

# ANIMAL & AQUA FEED



**PLP Systems**  
TECHNOLOGY IN LIQUID HANDLING & POWDER DOSING





**INNOVATIVE  
TECHNOLOGIES**

REVOLUTIONIZING  
FEED SOLUTIONS

**MAXIMIZING FEED  
PALATABILITY**

**DRIVING EXCELLENCE**

POST-PELLET

COATING INNOVATION

**PRECISE POST-PELLET  
DOSAGE**

SPRAYING EXCELLENCE

**UNIFORM  
COVERAGE**

**SUPERIOR  
COATING  
SOLUTIONS**

**MAXIMUM  
EFFICIENCY**

CUSTOMIZED DOSING SOLUTIONS



PREMIX  
PLANTS  
EXPERTISE







# OUR COMPANY

PLP SYSTEMS was founded in 1980 in Lugagnano Val d'Arda, Piacenza. Over the years, PLP has established itself as a specialized company in the development of dosing and weighing systems for liquids and powders. Its expertise extends to various industries, including animal feed, milling, pet food, food & beverage, winemaking, chemicals, and the concrete market. An important area for PLP Systems is the accurate management of liquids and powders for feed production, with a specific focus on post-pellet coating. This process involves adding micro-liquids such as enzymes, vitamins, flavors, probiotics, and yeasts to the pellets, aiming to enhance their quality.

PLP has dedicated time and resources to develop the best solutions and equipment to optimize production processes and ensure high-quality feed. With operational presence in countries worldwide, PLP is able to provide its innovative solutions and support customers globally.

PLP Systems' commitment to offering advanced dosing and weighing solutions, combined with its expertise across different industries, makes it a reliable partner for businesses seeking significant improvements in feed production and the post-pellet coating process.

## DOSAMIX TECHNOLOGY

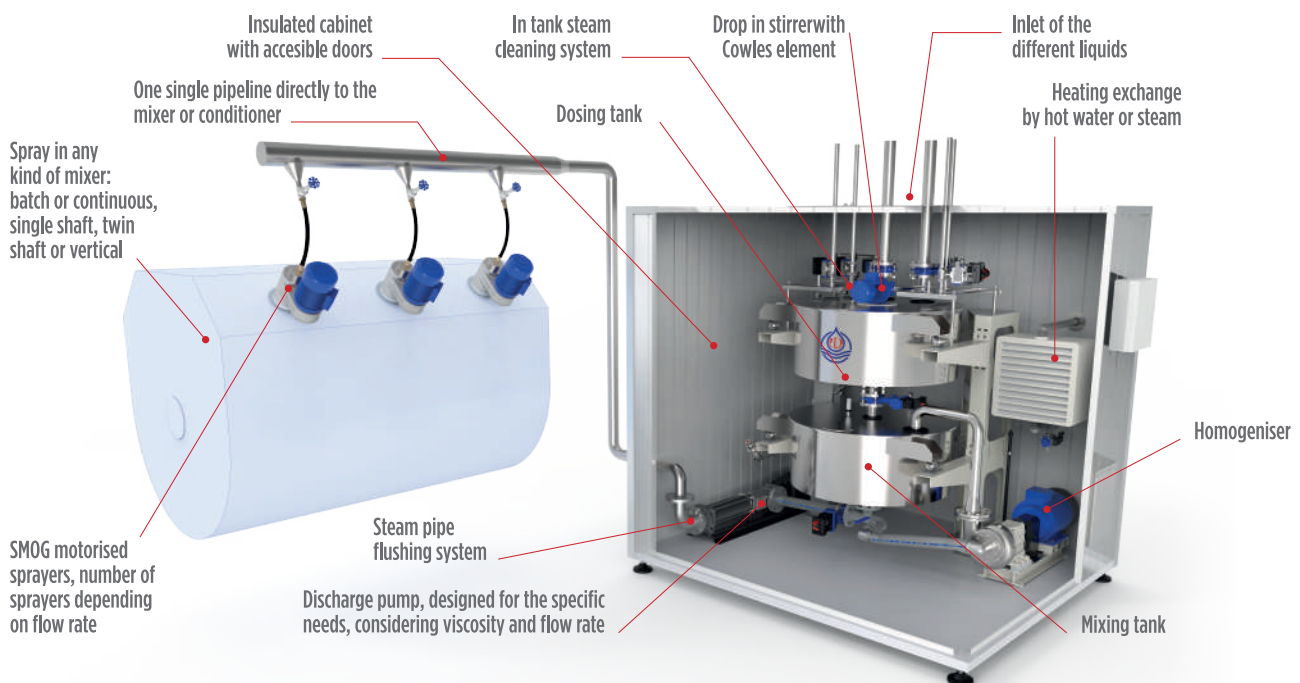
**DOSAMIX** is the best system for **adding all liquids within the formula**. It creates a homogeneous premix of various liquid components that can be incorporated into the flour. This process can take place either **in the batch mixer or directly in the conditioner** of the extruder.

