feeder can cope with extremely fine powders or coarse and abrasive granulates.	
<b>Good capacity of extraction</b>	Good efficiency with ingredients with poor flowing properties (dyes, starch...)	
<b>Respect of ingredient</b>	Suitable for: pills, capsules...	
<b>No particle size segregation</b>	Particle size distribution is respected during whole process.	
<b>Sewage</b>	Complete sewage of ingredient: easier cleaning works and change of ingredients.	
<b>Short cleaning time</b>	Few seconds, no tools requested Compliant with GMP/ EHEDG guidelines	
<b>Safety</b>	Thanks to the limited stroke of the parts in movement (< 3 mm), feeder operation is safe for operators.	
<b>Reliability</b>	Design without wearing parts. The feeders can't be damaged with unwanted parts coming with ingredient. Made with high brand stainless steel	

**LOSS-IN-WEIGHT MICRO FEEDERS**  
*Fine dosing* Opti-feeder FD-MPL



Compact line of loss-in-weight feeders for materials with varying bulk density: The digital load cell integrated in stainless steel housing is associated with a weight controller. Thus decrease of weight due to powder outlet flow is measured at high frequency.

To reach a better dosing accuracy, the feeder is design in such a way that only ingredient hopper and extractors are weighed (so load cell with smaller capacity are integrated for a better accuracy).

Two different soft wares are proposed for batch or continuous dosing.

The feeder is controlled with a multitasking operating system combining the functions of an operator interface, weighing controller, PLC and interfaces.

The design is made in agreement with drug and food industries requests for cleaning.

**Technical data :**

<b>Dosing accuracy (batch)</b>	Standard deviation $\approx$ 2 grams.
<b>Min. flow rate (continuous process)</b>	1.0 gram/sec
<b>GMP design</b>	yes
<b>Min dosing time (batch)</b>	From : 4 "

**Applications :**

- Continuous feeding: For all process application with stability and accuracy of flow rate requested.
- Batch process: Formulation, for minor ingredients. Conditioning...

## HIGH ACCURACY MICRO FEEDERS

### *Fine dosing* Opti-feeder FD- SPA

( A Class: resolution : 0.01 g - 3A Class: resolution : 1 mg  
4A Class: resolution : 0.1 mg)



Micro feeders *Fine dosing* SPA are probably the first on the market to reach such levels of excellence in term of accuracy, short dosing time and flexibility.

The ingredient is dosed in a small swiveling bowl fitted on an accurate load cell. Sensitive parts as motor reducer and scale are protected with a stainless steel housing.

The integrated batch controller optimizes coarse and fine feeding with automatic tolerance control. *Fine dosing* concept allows a ratio between coarse/ fine feeding flow over 30. This figure is a key point to reach fast and accurate dosing process.

In automatic version, at the end of dosing stage the bowl rotate 360°. The ingredient is then emptied to the application point.

The ingredient can be, as well, feed directly in the final container or box, positioned (manually or automatically) on the scale.

The design is made in agreement with drug and food industries requests for cleaning.





