WEBINAR QUESTIONS AND ANSWERS

Thank you to the numerous attendees who have attended our free joint webinar: How to achieve a perfect Dosing of Micro-ingredients with KSE Process Technology BV. The questions that were not answered during the webinar are hereby answered by our speakers, Marc Perel and Lukas Bruijnel.

- ***What is the best carrier for the micro ingredients premix? I mean, considering carrier is a vehicle for the micros, what is the Ferrari? And the Fiat? (from Jorge)***

Answer from Marc: Dear Jorge, good to hear from you! Regarding the choice of carriers in the premix plant: first of all, there is a question of availability. In general, for mineral carriers, calcium carbonate is present everywhere. However, it is important to set specifications (especially in terms of contaminants and in terms of particle size). For vegetable carriers, it is much more variable, but many cereal by-products can be suitable: rice bran, wheat middlings, corn cob... We can have a little more in-depth discussion via Teams if you wish.

- ***Hi!!! What are the best indicators/kpi's that control losses in dosages? (from Gustavo)***

Answer from Lukas: Dear Gustavo, first, a physical check of the weighed weight, collect the dosed immediately after the weigher to check the weight. Also, a total check, the sum of all doses must be equal to the amount of product that has been deposited in the silo (between 2 empty messages) an excellent way to check dosing systems over a longer period. As a 3rd back measurement of either a specific active substance or a tracer which is present in or added (laboratory test of the end product).

- ***In feed mill when is the best time to add the oil middle or the end? (from Mike)***

Answer from Marc: Dear Mike, this is a bit of a separate topic from micro-dosing but here are some tips: when adding macro-liquids in a mixer, it is best to wait a few seconds to 1 minute (depending on the type and efficiency of the mixer) in order to get the solid ingredients relatively homogeneous. The performance of the mixing operation can be validated by a test. For micro-liquids, on the other hand, a few seconds after the start of mixing is sufficient.

- ***How many seconds should be given for optimum mixing of added premix, while total batch mixing time is 180 seconds? Regards (from Anjum)***

Answer from Marc: Dear Anjum, each mixing operation is different from one plant to another and I lack specific information to answer you precisely. However, you should know that the efficiency of this operation can and should be qualified by a homogeneity test (with an internal or external tracer).

- ***In a feed mill what is the best time to add the premix? Beginning, middle or end of the batch? (from Silvia)***

Answer from Marc: Dear Silvia, to facilitate mixing, it would be best to add the premixes in the middle of the macro-components (and in the center of the mixer) but this is not always possible. So sometimes they are put at the end, before the liquids. In any case, it is forbidden to put them first.

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- ***In the feed plant, how do you evaluate that the added additive is perfectly mixed? For example, in the case of small-dosage additives, 11 g / ton (from Orlando)***

Answer from Marc: Dear Orlando, the best is to carry out a homogeneity test if the analysis of your additive allows it (in term of precision, cost...). Another option is to qualify your mixing operation with another internal tracer (zinc, manganese, antibiotic...) or external (micro-tracer).

- ***In a premix plant, how can we define the size of the feeder screw? if for the same product we can have very different addition levels depending on the formula (from Fillipi)***

Answer from Lukas: Dear Fillipi, a feeder must always be able to move the minimum desired product flow. if we assume a transport and reaction time loss of 1 sec, the feeder will therefore have to have a minimum capacity in kg/sec of 50% of the desired accuracy. on a desired accuracy of 10gr the feeder will therefore have to be able to handle a smallest capacity (flow) of 5gr/sec.

- ***Do you have an idea to keep choline chloride free flowing and from getting hard and collecting moisture and hanging up in the hoppers and or micro hoppers? (from Mike)***

Answer from Marc: Dear Mike, indeed choline chloride is a difficult product in terms of flowability because its hygroscopicity. I don't have a magic solution to avoid this phenomenon during storage, apart from drying the air (complicated to implement) or designing the storage as well as possible (not too large capacity, large section, efficient extraction system....). Another option is of course to avoid this bulk storage and to keep this product in bags (which unfortunately requires many more manual operations). Last option for the complete feed manufacturer: direct injection of liquid choline chloride in the mixer.

