

Vacuum

plays an important role in delivering micro-ingredients to livestock

by Kjell Roesjorde, Forberg International AS

Using vacuum to improve the intrusion of liquids into porous extruded pellets is a key objective behind the development of the Forberg® Rotating Vacuum Coater (RVC).

vacuum cycle with regards to the rate of equalising back to atmospheric pressure gives an optimum capacity of inclusion

Easy to include cleaning-in-place (CIP) system for thorough cleaning in a fast and effective way

Easy-to-change between formulas without the risk of cross contamination

The cycle and principles of operation

When the pellets have been loaded through the inlet valve, the valve is closed and the preset level of vacuum is obtained.

The next step is to add liquid additives through the single-component nozzles on the machine while the rotors are running. The Forberg RVC's well-known ability to fluidise the product and high internal transport capacity are important reasons why the distribution of different liquids is obtain at such a high level.

The principle allows perfect distribution directly to each pellet even for very small quantities of added liquid.

After distributing the liquids onto the surface of the pellets, the carefully monitored process of equalising the pressure inside the process chamber returning to atmospheric pressure, presses the liquid into the pores of the pellets, leaving the surface dry.

Petfood production

In the production of petfood diets made from extruded pellets, there has been a great development over the past decade. An important part of the development is the addition of different liquid additives, such as digest improver, vitamins, fat and appetite improver, just to mention a few.

Palatability is a key factor in producing high quality petfood.

Besides involving a careful selection of ingredients, it involves the right processing technique. The multiple layer coating possibility of the RVC has an important impact on food quality.

Other important features that put the RVC at the forefront in the race to achieve quality goals include:

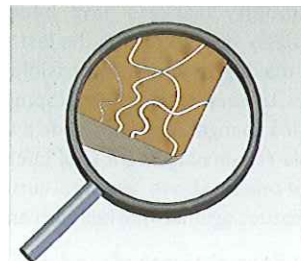
Loading and unloading of the machine through the same valve minimises the risk of leakage

The loading/unloading valve is out of the process area during the actual process, ensuring that what is put into the machine stays there until the charge is ready for unloading

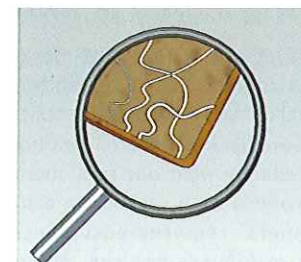
Smooth process chamber with accurately adapted rotors ensure very low wear and breaking of the pellets during the process

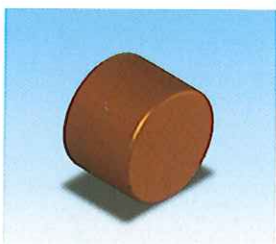
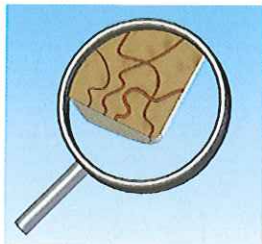
Total control of the

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The next step is to add liquid additives through the single-component nozzles on the machine while the rotors are running. The Forberg RVC's well known ability to fluidize the product and high internal transport capacity are the important reasons why the distribution of the different liquids is possible to obtain at a high level. The principle allows perfect distribution directly on each pellet even for very small quantities of liquid additive.





After the process of distributing the liquids onto the surface of the pellets, the carefully monitored process of equalizing the pressure inside the process chamber back to atmospheric is pressing the liquid inside the pores of the pellets, leaving the surface dry.

Forberg International AS has been in the front line of vacuum coating systems ever since the process was first introduced to the industry manufacturing pelleted fish feed in the beginning of the 1990s. This technique has made it possible to increase the level of energy in feed to higher and higher levels.

It is of great importance to keep the pellets dry on the surface even after adding different liquids and the process of vacuum-assisted intrusion is playing an important role in achieving that objective.

Adaptation of the RVC to the petfood market

To meet the requirements of the pet-food market, some adaptations have been made although the dry product itself has many of the same physical properties as those associated with fish feed; at least concerning the ability to utilise vacuum techniques.

The use of fat, with melting point higher than ambient temperature, has triggered the use of special heat cable tracing of hoses to the nozzles, and even tracing of the nozzle assembly itself.

Heat tracing and insulation of the coater body prevents the build up of solid fat in the machine. The machine housing and rotors can be made in stainless 304 or 316 depending on the level of acid addition.

Poultry feed

One of the challenges in producing pressed pelleted poultry feed for broilers is to add sufficient energy as fat and at the same time maintain a durable pellet. A good pellet is one that contains all the correct ingredients all the way to the final, chicken 'consumer' and ensures that 'he/she' get the full diet intended.

Loose pellets will increase breaking and cause segregation during transportation from the pellet press to the feeding pan in the chicken

house. The result is that the chicken will pick its choice of the feed and will often miss the fine additives that should be part of the pellet.

With the RVC, the solution is simple; initially you add the fat in the right quantity to make a perfect pellet. After the pellet is made - exhibiting good physical properties - you pass them into the RVC, close the inlet valve and create the right vacuum level inside. Add the correct amount of fat in liquid form through the nozzles and the system ensures a perfect distribution onto all pellets without breakage.

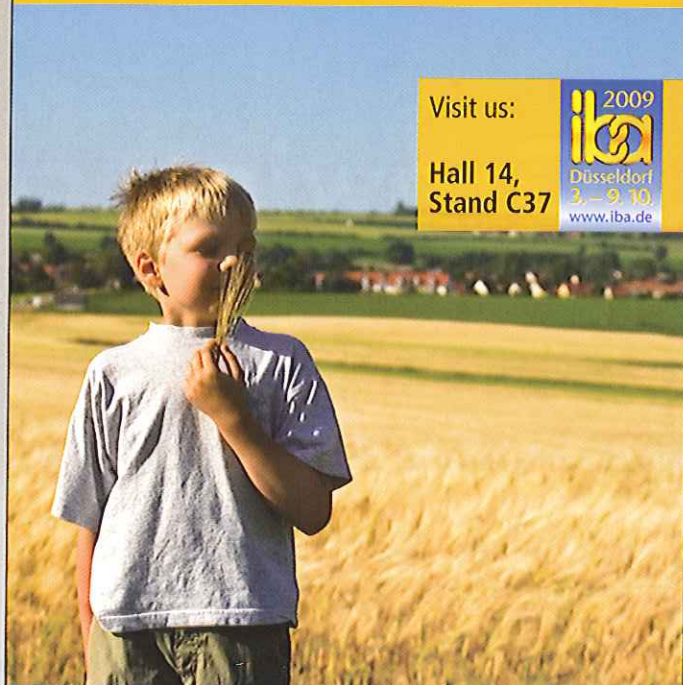
You can also add a choice of liquid vitamins and/or enzymes and when the process is over and the pressure is brought back to atmospheric, the result is a durable and dry pellet with all the added ingredients on the inside!

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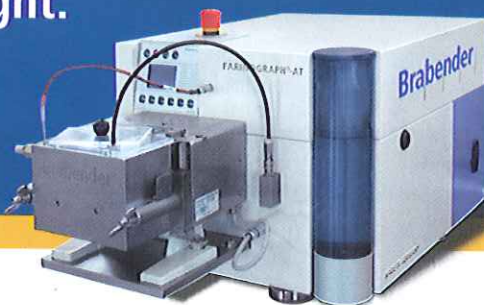
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