TRAINING AND EDUCATION

The Swiss Institute of Feed Technology (SFT)

CH-9240 Uzwil, Switzerland

The Swiss Institute of Feed Technology (SFT) has been at the heart of training and education for the professional feed manufacturing industry for 34 years. Established by the then owner of Bühler AG, Dr. René Bühler in 1979, SFT offers short courses and a Diploma course in Feed Manufacturing Technology in both German and English languages.

Courses at SFT are run with the professional feed manufacturer in mind. With a focus always on industry needs, courses are based on the motto "hands-on and focused" – an approach designed to address the requirements of the sector while meeting the individual training needs of students from around the globe. Graduates leave with an ability to understand, apply and operate state-of-the-art technologies and processes in a feed production plant.

Diploma Courses

SFT offers an accredited diploma course for the degree of Feed Production Engineer. Recognizing the difficulty for commercial feed processing personnel to be away from their jobs for protracted periods of time, SFT has designed the courses so that as much preparatory work as possible can be done prior to residential training at SFT in Switzerland. This course structure also opens up the possibility for those with basic knowledge of individual processes or of the operating principle of a complete feed manufacturing plant, and who ideally have also accumulated practical experience in feed production, to get advanced training.

Bühler Aquafeed Workshops

Bühler runs an annual one- and three-day "hands-on" aquafeed extrusion workshop in English at the Bühler extrusion pilot plant, Uzwil, Switzerland, teaching twin and single screw extrusion technology and the preparation of feed ingredients by size reduction and mixing.

The one-day feed preparation module covers:

- Theory of grinding and mixing systems and plants and their corresponding layouts
- Influences to the grinding process and particle size distribution chart
- Requirements to a modern mixer, mixing accuracy and its influences
- Grinding and mixing equipment.

The main three-day module covers:

- Introduction to the basics of extrusion technology, focusing on preconditioning, energy, moisture and mass flow balance
- Discussion of single v. twin screw extrusion technology, screw configuration, die and knife technology
- SME control and product density control and its significance in vacuum coating

Practical Demonstrations

All of the theoretical aspects are demonstrated with many practical examples, such as modification of cereals, proteins, floating and sinking fish feed production, including vacuum coating, shrimp feeds and/or feeds for other aquatic species, influence of alternative protein and starch sources, texture of proteins and other subjects of specific interest.

Dates for the next workshop: March 24- 27, 2014.

More information: Email Zita Eugster

The preparatory work involves two three-month blocks of correspondence courses, which include in-depth study of individual topics. Each preparatory block is followed by a four-week session of intensive hands-on training at SFT.

Subjects covered in each of the training sessions include animal nutrition and feed science, electrical engineering and automation, flow sheet design and process technology. Upstream processes such as intake/reception, size reduction, blending & mixing, etc. are covered in the first session; downstream processes of feed production such as liquid addition , hygienization, compaction, etc. in the second session.

Students also have the opportunity to learn about a variety of additional topics by guest lecturers. Courses are offered alternately in German and English, in a three-year cycle.

Short courses

Short courses are offered primarily in German and English and last from a few days to maximum of two weeks.

Pictured here with their instructors, 23 students from 13 different nations who attended the 2012 Diploma course.

Additional services

SFT is also happy to organize customized - and plant-specific courses on request at SFT or the customer's site, with simultaneous interpretation into the relevant national language.

Another service offered by SFT is to act as a neutral consultant for plant optimization and modifications, carrying out inspections, and conducting homogeneity and cross-contamination tests etc.

More information: Email website

Practical applications of the technology of extrusion and shares in the food industry

This course, a cooperation between Bühler and the University of Santiago, Chile will take place September 30 – October 4, 2013 at CEUS Llanquihue of the University of Santiago of Chile, Llanquihue, Chile.