- The liquid premix is achieved through the EML homogenizer, which enables the creation of a unique solution that is perfectly homogeneous and stable over time, even when combining liquids with different

bases (water-based, oil-based, or fat-based) and viscosities.

- The spraying of the homogenized liquid is carried out using our SMOG sprayer, ensuring microdroplets and perfect distribution of the liquid within the flour.

**DOSAMIX** is recommended for the **addition of molasses**, which, when mixed with water and other oils, reduces viscosity and improves absorption into the flour.



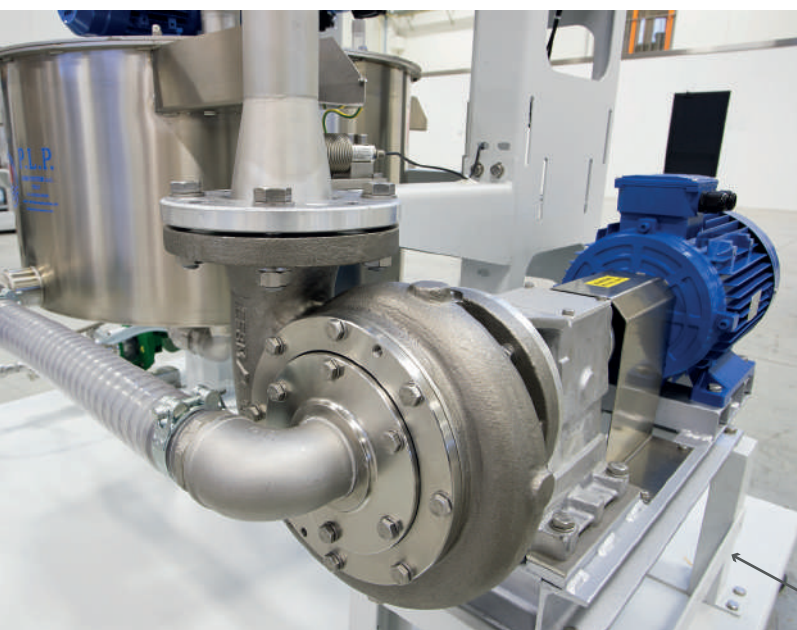
Type	Capacity (L)	Types of mixing		Liquids
		Emulsifier	Homogeniser	
DOSAMIX 2/25	25	F 400	EML 1.5/200	4
DOSAMIX 2/50	50	F 400	EML 1.5/200	4
DOSAMIX 2/100	100	F 400	EML 1.5/300 - EML 3/100	6
DOSAMIX 2/150	150	F 400	EML 3/100	6
DOSAMIX 2/300	300	F 400	EML 3/100	8
DOSAMIX 2/400	400	F 400	EML 3/100	8
DOSAMIX 2/500	500	F 400	EML 3/100	10
DOSAMIX 2/700	700	F 400	EML 3/100	12
DOSAMIX 2/1000	1000	F 400	EML 3/100	12



# MLBS SYSTEMS

The double tank weighing system DOSAMIX, or single tank MLBS used for feed applications such as for the weighing of liquid components, ensuring precise dosing, mixing, and liquid injection.  
PLP weighing systems, guarantees an excellent mixed product, saving time on cycle work.  
These technologies can be adapted according to customer needs and products to be dosed.

The MLBS weighing batch system is a simplified version of the Dosamix.  
The MLBS allows the dosage of liquid components of any type and viscosity in a single dosing solution such as fats, oils, molasses, lecithin, creams, acids, amino acids and solvents.