**SPA-A (Process type - resolution 0.01g)**

Weighed bowl,

Feeder - extractor

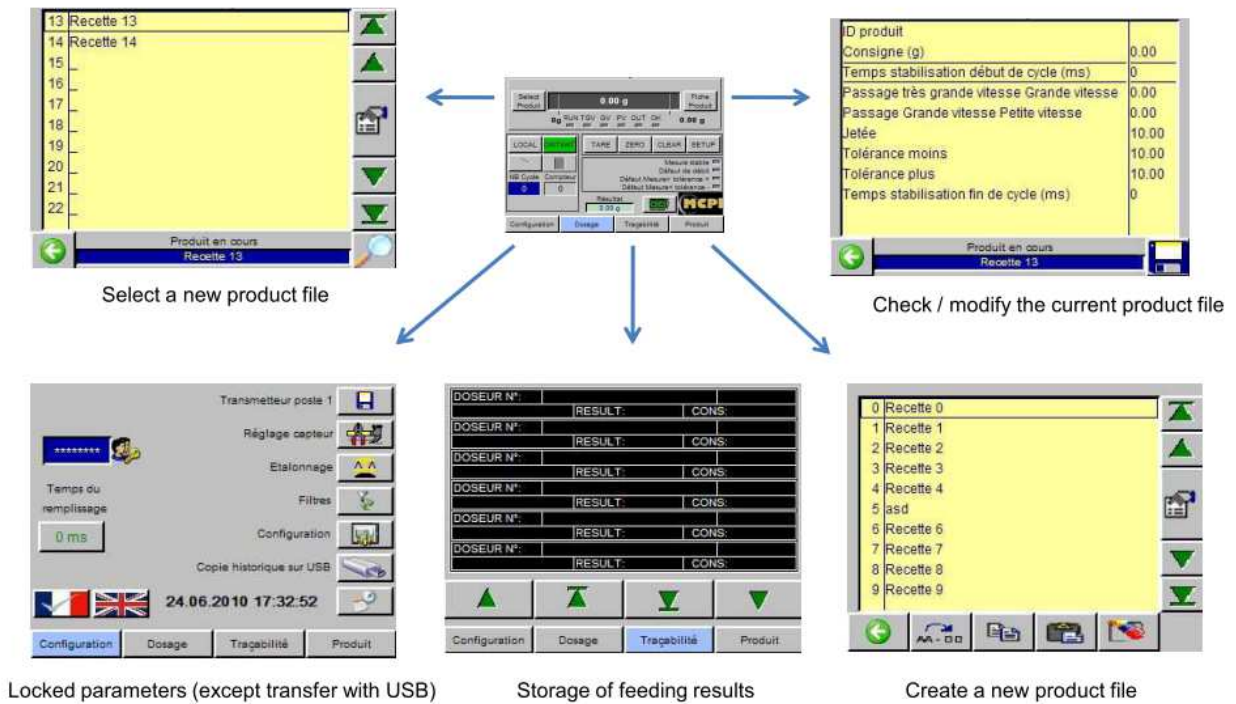
**Technical data :**

<b>Dosing accuracy</b>	Standard deviation A class : 0.03 g 3A class : 0.01 g 4A class : 1 mg
<b>Load cell</b>	A class : Analogical load cell, min interval 0.01 g 3A class : Numerical load cell, min interval 1 mg 4A class : Numerical load cell, min interval 0.1 mg
<b>Min dosing time</b>	From 4".
<b>Min set point</b>	from : 10 mg



# Batch controllers

## Organization tree



### Main points :

- Interface with high quality touch screen (MAGELIS Schneider)
- Up to 100 recipes can be memorized
- Feeding with 3 different output flow rates for a better control of accuracy and dosing time.
- Optimisation of overshoot
- Traceability : 800000 feeding results are memorized, interface with USB plug.
- Log in to access of production & maintenance parameters.
- User friendly interface



## LINEAR POWDERING MACHINES

### *Fine dosing* FD- MVH



The key words to describe a properly functioning powdering machine are **uniformity** and **profiles**. **MCPI *Fine dosing***<sup>®</sup> powdering machines are designed to distribute dry ingredients uniformly across the application, without disturbances. Equally important, the powdering machines must be simple to operate, easy to clean and flexible to work with numerous ingredients.

New innovative powdering solutions, combined with the precise dimensioning know-how of today, have raised powdering performance to a totally new level. MCPI offers a comprehensive selection of powdering machine concepts designed to address the needs of customers regardless of the application, and the machine width.

The new high-performance powdering machine delivers numerous value-adding benefits compared to other products on the market, such as:

- ♦ Excellent distribution and stability
- ♦ Throughput flow range: adjustable with a ratio of 1 to 100
- ♦ Capacity to operate with any kind of materials with almost no segregation of particles.
- ♦ Reliable and easy operation and maintenance
- ♦ Optional hygienic construction for food industry.



**Technical data :**

<b>Throughput flow stability</b>	< 5%
<b>Max width</b>	Up to 2000 mm
<b>Range of throughput flow</b>	Adjustable in a ratio of 1 to 100
<b>No particle size segregation</b>	Particle size distribution is respected.
<b>Operation mode</b>	Continuous or batch



**Powdering machine, width 1000 mm.**



## MULTI-HEAD FEEDERS

*Fine dosing* Opti-dose FD- MVH-xP



The unique MCPI's Multi-head Feeder, is probably the best solution on the market, to give on multiple application points, a simultaneous, quick and accurate dispensing of ingredient, with perfect sprinkling effect.

These feeders are controlled with motor speed and outlet section of extractor. MCPI's "Short-cut system" is a mechatronics solution, which allow a perfect control of the extractor movement with repeatability below 3/100 sec, to ensure a quick and accurate feeding.