More information: Email Astrid Seperiza

Norwegian University of Life Sciences

Universitetstunet 3, NO-1432 Aas, Norway

Master of Science in Feed Manufacturing Technology

At the Norwegian University of Life Sciences, and its MSc-program in Feed Manufacturing Technology you can earn a valuable combination of in depth understanding in the field of feed processing plus state of the art knowledge in nutrition. Adding business administration in feed manufacturing, the scenic Campus Aas and a lively student life gives a perfect combination, for both life and science.

Feed manufacturing has reached the point where master and doctoral degrees are necessary in order to understand and optimize processes that started developing decades ago based on practical experience of trial and error. The Norwegian University of Life Sciences offers one of few MSc-programs in this field internationally. The program is administrated by the Department of Animal and Aquacultural Sciences. The MSc program is taught 100% in English. Key elements are:

- Processes in feed manufacturing technology, with dual focus on commonly used equipment and the effects of processing ingredients and feed on the nutritional value.
- Comparative nutrition, from ruminants via poultry and pigs to fish and companion animals.
- Administration of feed business, involving a wide specter of topics from hazard prevention, legislative aspects, logistics, economy and personnel.

Teaching and training is partly based on lectures, but a considerable part is offered as demonstrations and training in groups. The courses are mainly taught by scientists from the University, but external experts from the feed industry and international companies are also frequently used. The Centre for Feed Technology is actively utilized in order to give the students "real life" experience with equipment used in modern feed processing. The Centre for Feed Technology was established

Former student: Thea Morken, scientist at BioMar.

I got interested in feed technology while studying aquaculture and decided to combine my knowledge in nutrition with how the feed is produced.

"Why did you decide to study at Norwegian University of Life Sciences?"

Because of the aquaculture/feed technology program. Social student environment. The good reputation of the University.

"What advices do you have for future FMT students?"

Get as much practical experience as possible during the studies, e.g. working/helping out at the Centre for Feed Tech. or at other feed plants during holidays. Talk to scientists within your field; ask to participate/help out with experiments – in order to prepare for your own thesis work.

Halvor Hektoen, prorector (starting January 1, 2014) at Norwegian University of Life Sciences.
Photo by Gisle Bjørneby.

Welcome to the Norwegian University of Life Sciences, and its MSc-program in Feed Manufacturing Technology!

The facilities and competence we have at the Centre for Feed Technology makes it very important to our university. This Centre gives us the opportunity to serve the whole value chain when it comes to research, covering the field from feed to fork. The increased focus on alternative ingredients in the fish feed sector is something that triggers the students since they can do exciting trials. The flexibility at the Centre for Feed Technology allows processing of alternative and new feed ingredients. Last but not least, the student life in Aas, is also worth experiencing!

just before the millennium with an overall goal to serve the feed industry by carrying out research, educational and developmental projects 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. Later the Centre received support from more institutions and businesses. The Centre for Feed Technology is fully owned by Norwegian University of Life Sciences, located adjacent to Department of Animal and Aquacultural Sciences, in the village of Aas, 35km south of the capital Oslo.

A unique knowledge base and flexibility in equipment

The study gives you unique knowledge about nutrition and feed processing technology. The competence you earn is strongly needed in the feed industry. Your expert knowledge within animal feed production gives you many career opportunities. The curriculum consists of a combination of nutritional, technological, chemical and physics topics, which combined will represent a unique approach to this topic. You will become familiar with state-of-the-art feed processing equipment. You will also get knowledge about aquafeed, petfood and feeds for traditional production animals, whereof most of the feed types you will produce yourself during the study program.

A unique and flexible collection of production equipment for fish feed makes The Centre for Feed Technology a state of-the-art location within the field of feed processing. The semi-industrial scale of production makes The Centre for Feed Technology an ideal place of study for students aiming for industry relevance. The plant is equipped with both steam pelleting, extrusion and expansion lines, so that feeds for virtually all animals can be processed. Plant capacity is around 2.000 kg h^{-1} for pelleted or expanded-pelleted product and 500 kg h^{-1} for extruded product. Current investment in new equipment facilitates lowered capacities down to ~100 kg h^{-1} for pelleted and ~25 kg h^{-1} for extruded feed.