*MLBS system, equipped with EML Homogenizer, for a perfect emulsion of the product.*

Type	Capacity (L)	Types of mixing		Liquids
		Emulsifier	Homogeniser	
MLBS 50	50	F 400	EML 1.5/200	4
MLBS 100	100	F 400	EML 1.5/200	6
MLBS 150	150	F 400	EML 1.5/300 - EML 3/100	6
MLBS 300	300	F 400	EML 3/100	8
MLBS 400	400	F 400	EML 3/100	8
MLBS 500	500	F 400	EML 3/100	10
MLBS 700	700	F 400	EML 3/100	12
MLBS 1000	1000	F 400	EML 3/100	12

## EML HOMOGENIZER

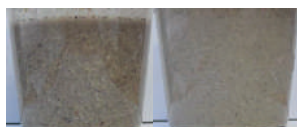
### Benefits of HOMOGENIZERS

- REDUCTION OF LUMPS AND PARTICLES OF THE LIQUIDS
- IMPROVE THE SPRAYING PHASE EFFECT AND THE COEFFICIENT OF VARIATION" OF THE LIQUIDS MIXED TOGETHER
- IMPROVE THE QUALITY OF THE FINAL PRODUCT AND COLOUR QUALITY OF THE COMPOUND
- REDUCTION OF VARIATION OF PRODUCTION AND CONSUMPTION OF THE EXTRUDER MACHINE
- RETAINS HUMIDITY IN THE FINAL KIBBLE, AS THE WATER WILL BECOME ENGLOBED INTO THE OIL PARTICLES
- PERFECT HOMOGENEITY OF THE PREMIXED LIQUIDS



Type	Motor	Speed	In/out	Flow rate	Note
EML 1.5/P	1,5 kW	2800rpm	3/4 gas	50 lt/min	Body in POM
EML 1.5/200	1,5 kW	2800rpm	3/4 gas	50 lt/min	Monoblock
EML 1.5/300	3 kW	2800rpm	3/4 gas	80 lt/min	Monoblock
EML 3/100	5,5-7,5 kW	1400/2800rpm	2"/DN 80	200 lt/min	High shear
EML 3/400	30-35 kW	1400rpm	DN 100	800 lt/min	High shear

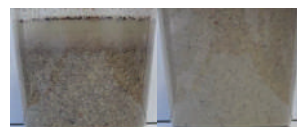
Comparison of liquid feed separation times. The sample on the left was obtained using a traditional mixer, while the one on the right was obtained using our EML homogenizer.



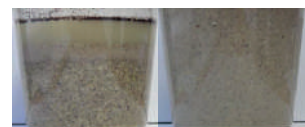
10 seconds



1 minute



5 minutes



30 minutes

Comparison of liquid mixture separation times (30 min.).  
Fig. 1 & 3 obtained using our EML homogenizer, Fig. 2 & 4 by traditional mixer.



fig. 1



fig. 2



fig. 3



fig. 4

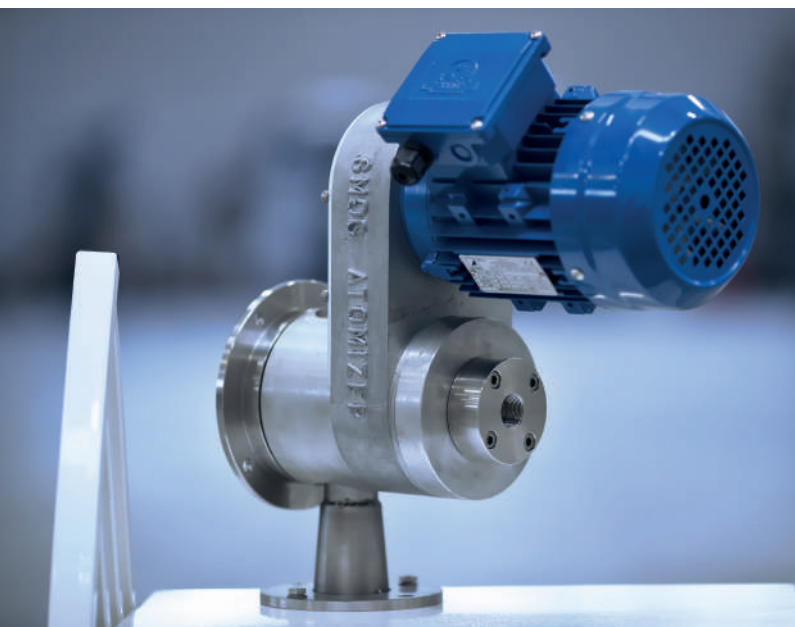
Fig. 1-2, 70% vegetable oil; 30% H<sub>2</sub>O.

