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Mastering in feed technology at FôrTek

Feed compounding and manufacturing is far more than milling and mixing ingredients. Globally, feed manufacturing has reached the point where master and doctoral degrees are necessary in order to understand processes that have been developed decades ago based on practical experience of trial and error.

By Dejan Miladinovic, Center for Feed Technology – FôrTek, Norway

The Centre for Feed Technology – Fôrtek has been established a decade ago with an overall goal to serve the feed industry by carrying out research, educational and developmental assignments in the fields of feed manufacturing processes and animal and fish feed nutrition. The initial idea of an experimental feed production plant came from the feed industry and university scientists, and later received support from other institutions and businesses. Since 2005, Fôrtek is fully owned by Norwegian University of Life Sciences (UMB), situated in the village of Ås, 35km south of Norwegian capital Oslo.

FôrTek’s mission is production of research feed and process technology development and training of university students and industry personnel. FôrTek holds seminars related to feed technology with the support of Norwegian University of Life Sciences and its centres of excellence.

A small feed mill

A unique and flexible collection of feed production equipment for animals and fish makes FôrTek a state-of-the-art feed manufacturing complex. It is, however, smaller than its big commercial brothers. In addition, unlike its big brothers the plant is equipped with all types of animal, pet and fish feed possible. It has, therefore, a larger range of equipment than any individual feed plant. Plant capacity is around 2,000 kg/hr for pelleted or expanded-pelleted product and 500 kg/hr for extruded product.

Fôrtek is designed to make and test new ingredients in feed formulas and their physical handling characteristics as well as to evaluate variations of formulas to improve nutritional value and product quality. The production lines are available for the production of research feed for fish and other monogastric and ruminant animals. Receiving, grinding, proportioning...
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New equipment

FörTek has some interesting equipment available for research purposes. Recently Dinnsen of Holland has donated to FörTek a 5 litre vacuum coater that would allow for conducting tests on a very small scale. Furthermore a new technique in sieving has been developed that includes the use of water in order to wash down the small particles that would normally be washed away by the animal saliva when eating the feed. The aim is to duplicate the “saliva effect” in animals. And the extruder at FörTek received a new attachment that would allow pumping fish silage and other difficult to flow materials right into the barrel of the equipment, maybe even complete fish offal.

The Dosing System allows several ingredients to be batched at one time using two scales, 22 silos for formulating different combinations of raw materials and two positions for 500 kg big bags. This system operates automatically from the main computer.

and mixing as well as conventional and non-conventional conditioning, expanding, extruding and pelleting processes are possible with precise liquid and micro-ingredient addition. Test production traceability system is equipped by Norvidan’s “Citec System” and Bölösers 2.3 programme version.

As an additional traceability related to heat sensitive ingredients, temperature control can be performed with an infrared camera upon request. Multiple types of equipment (including expanders and extruders) provided by major equipment producers (a.o. Kahl, CPM, Buhler, Dinnsen, Forberg) and ability to install and test different types of processing equipment makes FörTek unique.

Tailor-made educational programmes

Each year the milling operation draws many visitors from around the world. With its investments FörTek has the sophistication to handle the feed industry’s needs. People not only visit just to have a look at the facilities, there are many options to learn about feed milling. Courses in feed milling technology, nutrition and feeding of animals and fish, fish farming, quality programmes, least cost formulation, plant design, etc. can be customised and prepared to suit special requirements. These courses typically have a three to five day duration and are held at UMB or at FörTek’s facility. With prior arrangements the courses can be given at the customer’s facility and in some cases local teachers (native speakers) can be included as instructors under supervision of FörTek and University personnel.

In aquaculture, education via Internet is available. UMB teamed up with New Brunswick Community College of Canada and Santo Tomas University of Chile and agreed to work together towards a common goal of bringing “aquaculture education” to the Internet. The three universities will work in conjunction with their institutes, i.e. Akvafors, FörTek, Matforsk, Technical Sciences and others in order to provide specific technical and scientific knowledge.

Research on effects of feed on animals

FörTek is co-located with the Department of Animal and Aquaculture Sciences as a research/production section within the Animal Production Experimental Centre. The interaction between those two divisions enables researchers to monitor the complete feed chain, from feed ingredients processing and its technical characteristics to the effects on nutrition, health, welfare of various farm animals. This is also one of the strategies to serve as a base research institution for combining national and international knowledge in all areas of feed technology and animal nutrition. Because of its versatility, Förtek can offer a complete research package for feed research and development. The feed is produced in agreement with Norwegian regulation policy for feed production, "Regulation of feedstuffs" (07-11-2002) and "Regulation of feed additives" (12-04-2005), which is in correspondence with EU regulation policy for feed production.

Numerous experiments have been performed in Förtek, resulting in a large number of scientific papers published in peer-reviewed journals.

So far, the Norwegian University of Life Sciences with help of Förtek’s personnel have educated five generations of Masters of Science in Feed Manufacturing. This two year M.Sc. programme is taught in English and has provided feed companies with highly qualified personnel which have facilitated feed manufacturing improvement across the world.

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