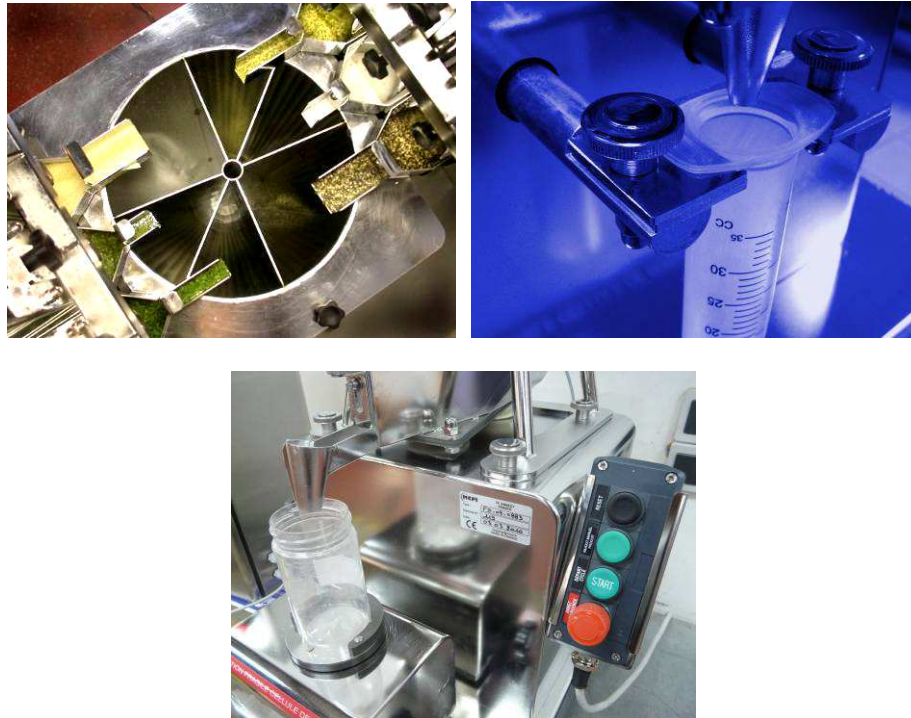
This range of machines is an efficient cost effective solution for high cadencies productions (dosing time from 0.2 sec, up to 60 dosing cycles / min). The feeders can be fit on a "C" shape mobile truck, to facilitate cleaning operations.

The design is made in agreement with drug and food industries requests for cleaning.



## FILLING MACHINES

### *Fine dosing* Fill-matic



***Fine dosing* Fill-matic** series can fulfill a variety of unique applications when extreme accuracy and flexibility are requested.

Without any modification, each model can dispense ingredients ranging from powders to granules. By listening to our customers and understanding their needs we can skillfully design and assemble the state-of-art custom machinery required.

The feeders are available either in volumetric or gravimetric versions.

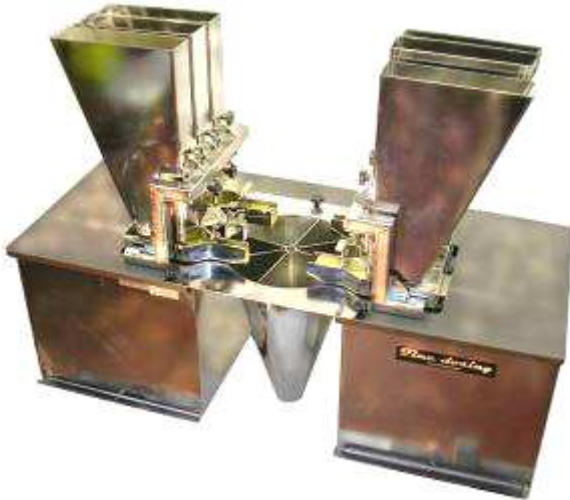
The very small overshoot value, associated with a sharp control of extractor movement, are the key points to reach the high level of performances in terms of dosing time and accuracy.

Volumetric feeders: Controlled with motor rpm and outlet section of extractor.

For batch process MCPI offers unique control system call "Short-cut system". It consists of a mechatronic solution which ensures a perfect control of the extractor movement with repeatability below 3/100 sec, to ensure quick and accurate feeding. With short-cut system it is possible to reach very short dosing time (from 0.2 sec) and feeding quantities from 0.1 gram to kilo grams.

Gravimetric feeders: For a perfect control of production parameters with weighing system.

Design of these feeders is made in agreement with drug and food industries requests for cleaning.



**Multi components dosing station** : 6 different ingredients are dosed simultaneously .  
Dosing time: ~3 - 5 seconds.  
Repeatability: Standard deviation below 5%.



**Gravimetric bag filling machine, loading** of the filler's hopper vacuum based feeder.  
Accuracy <  $\pm 0, 5\%$



**Filling machines**



①



②

**Feeder ①** : Gravimetric feeder with 1or 2 ingredients, accuracy  $\pm 0.5$  g.

**Feeder ②** : Pharmaceutical feeder, accuracy  $\pm 0.2$  g.