Fig. 3-4, 40% molasses, 40% vegetable oil, 20% H<sub>2</sub>O.

## Motorized SMOG

### Benefits of HOMOGENIZERS

- NO NEED FOR HIGH PRESSURE TO NEBULIZE THE LIQUIDS
- FLOW RATE CAN RANGE FROM 0.1 TO 40 LITRES PER MINUTE, ALWAYS GUARANTEEING A GOOD NEBULIZATION
- SUITABLE FOR ANY TYPE OF LIQUID WITH ANY VISCOSITY
- THANKS TO THE LARGE HOLE INJECTOR, BLOCKAGE OF THE NOZZLE IS RARE
- LESS CLEANING REQUIRED COMPARED TO WHEN USING STANDARD NOZZLES
- IMPROVE CV "COEFFICIENT OF VARIATION" OF THE LIQUIDS SPRAYED INTO THE MIXER, THE QUALITY OF THE FINISHED PRODUCT
- REDUCTION OF MAINTENANCE FREQUENCY



Type	Mounting	Range	Assist	kW	Note
MicroSMOG	Top/Side	0-20 lt/min	Air blower	0.12	Any liquid and pressure
SMOG	Top/Side	0-30 lt/min	Air blower	1.1	Any liquid and pressure
SMOG XL	Top/Side	0-40 lt/min	Air blower	1.1	Any liquid and pressure



## MDP

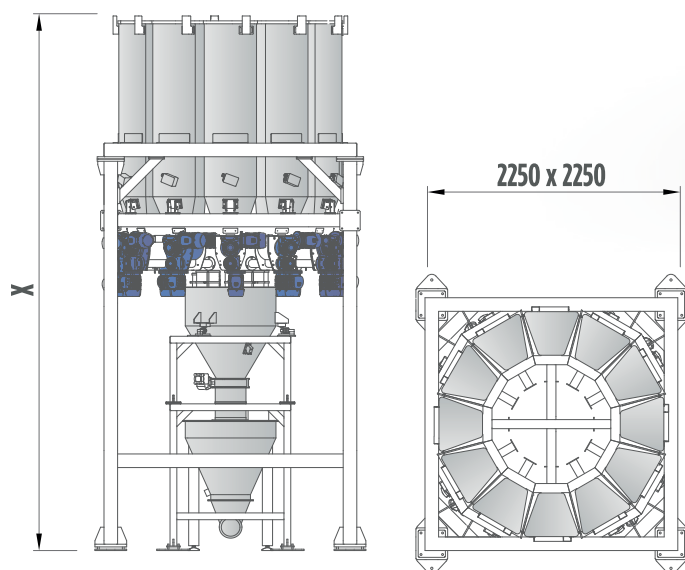
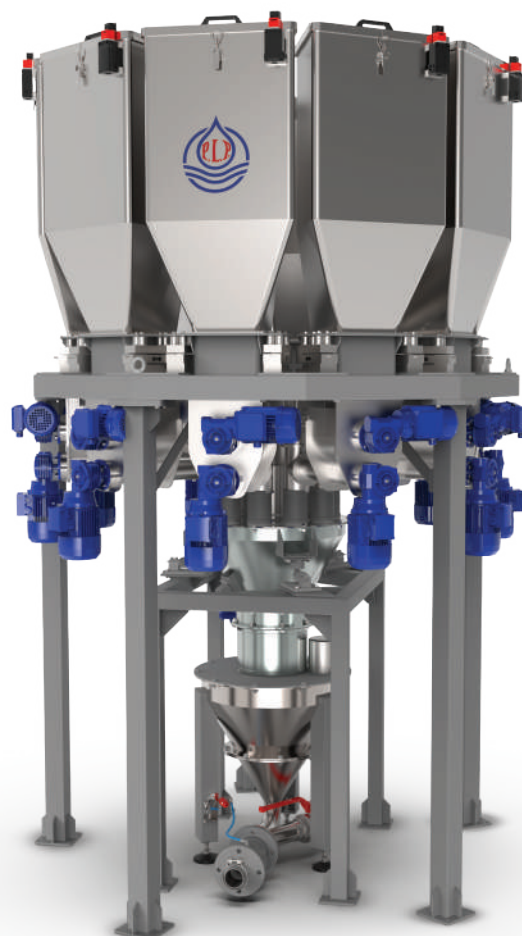
MDP micro powder dosing system used for the formulation of additives and premixes.