Career opportunities

Your competence when finishing this MSc-program is attractive for feed industry, feed processing equipment manufacturers, and feed producers. Some candidates

are also entering the consulting business. And if you are seeking an academic career, this MSc program is also an excellent background.

Admission, Requirements, and information

A bachelor's degree or its equivalent, with at least: 10 credits mathematics, 10 credits chemistry/ physics, 10 credits statistics and 60 credits biological subjects, preferably including nutrition. Applicants must demonstrate English language ability in accordance with the University regulations.

For more information about the courses: visit the website.

Application deadline is December 1st, except for students from the Nordic countries, who have a deadline of June 1st.

Feel also free to contact the professor in charge, Trond Storebakken or the Study Coordinators for further information on the MSc program in Feed Manufacturing Technology.

For matters regarding The Centre for Feed Technology, please contact the manager, Olav Fjeld Kraugerud, Ph.D.

Our extruder is a Buhler BCTG 62 (ground floor) with a BCTC pre-conditioner ahead of that (first floor), and with two separate bins (second floor) making it easy to perform inclusion rate experiments.
(Photo: Gisle Bjørneby)

Suzi Dominy
Editor/Publlisher
editor@aquafeed.com

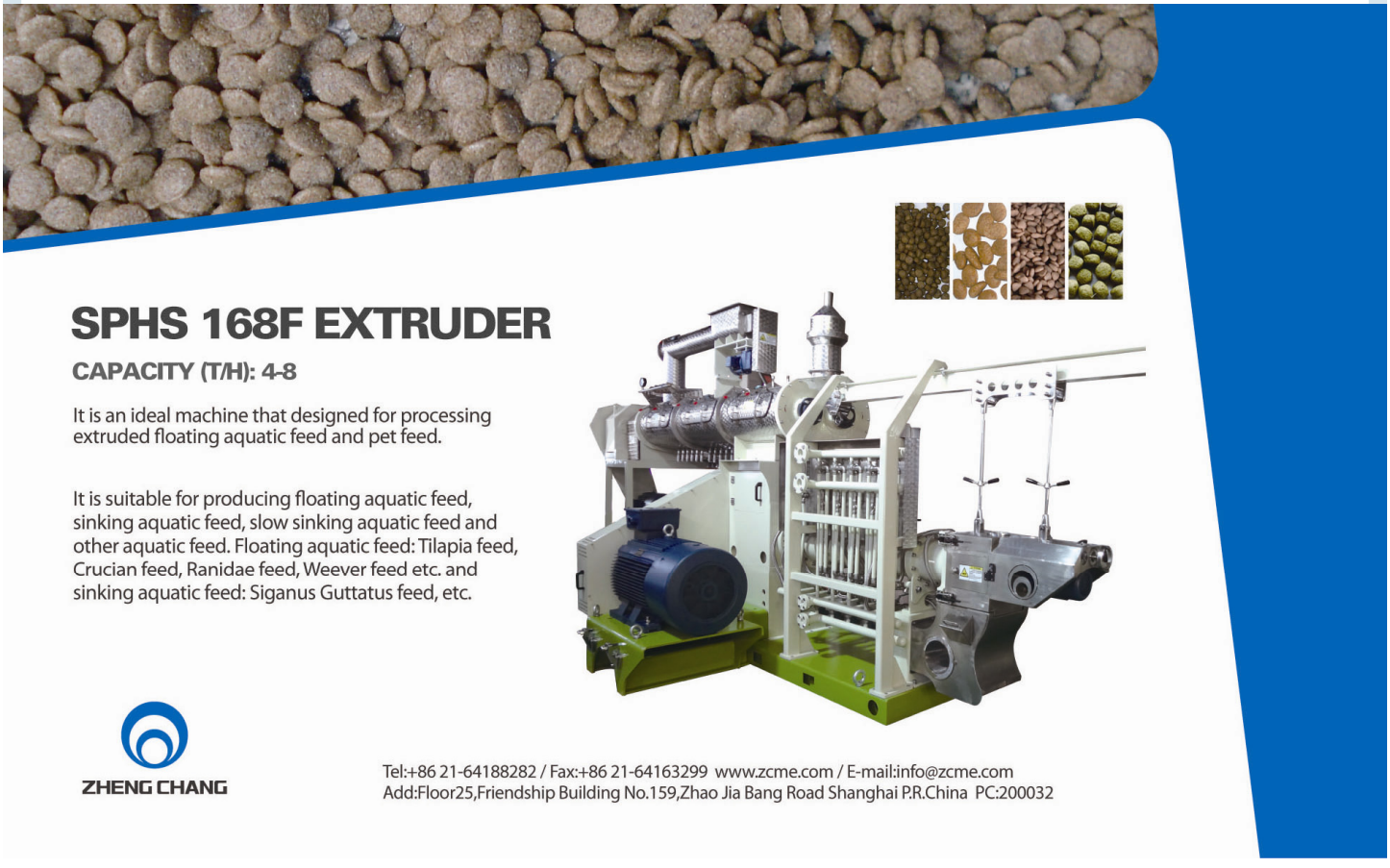
"Would you like to share your knowledge with the aquafeed industry?

