

Short course a success

Forty registrants plus speakers attended a short course on oilseed processing held in Zurich, Switzerland, in November following the World Conference on Emerging Technologies in the Fats and Oils Industry in Cannes. The short course was arranged by AOCS European members and hosted by Buhler Brothers Ltd. of Uzwil, Switzerland.

Participants came from 17 countries—Portugal, Spain, Greece, Turkey, Yugoslavia, Austria, Singapore, India, the United States, South Africa, Thailand, Argentina, France, Brazil, Germany, Sudan and Belgium.

Topics included continuous ship unloading, oilseed cleaning, concrete and steel silo usage, oilseed storage, soybean dehulling, flaking, expeller press installation, solvent extraction, energy production from burning sunflower hulls, automatic control of seed preparation and level controls in oil mills. Different examples of equipment and methods were discussed.

Roger Leysen of the American Soybean Association's Brussels, Belgium, office served as conference chairman and as a speaker. Other speakers were R. Brüllmann, F. Frey, L. Rütthemann and W. Fetzer of Buhler Brothers; A. Krämer of Krämer & Partners Engineers, Switzerland; Phillippe B. Des-

champs, a milling engineer of Denis Privd., Germany; H. Lang of Endress und Hauser, West Germany, and Carol Ruckenstein of Universal Seeds and Oil Products Inc. of England and chairman of the AOCS International Relations Committee.

Discussing oilseed storage, Ruckenstein pointed out that moisture content of the seed is crucial, with spontaneous combustion resulting when critical moisture levels are exceeded. He recommended purchasing and storing mature seeds, with precleaning for high oil content seeds. Leysen added that for meals, it is most economical to dry to the allowed humidity levels, i.e., 12.5% moisture in Europe. He explained that the local ambient temperature, depending on the time of year, and temperature of the meal when it goes into the silo are important.

Fetzer said that in dehulling of soybeans, it is important to dry the seed for optimum handling. He outlined front-end dehulling, tail-end dehulling, a combination of front- and tail-end dehulling, and hot dehulling. The hot dehulling, he explained, is a new system combining fluid bed technology with front-end dehulling without using a common seed dryer or tempering bins. "The merit of this process is a special heat-treatment of the soybeans and the following crushing/

dehulling as well as the flaking, being made with hot beans," Fetzer said.

Leysen, presenting an overview of solvent extraction, noted that the processor depends heavily on the quality of the oilseed he is able to purchase. He said the time between flaking and extraction should be minimal to discourage oxidation or enzymatic reactions. Leysen outlined a number of different types of extraction equipment available. Explaining that residual oil content in the meal is a function of the flake thickness, Leysen added that extraction of the last traces is time-consuming and may result in more phospholipids and gums, which will cause problems in refining. Refiners have to find a balance between how much oil they can remove and what is economically practical, he said. Leysen also cautioned participants about the two major risks in soybean crushing plants: fire and explosions. "The management of a solvent extraction plant must establish and maintain safety 'esprit de corps' among the employees of the plant," he said.

Leysen predicted there will be more new developments in analytical equipment for the soybean crushing industry. One development has been the Near Infrared Reflectance technique, a method now accepted by the Federation of Oils, Seeds and Fats Association Ltd. (FOSFA) for determining oil,



Forty participants from as far away as South Africa, Brazil and Argentina took part in the European short course in Zurich following the AOCS world conference in Cannes.



Wilhelm Fetzer of Buhler Brothers demonstrated the workings of some of the equipment on display at the company's training center at Uzwil.



It was in this small iron foundry (shown

above) that Adolf Buhler started a business in Switzerland in 1860. That business has evolved into Buhler Brothers Ltd., headquarters of which, in Uzwil, Switzerland, are shown below. Buhler Brothers hosted the European short course in November and invited participants to tour the Uzwil facility.



moisture, volatile matter and protein content in soybeans. While application of new analytical tools for process, control and automation are being announced, Leysen explained, they have not yet found wide practical use. Leysen also cited processing developments proposed by engineering companies, including Lurgi's ALCON process, EMI Corp.'s extrusion process for flakes and presscake for extraction, and a desolventizer-toaster-dryer-cooler (DTDC) apparatus. Other developments in the industry include research with solvents other than hexane, microwave use for drying soybeans and the use of full-fat soybeans as raw material for the feed compounding industry.

Fetzer outlined ways to automate seed preparation and predicted instruments soon will be on the market to control these operations. Leysen, noting that some large facilities already are automated, agreed that automation will be the future for all eventually.

In a talk on expeller press installation, Ruckenstein said tra-

ditional oilseed processing consists of flaking, conditioning, pressing, cake breaking and extraction, although direct extraction is being used for some oilseeds, particularly cottonseed. Ruckenstein described the use of expanders for soybean flakes, permitting increased extraction capacities for existing soybean facilities without high investment. He said expanders now can replace expellers in cottonseed plants, and experiments show they can be used on undecorticated sunflowerseed.

Ruckenstein, one of those instrumental in organizing the short course, said he felt enrollment showed the course was needed and successful. "I think international short courses are very good because they help address special problems, improve knowledge in the industry and promote cooperation," he said.

Lars Wiedermann, ASA's technical director for soy oil in Southeast Asia, noted that as there is much interest by companies and countries to establish facilities that are flexible in handling more than

one oilseed, there is a desire to obtain more technical knowledge. "Countries are looking at increasing their production or being able to handle a variety of oilseeds that are imported. They need to know what type of facility to build."

Leysen, in closing remarks at the technical sessions, proposed that the AOCS International Relations Committee consider arranging another European short course.

After a day and a half of technical talks, short course participants were bused to Buhler Brothers' main facility in Uzwil, Switzerland, for a tour of the plant. Buhler, which employs 9,000 persons worldwide, develops, manufactures, sells and services complete systems and equipment for such industries as food processing, ship loading and unloading, chemical engineering and environmental protection. The company, founded in 1860 as an iron foundry, celebrated its 125th anniversary in 1985. In addition to a tour of the manufacturing sections at Uzwil, participants also visited the company's training center, where personnel from customers learn how to maintain and repair Buhler-made equipment.

GC school

The Chicago Chromatography Discussion Group will conduct its annual school in basic gas chromatography during the week of March 17, 1986, at the College of Pharmacy, University of Illinois, Chicago campus, Chicago, Illinois. The course will include lectures by persons with extensive experience in gas chromatography. For further information, contact Arthur A. Schmitz, coordinator of the GC School, 628-S 6th Ave., LaGrange, IL 60525.

Errata

The 1986 annual meeting registration form has three errors. Correct price for Friday luau is \$25. Correct price for golf tournament is \$60. Section cocktail parties are on Thursday, May 15.