Constructed on a standard carousel design with up to 12 components and very small dimensions.

However, it can be customised according to customer requirements. The batch dosing can range from a few grams up to 1000 kg capacity.

The system is normally used as a batch weigher, dosing each powder individually into the weighing hopper.

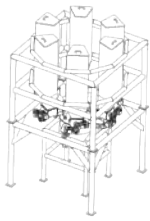
Other configurations such as loss-in-weight dosing, continuous dosing and volumetric dosing are possible.



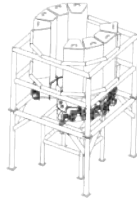
Type	BATCH 25L	BATCH 50L	BATCH 100L	BATCH 200L	BATCH 300L	BATCH 400L
MDP - 50	3010 mm	3060 mm	3210 mm	3460 mm	3860 mm	4310 mm
MDP - 100	3410 mm	3460 mm	3610 mm	3860 mm	4260 mm	4710 mm
MDP - 200	4210 mm	4260 mm	4410 mm	4660 mm	5060 mm	5510 mm
MDP - 300	5010 mm	5060 mm	5210 mm	5460 mm	5860 mm	6310 mm
MDP - 400	5810 mm	5860 mm	6010 mm	6260 mm	6660 mm	7110 mm
MDP - 500	6610 mm	6660 mm	6810 mm	7060 mm	7460 mm	7910 mm

Approximate dimensions: MDP station + batch hopper WH + Pneumatic hopper PBH -- Plan dimensions 2250 mm