- ***Dear Mark / Lukas, please could you comment if Adisseo or KSE has some service to help customers in this topic (Dosing of Micro-Ingredients) ? (from Fabiano)***

Answer from Lukas: Dear Fabiano, from KSE we offer a (paid) service with the dosing design tool. With the tool, all dosages are analyzed based on the compositions to be produced, the expected turnover and batch size. you can expect a very comprehensive report and advice on all actions, the expected accuracy and capacity. In addition, advice on the weighers, silos (storage capacity) and handtipping actions.

- ***Is the homogeneity affected by the weight of the batch? Should we test homogeneity with every weight? (from Riadh)***

Answer from Marc: Dear Riadh, some GMP codes would ask you to test homogeneity at the lowest batch size and biggest one. You can, for example, alternate every other year.

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- ***How to accurately measure the vitamin A content in premix and feed due to its minor level in premix and feed? (from Vincent)***

Answer from Marc: Dear Vincent, the HPLC method allows us to analyze vitamin A with a reproducibility of 10% in premix and 20% in feed.

- ***What intervention can we make to address hygroscopic materials particularly bridging in dosing bins/silos? (from Henry)***

Answer from Marc: Dear Henry, I think the solution in mainly in the design of the bin (large section, efficient extraction). Sorry not to be so creative.

- ***What are the main storage parameters that need to be considered when storing premixes/feed additives? (from Nazim)***

Answer from Marc: Dear Nazim, the main objective of storage is to preserve the quality of the ingredients: it is therefore necessary that the storage conditions (including filling) avoid contamination between products, avoid errors, ensure traceability, management in FIFO, and of course do not cause microbiological or chemical alteration. The essential parameters to control (as much as possible) are therefore mainly time, temperature and relative humidity.

- ***Is there a system available to lower hygroscopy in a silo with choline chloride 60 % (heating output, reducing humidity in silo, ...) other idea's ? (from Geert)***

Answer from Marc: Dear Geert, indeed choline chloride is a difficult product in terms of flowability because its hygroscopicity. I don't have a magic solution to avoid this phenomenon during storage, apart from drying the air (complicated to implement) or designing the storage as well as possible (not too large capacity, large section, efficient extraction system....). Another option is of course to avoid this bulk storage and to keep this product in bags (which unfortunately requires many more manual operations). Last option for the complete feed manufacturer: direct injection of liquid choline chloride in the mixer.

- ***Which one is better in term of accuracy ? (Slide or Screw) (from Sirawit)***

Answer from Lukas: Dear Sirawit, both can achieve very high accuracy. with a screw, however, you have the disadvantage of the free run-out of the last blade (which can be prevented by adding a valve) and a relatively small dynamic flow range, which limits the speed of the dosing (for larger doses).

- ***In your experience which is better to use, a cylindrical silo/bin or rectangular? Why? (from Henry)***

Answer from Lukas: Dear Henry, round silos have a considerably better outflow (due to the lower resistance due to the absence of corners). However, proper attention is needed for the outflow funnel.

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❑ ***What is the acceptable tolerance between actual and theoretic amount? (from Kim Khoa)***

Answer from Marc: Dear Kim Khoa, it is really up to each company to determine its tolerances according to its quality objectives. The formulator, the quality manager must set their requirements and a dialogue must take place with the factory with regard to material capacities. The tolerance would be expressed in % and/or kg (and taking the more restrictive for example). To try to answer you, here are some orders of magnitude of possible tolerances: phosphates, salt +/- 0.5 to 1 kg/t, amino acids about +/- 0.1 kg/t, enzymes +/- 0.05 kg/t...

❑ ***What is the best carrier for micro mix ingredients? Thank you. (from Amel)***

Answer from Marc: Dear Amel, regarding the choice of carriers in the premix plant: first of all there is a question of availability. In general, for mineral carriers, calcium carbonate is present everywhere. However, it is important to set specifications (especially in terms of contaminants and in terms of particle size). For vegetable carriers, it is much more variable, but many cereal by-products can be suitable: rice bran, wheat middlings, corn cob...

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If you have further questions about this topic, please contact our speakers:

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