F

#4 Dosing

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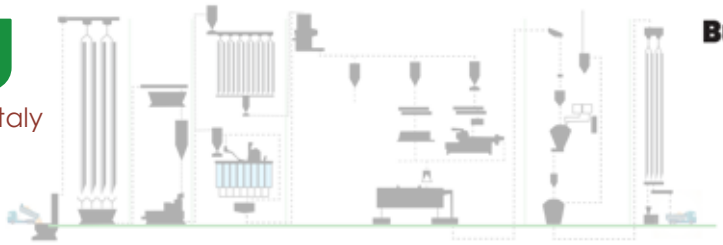

Build MY Feedmill

Feed industry professionals, academics and business people learned about inner workings of a feed mill at the Build my FeedMill Conference on March 13 at VIV Asia.

In conjunction with Milling and Grain, VIV Asia hosted 12 speakers who presented information about their feed mill and storage products. Those in attendance were led through the entire milling process, from intake and conveying to weighing, grinding, pelleting, drying and cooling and storage.

The use of liquids in feed mills must be implemented using innovation, precision and cost effectiveness whilst maintaining traceability throughout every stage of the application and avoiding cross contamination.

Liquids are a fundamental ingredient and effect the success of the quality of the finished product. Nutrition involves chemical reactions and physiological processes, which transform food into body tissues and energy.

For many years, the addition of liquids for the feed industry was considered as a second matter and not an important way of making good feed. Molasses and fats were introduced into the mixer just through a pipe. The distribution into the feed was poor, creating problems inside the mixer on pelletising and finally, because of a bad homogeneity, the feed did not perform well for animals.

Today, animal feed industries use a large quantity of different types of liquids. Feed production requires more advanced and technological systems. PLP Systems can offer different solutions for the handling of the liquids, but what are the main stages that are fundamental for a good finished product?

First is certainly how the liquids are introduced into the mixer.

Perfect dosage, homogeneity and spraying of the liquids

With our DOSAMIX systems, all the liquids are dosed by accurate weighing scales and the premix of the liquids is handled by the homogeniser machine which creates a homogenous solution even when combining together both water and oil-based products.

The spraying, by the Smog Atomiser, guarantees small droplets and a perfect distribution into the mixer.

Our solution allows the introduction of all the liquids (fats, oil, molasses, lecithin, creams, acids, amino acids, solvents, and with different viscosity) in the mixer, as if they were a single liquid achieving a huge amount of benefits.

These advantages include an excellent homogenisation, a perfect distribution of liquids inside the mash during the mixing phase and reduction of lumps and particles, The “Coefficient of Variation” (CV) improves, together with the quality of the final product.

There is a great improvement in the colour quality of the compound, a reduction of variation of production and consumption of the pelletising or extruder machine which saves humidity in the final feed, as the water will become englobed into the oil particles.

When liquids are sprayed separately into the mixer, water-based liquids and oil/fat react against each other (immiscible) by forming a layer on top of the feed particles. The product will be non-homogeneous and will create lumps and fines.

The DOSAMIX system is complemented by PLP Liquid Systems’ Smog Atomiser, that is able to break down into fine particles the liquids, thereby creating a fog effect. In this way, a perfect distribution of the product is guaranteed.

With the introduction of this technology, the feed mill factory will notice:

- Production capacity increase
- An increase in moisture retention

- Longer life of dies, pumps and dosing lines
- Reduced cleaning time
- Reduction of lumps and fines and a better feed quality

Post-pelleting of the liquid

Another important phase is certainly the post-pelleting of the liquids.

Fats, molasses, liquid enzymes, vitamin and medicines are important ingredients which determine the health of the animal. Fats and molasses are good energy ingredients, a lower addition results in deficiency in weight gain and over-application can result in a financial loss for the mill.

Enzymes and vitamins are sensitive to temperature, and can rapidly degrade at just 80°C.

A low inclusion can cause growing problems and an overdosage will cause a financial loss.

PLP has developed various systems for this application, in particular, a newly-advanced technology that permits the handling of these difficult products.

This technology stops the introduction of sensitive additives in the mixer and instead adds them to the finished product at the end of the line. The goal is to dose the correct number of additives and to avoid cross contamination.

Some of PLP's most advanced dosing systems include:

Mass Spin Coater

For the addition of micro-liquids with a maximum capacity of one percent, the Mass Spin Coater would be the machine to handle this type of coating. It's an online 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 and antibiotics

Drum Coater

Suitable also for the addition of liquid additives such as enzymes, fat, digests, spices, oil, olive oils, antibiotics, vitamins, colours, chocolate, caramel, sugars, etc.

The drum has a system valve on the outlet, allowing small batches of product to be mixed with a longer retention time. This ensures an excellent coating over the entire surface of the product, even with a small percentage of additives.

MT Paddler 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, digests, aromas, oils, medicines and 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.

Tribo Electric Technology

Medicines can be added and fixed onto the pellet surface by use of PLP 'Tribo Technology'.

The fixation of the powder additive is done by electric forces with the help of a natural binder (Seal4Feed). Coating medicine at the end of the line will avoid dosing a higher percentage of additives, due to the loss caused by the thermal and mechanical stress during the production phases and will avoid cross contamination in the production line.

All these applications can be also used for applying powder products on to the finished products. PLP systems has also developed a new system defined as Post Stress Powder Application (PSPA).

This new system can be used for the application of liquids and powders on the finished product without necessarily creating a blend before the injection. Powder products are very important for the good realisation of the finished product and dosage and weighing are important because they have to be very accurate.

Most of the micro ingredients utilised in animal feed mills are added into the main mixer to produce a finished feed or in a premix to facilitate uniform dispersion of the smaller elements into a large mix.

Incorrect usage might have a major influence on animal growth as well as an unexpected contamination of all the feed.

MDP System

PLP Systems can provide different solutions but their flagship model is certainly the Micro Powder Dosing

(MPD system). MDP is a system with a standard concept but the size, capacities and logical function can be designed and adapted to suit individual customer's needs.

The batch dosing can range from a few grams up to 1000kg and different ranges of products can be handled such as granulometry size and physical/chemical characteristics. The system is normally used as a batch dosing scale, dosing each powder individually into the weighing hopper.

Other types of configuration are possible such as loss in weight, continuous dosing and volumetric dosing. All parts in contact with the product are constructed in stainless steel and the MDP has been designed in order to achieve a smooth operational work process and a simple system maintenance.

Resolution of the dosing for each additive can start from less than one-gram resolution;

Regarding the speed of each batch, the feeders are able to reach up to a 500kg batch in less than three minutes. The MDP is compact in size, in only four-square metres wide and a carousel of 12 feeders can be housed within.

Special products can be handled with different concept feeders (vibrating units) such as filaments, flakes, pastes for fragile products. For easy maintenance, the MDP station contains simple but robust elements that can be easily be replaced on site. Cleaning is easy thanks to the fast clamps connections on the body of the feeders.

PLP offers complete and customised solutions for the dosing, coating and weighing of both powders and liquids. We attach great importance to being open to new ideas, and unique solutions, this being an integral part of our culture at PLP as well as innovation, precision and reliability.

In our main office, we have built for customers a test area where our valued clients can come and experiment with our machinery, bringing their products to test thoroughly (pellets, extruded products, additives and more). We are happy to invite you all, our goal is to become a reliable partner with whom to develop the technology of the future and overcome more and more challenges with together!

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