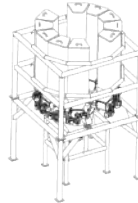




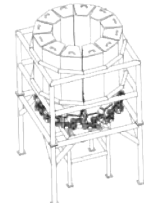
6 Powders



8 Powders

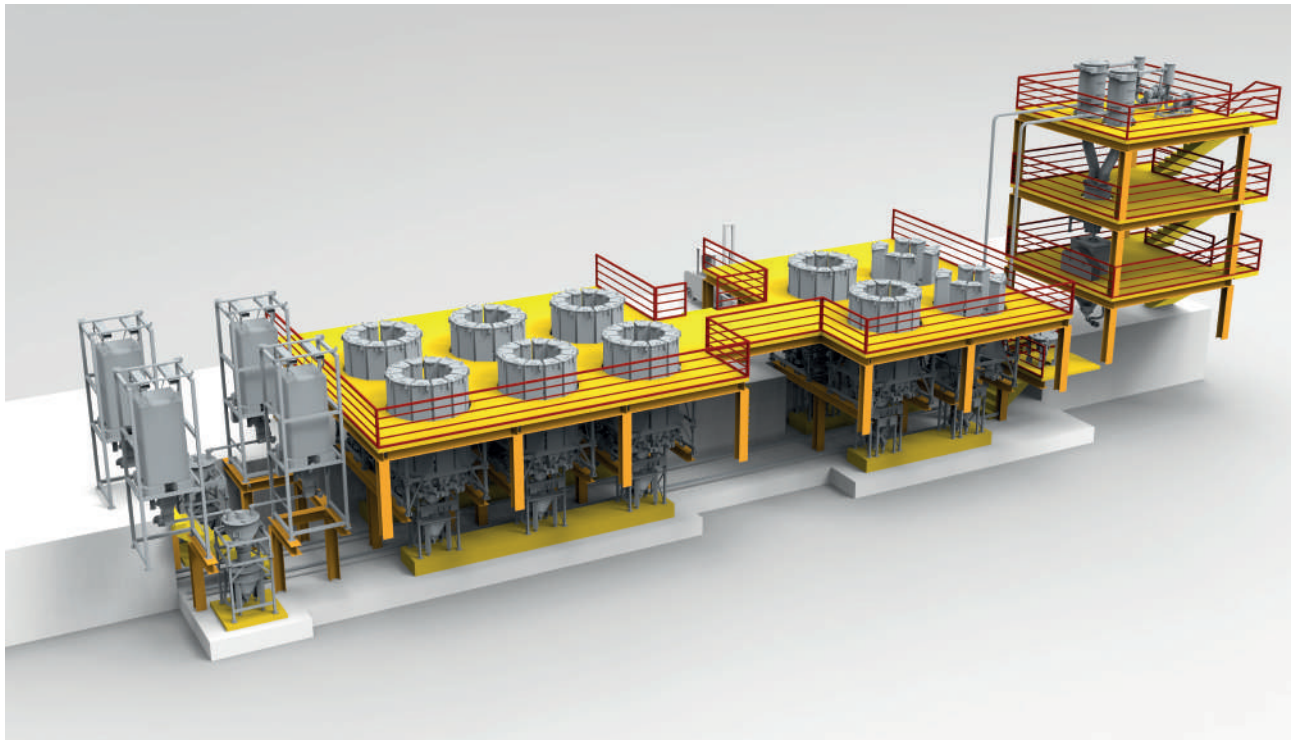


10 Powders



12 Powders

## A COMPLETE LINE WITH MULTIPLE STATIONS AND A MIXER TO PRODUCE PREMIXES



## DOSING STATION ACCESSORIES



AUTOMATIC PNEUMATIC  
LOADING STATION,  
FOR EACH FEEDER



BAG EMPTYING STATION, WITH  
ASPIRATION AND FILTER



UNLOADING BIG BAG  
STATION, WITH DOSING  
SCREW



UNLOADING BAG STATION WITH  
CUTTER AND LEXAN PANEL.  
CONNECTED TO THE PNEUMATIC  
LOADING LINE

## PIM-ELET, MSC & CIBODOS

Acid dependency, depending on their use (preservative, mold inhibitor, bacterial and salmonella treatment, gut health, etc.), can be implemented at various parts of the process line.

### PIM ELET

Our simple and compact unit is designed for acid dosing directly into a screw conveyor or continuous mixer. It is used to add acids to the raw materials.

### MSC - ACID APPLICATIONS

Adding acids to the raw material in feed plants, grain storage facilities, and mills. Accurately measuring the product flow rate and uniformly spraying the acids.

### CIBODOS

For batch dosing of acids into the mixer. The system includes acid and water dosing, a static mixer, and spray nozzles.

**The systems for acid and water addition can be combined with a continuous reading moisture sensor to enable proportional dosing.**



**PIM ELET**



**MSC - ACID APPLICATIONS**

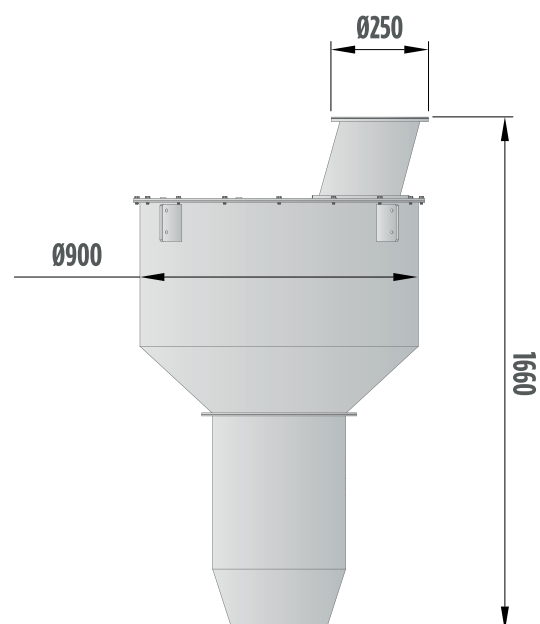
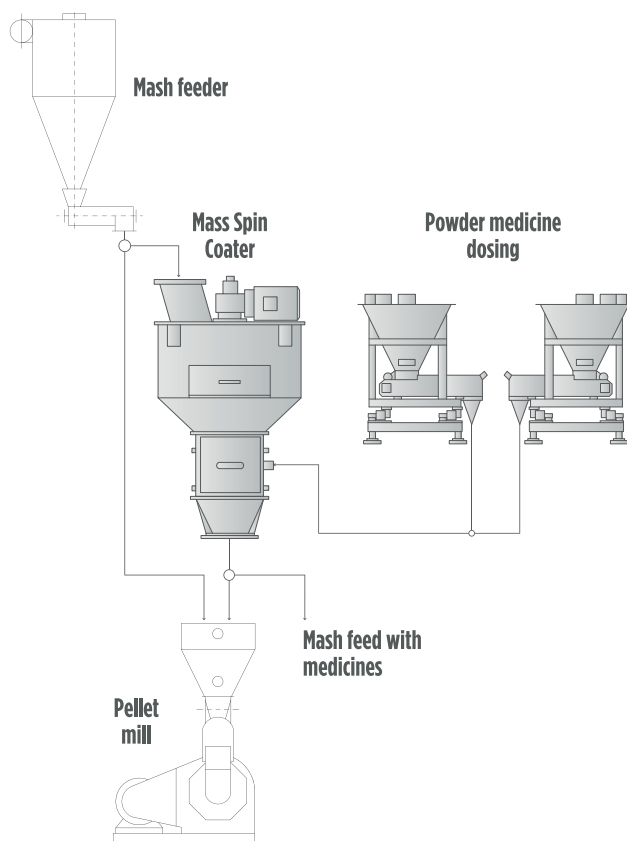