We welcome practically-orientated feature articles describing applied nutrition or processing research, new products, feeding trial results, case studies.
Contact me for deadlines and other requirements."

Aquaculture Feed Extrusion, Nutrition and Feed Management Short Course

A one-week Practical Short Course on Aquaculture Feed Extrusion, Nutrition and Feed Management will be presented on September 22-27, 2013 at Texas A&M University by staff, industry representative and consultants. This program will cover information on designing new feed mills and selecting conveying, drying, grinding, conditioning and feed mixing equipment. Current practices for preparing full-fat soy meal processing; recycling fisheries by -products, raw animal products, and secondary resources; raw material, extrusion of floating, sinking, and high fat feeds; spraying and coating fats, digests and preservatives; use of encapsulated ingredients and preparation of premixes, nutritional requirements of warn water fish and shrimp, feed managements and least cost formulation are reviewed.
Practical demonstration of sinking, floating, and high fat aquafeed, are demonstrated on four major types of extruders - (dry, interrupted flights, single and twin screw), using various shaping dies. Other demonstrations include: vacuum coating and lab analysis of the raw material for extrusion. Reservations are accepted on a first-come basis.

For more information about the course: visit the website or email Mian Riaz, Ph.D.



Kansas State University's International Grains Program

1980 Kimball Avenue, Manhattan, KS 66506, U.S.A.

Short courses

The International Grains Program (IGP) offers week-long courses in feed manufacturing including its effect on animal nutrition.

With fisheries and aquaculture operations expanding worldwide, the demand for education and training in the field have never been greater. At an average annual production growth of 6.3 percent from 2001-2010, and a global annual value near $120 billion, entrepreneurs and companies are taking notice.

To help bridge this training gap, the International Grains Program, part of Kansas State University's Department of Grain Science and Industry, offers yearly week-long courses in feed manufacturing and grain management. As part of the hands-on

Hands-On Extrusion Processing

KSU International Grains Program Extrusion Processing Course

Those interested in learning the latest in ingredient innovations and equipment usage relating to extrusion processing should consider attending the International Grains Program's annual Extrusion Processing course. The hands-on training opportunity is scheduled for August 13-16, 2013.

The course, geared toward technical and managerial personnel representing the food, pet food, and feed industries and ingredient companies, will provide professional insight from experts in industry and academia, as well as hands-on training sessions. The training will also focus on the science and practice of consumer acceptance studies for new products.

