



**LALLEMAND BIOFUELS
& DISTILLED SPIRITS**



**ETHANOL
TECHNOLOGY
INSTITUTE**

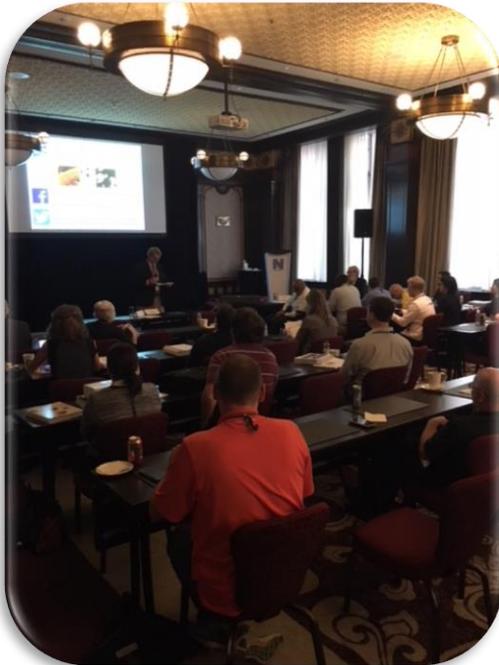
The Alcohol School 2017



The Alcohol School 2017 Montreal Recap

Lallemand Biofuels & Distilled Spirits (LBDS) and the Ethanol Technology Institute (the educational arm of LBDS) has recently completed its 2017 Alcohol School held in Montreal, Quebec, Canada from Sept 10-15. Approximately 90 delegates from both fuel ethanol and beverage distilling companies from 6 different countries attended the week long course.

Course Agenda



The delegates listened to an Industry overview from both Fuel Ethanol and Distilled Beverage perspectives, from what is happening currently and the future challenges facing both industries. Other presentations ranged from, substrate selection, enzymes and composition from both starch and sugar based substrates, grain receiving, storage and milling (both wet and dry), and subsequent mash preparation. Lectures on Yield, efficiency and profitability, and fractionation technologies were also featured.

Novel methods of dry grind processing, sugar feedstocks, high gravity fermentation technology, anaerobic digestion, cellulose technology and biomass usage were interwoven with discussions on analytical methods techniques, process control, plant troubleshooting and the need for proper

cleaning and sanitation to preserve ethanol yields.

Emphasis on yeast production, propagation, and nutritional requirements were discussed as well as processing basics such as distillation, molecular sieves, and dry

house technologies. The topics of new developments and technologies were discussed as well as new and novel yeasts for ethanol production were given to introduce delegates to technology available to the industry. The relevant topics of water reuse and energy balance in operating facilities and oil separation were discussed with practical applications for all in attendance. The finale consisted of the topics of 2nd generation feedstocks, enzymes, and operating capabilities and implementation. A pertinent discussion on a nutritionist's view of



DDGS and how we can improve the quality and consistency to open up more markets to this valuable co-product were reviewed. This session ended with the role of biorefineries in the alcohol industry and looking at the challenges facing the alcohol industry and some of the technical opportunities for the future.

New this year was an expanded distilled beverage focus with lectures consisting of mash preparation, rum and Canadian whisky production, distillation for flavours, process optimization and analytical methods. The finale consisted of presentations on gin and vodka production, craft distilling challenges and a maturation demonstration. Also new this year was a separate one day Concise Extra Credit - Craft Distilling seminar held separately from the regular school. Lectures and demonstrations consisted of Raw Materials and processing, yeast and fermentation management, yeast impact on congeners, distillation, blending and maturing, QA/QC, and sessions on whisky, rum, vodka and gin production. The finale consisted of talks about the current challenges and opportunities for Craft Distilleries and a sensory analysis training session. Overall, a good expanded edition for distilled spirits production.



One of the highlights of the North American program is the special beverage tasting event in Les Voutes, a series of three caves underneath the hotel. These caves were an integral part of the fortifications of Old Montreal and provided a fantastic setting in which various spirits like tequila, whisk(e)y, rum, vodka, gin, cachaça, wine and beer were tasted.

This event gives everyone an opportunity to experience various types of spirits and understand some of the knowledge learned throughout the course. It also gave the delegates a chance to interact and ask questions of the presenters in a more relaxed social setting.



Practical Applications



In addition to the lectures, tours of various facilities were interwoven into the program to provide the delegates a focus on facts discussed in lectures. In the North American School, tours of National Research Canada (NRC) laboratory facilities took place in order for the delegates to better understand microscopy

(general and fluorescence), basic microbiology, culture collection, molecular biology, yeast and bacterial fermentations, and pilot scale alcohol fermentation. Discussions on probiotic bacteria and how Lallemand's Animal Nutrition division cross links to alcohol production through Distillers Dried Grains and their nutritive value which is important to feed nutritionists were also presented.

Delegates also visited Lallemand Inc.'s (Prefontaine) yeast plant to learn how yeast are produced, processed and distributed in its various forms to industries around the world.





A visit to a nearby ethanol production facility (GreenField Global - Varennes, Québec, formerly Éthanol GreenField) provided delegates with an opportunity to view a first class fuel alcohol facility and to see in practice some of the techniques and knowledge learned from the lectures.



A visit to Diageo Global Supply (Salaberry-de-Valleyfield, Québec) provided another perspective in alcohol production from the distilled beverage point of view. Demonstrations such as distillation and a sensory tasting panel were given to get a feel for not only the science, but also the art of making alcohol for the distilled beverage industry.



Next Course

We are happy to announce the following dates: the 2018 Alcohol School(s) will be held April 9-13 in Toulouse, France and September 9-14 in Montreal, Quebec, Canada. We hope to see you there! Look for more information on our website at www.lbds.com.