**CIBODOS**



## MASS SPIN COATER: ADDITIVE PRE PELLETING

Cross-contamination of medicated feeds poses a significant challenge for feed producers, as regulations continue to become more stringent, requiring separate lines for medicated and non-medicated feeds. PLP SYSTEMS introduces a new technology for adding powdered medications into the mash just before the pelletizing line, eliminating the risk of contamination for other production lines.



### APPLICATION FOR:

- Establishing a dedicated line for feeds and medicated products, without contamination of other lines.
- Avoiding the risk of cross-contamination between two medicated lines producing for different species.
- Adding medications to the milled feed without any risk of contaminating the main batch mixer.

## MASS SPIN COATER: POST PELLETING

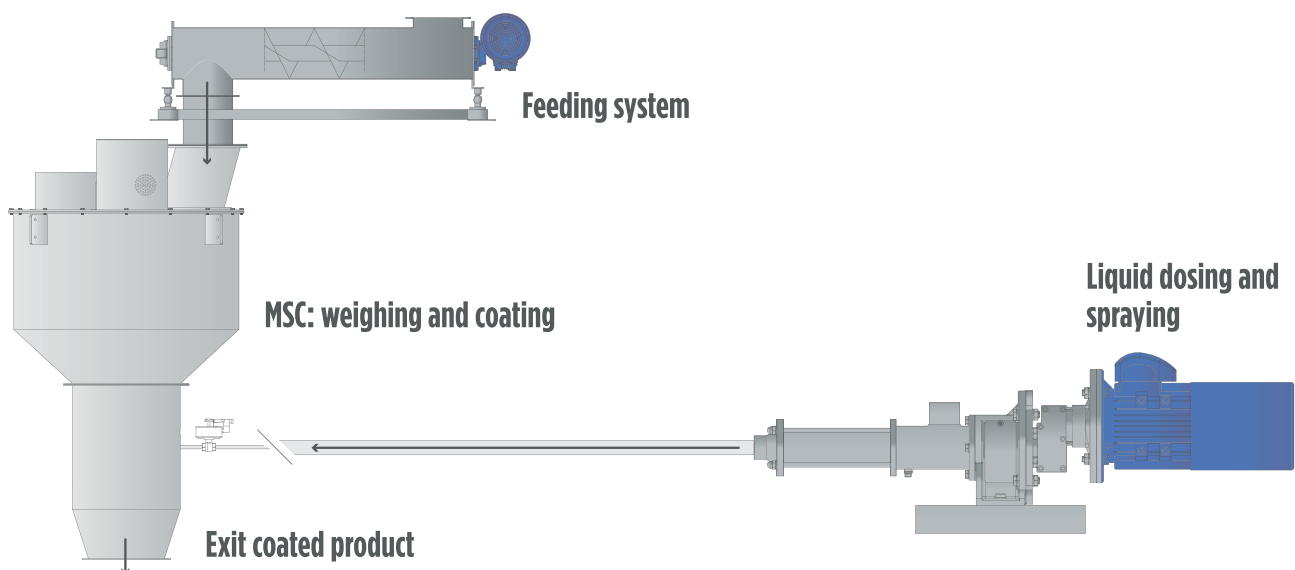
For addition of micro liquids with a maximum capacity of 1%, the Mass Spin Coater is the machine to handle this type of coating. It's an on-line machine that can be easily fitted in any existing plant.

Through an integrated torsion transducer and a

processor of Coriolis force data, the MSC is capable of identifying the mass delivery rate of solid products (pellets, flours, kibbles...). This permits a proportional control for adding doses of additives for the process such as oils, enzymes, antibiotics, etc.