Along with learning about the fundamentals and operations, researchers will also learn the latest trends in extrusion processing and information on how to set up an extrusion-based business. Learning about the technology is one part of the course, but participants also receive training from the business angle.

"The intricacies of setting up an extrusion-based business including capital decision-making and strategic planning are addressed in this course," said Dr. Sajid Alavi, course coordinator and associate professor of grain science and industry. "Case studies are conducted with an emphasis on both the U.S. and developing world markets."

The lectures will provide detailed insight into processing of a diverse range of extruded products including breakfast cereals, snacks, textured soy protein, pet food, and feed for poultry and aquatic species. Classroom experiences are reinforced by the interactive lab exercises and demonstrations for participants at the K-State Extrusion Laboratory as well as a field trip to Wenger Manufacturing in Sabetha, Kansas, USA.

Aside from the learning that goes on in the classroom and in the lab, Alavi believes one of the greatest aspects of the course is the networking that occurs between the class participants and speakers.

One past participant wrote on their evaluation, "Every aspect was informative. I have several recommendations to take back to my company." Another one said, "The real world case studies are great. This separates this extrusion course form any other I have attended."

To register for the course, go to the new IGP on-line registration site

training conducted during these courses, participants learn about pelleting and the extrusion process of feed manufacturing that is essential to the production of animal and aquatic feed.

One of the many advantages of the IGP training includes the state-of-the-art facilities.

"We're excited to have the opportunity to utilize the new O.H. Kruse Feed Technology Innovation Center in our courses, which will bring more opportunities for our participants to get hands-on training with the latest technology and equipment," said Carlos Campabadal, feed manufacturing specialist and course manager at IGP.

Past participants have enjoyed the wide range of topics that are covered during the

courses.

"I enjoyed the feed mill design and engineering parts of the course, and I was able to learn about different ways of feed processing in relation to nutritive values," said Catherine Ahmann, 2012 participant from the Washington State Department of Agriculture.

This year's feed manufacturing course is scheduled to take place at the IGP Conference Center September 30 - October 4. Those interested in participating in the course can visit the registration website.

This is just one example of the training offered by the Department of Grain Science and Industry and its International Grains Program. In addition to the feed manufacturing and grain management trainings, IGP faculty also offer courses in the grain marketing and risk management, and flour milling and grain processing.

To learn more about IGP, visit the website.

Graduate degree courses

The Department of Grain Science and Industry offers courses of study leading to degrees of master of science and doctor of philosophy in grain science.

Modern teaching and research facilities include a feed mill, extrusion laboratory, and grain storage and handling facility. In addition, more than 10 cereal chemistry laboratories are equipped with visible and ultraviolet spectrophotometers near infrared analyzers, an infrared microspectrometer, gas chromatographs, liquid chromatographs, ultra centrifuge, freeze drying apparatus, balances, rapid viscosity analyzer, differential scanning calorimeter, thermo-mechanical analyzer, classical rheometer (Instron), dynamic rheometers, gel electrophoresis apparatus, a full array of glassware, rapid analyzers for nitrogen, fiber, and glucose, as well as recording mixers and starch viscometers.

A unique feature of the department is its fully functional pilot feed mill for research and development studies by university, industry, and government organizations. The feed mill at Kansas State University is a modern concrete and steel structure on campus which houses the latest in equipment in the feed milling industry. Its capabilities include cleaning and receiving raw materials, classification of raw materials, grinding and pelleting, flaking, or extruding. A premix room for microingredients and a large-scale batching system facilitate accurate proportioning and weighing of feed ingredients. The feed mill is capable of producing nearly all physical forms of formulated animal feeds. Plans for construction of new facilities are in progress.

A food-grade extrusion processing facility, houses a Wenger model X-20 single-screw extruder, a Wenger model TX-52 twin-screw extruder, and a gas-fired belt dryer.

The Swanson Memorial Resource Room, located in Shellenberger Hall, contains a collection of volumes relevant to the grain science discipline.