### USED FOR APPLYING EITHER POWDER OR LIQUID ADDITIVES:

- **Oil:** for adding small amounts of oils on the pellets
- **Enzymes and Vitamins:** adding liquid enzymes and vitamins onto the finished product
- **Powder condensation:** adding blenders in order to reduce the fine powders
- **Humidification :** increasing moisture in the finished product or in raw materials adding water and acidifiers
- **Adding medicines:** addition of powders medicines in the mash feed before pelleting in order to reduce cross-contamination in the mixer and in transport





# MT COATER

The coating system MT is a complete machine able to mix in line pellets, kibbles, and other granulated products with additives such as liquid enzymes, fat, digest, aromas, oil, medicines, vitamins. The machine is used in combination with the powerful

sprayer MicroSMOG and guarantees a perfect coating of the product.

Paddles are tiltable for a better performance of the machine.

## THE SYSTEM IS COMPOSED OF:

- Buffer hopper with load cells to keep the product level constant
- Weighing screw to detect the amount of products to be coated
- Systems for the preparation and dosage of the liquid additives
- Coater MT complete with two shafts and adjustable paddles to mix and hold the product in suspension
- Motorized sprayers type Micro Smog.
- Electronic device used to identify the instantaneous flow of the product and to determine the right amount of additive set by the operator, increasing or decreasing according to the product flow rate.



The addition of powders onto pellets can be done through Venturi injection with a spraying effect to achieve better product homogeneity. There is also the possibility of utilizing electrostatic technology.



Type	m <sup>3</sup> /h	Ton/h *pellet	Liquid *pellet	Liquid *extrusion	Power
MT10	0.5-11 m <sup>3</sup> /h	0.3-8 t/h	0.01-6%	0.01-10%	3+3 kW - H 3+3 kW
MT30	4-20 m <sup>3</sup> /h	3-15 t/h	0.01-6%	0.01-10%	4+4 kW - H 3+3 kW
MT30-SC	4-20 m <sup>3</sup> /h	3-15 t/h	0.01-4%	0.01-8%	4+4 kW
MT30XL	4-40 m <sup>3</sup> /h	3-30 t/h	0.01-8%	0.01-17%	4+4 kW - H 3+3 kW
MT50	7-70 m <sup>3</sup> /h	5-50 t/h	0.01-8%	0.01-17%	5+5 kW - H 3+3 kW
MT100	12-150 m <sup>3</sup> /h	10-70 t/h (up to 100)	0.01-8%	0.01-17%	5+5 kW - H 3+3 kW

## CONTINUOUS INTENSE MIXER MAK

The MAK is a continuous intensive mixer available in two variants: the single-shaft version and the twin-shaft version, both equipped with adjustable blades featuring different profiles.

This system is designed for adding liquids in substantial quantities to: grains, flours, powders, or granules; to reduce clumps in the mixture and enhance the homogeneity of the final product.

The twin shaft version not only guarantees a mechanical

action that breaks up clumps but also operates at high speeds, ensuring intense mixing and high absorption of liquids into powders. This makes the MAK suitable for various industrial applications such as: animal feed, milling, zootechny etc., where mix uniformity is of primary importance.

In the animal feed industry, the EML homogenizer finds application as a mixer for adding molasses and oils, as well as a conditioner for adding steam to the flour.



Technology	Type	m <sup>3</sup> /h*	Power*
MAK-200	High-speed shaft	10 m <sup>3</sup> /h	11 kW
MAK-300	High-speed shaft	15 m <sup>3</sup> /h	15 kW
MAK-400	High-speed shaft	30 m <sup>3</sup> /h	22 kW
MAK-500	High-speed shaft	40 m <sup>3</sup> /h	45 kW
MAK-10T	Twin-shaft	15 m <sup>3</sup> /h	5.5+5.5 kW
MAK-30T	Twin-shaft	30 m <sup>3</sup> /h	7.5+7.5 kW
MAK-50T	Twin-shaft	55 m <sup>3</sup> /h	9+9 kW
MAK-100T	Twin-shaft	80 m <sup>3</sup> /h	15+15 kW

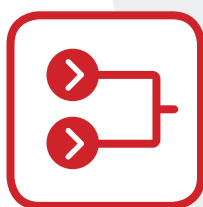
\*Capacity and addition may vary depending on the type of application, granularity, viscosity and absorption capacities.







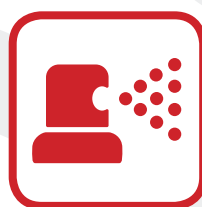
**Batch  
dosing**



**Continuous  
dosing**



**Homogenizers  
and Emulsifiers**



**Sprayers**



**Coating**

**Find out more on:  
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