



Host	Am	Onl	Glu	Man	Xyl	Temp	pH
<i>E. coli</i>	+	+	+	+	+	35°C	6.5
<i>K. fragilis</i>	+	+	+	+	+	30°C	5.5
<i>Z. mobilis</i>	+	-	+	+	+	30°C	5.5
<i>Saccharomyces</i>	-	+	+	+	+	30°C	4.5
<i>P. stipitis</i>	-	+	+	+	+	30°C	4.5

# Ethanol business strategy: Training

Almost as important as the right technology is to the success of an ethanol plant are the people who will operate the facility.

Right now, there's an ever-expanding list of ethanol jobs available but not enough qualified candidates to fill the positions (See related article on page 64). Luckily, multiple training options are offered so ethanol companies can "grow their own" qualified workers. Private companies to junior and technical colleges offer training programs, certificates and even degrees in biofuels. Industry trade shows and one- or two-day workshops can also provide an avenue for employees to brush up on skills and learn about the latest technologies or methods to improve production.

## PRIVATE TRAINING

Two private companies offer week-

(Above) Several training options are available in the ethanol industry. Photo courtesy of Ethanol Technology.

## Private companies, technical colleges in the U.S. offer education opportunities for ethanol workforce

by Susan Reidy

long programs that cover the production of fuel ethanol in great detail. Milwaukee, Wisconsin, U.S.-based Ethanol Technology, a business unit of Montreal-based Lallemand, Inc., offers its Alcohol School twice a year, once in Canada and once in France. The program has grown and educated more than 1,500 industry personnel since 1980.

North American Bioproducts Corp.

(NABC), Atlanta, Georgia, U.S., offers its Ethanol Short Course twice a year in the Midwestern U.S. The company started offering the course in 2007.

Ethanol Technology's Alcohol School covers all aspects of the ethanol production process, said Mike Ingledew, scientific director of the Ethanol Technology Institute, and is designed for lab, plant and management personnel. Enrollment for each school is capped at 125

*Editor's note: Over the last few years, the number of ethanol facilities built worldwide has grown at an exponential rate. The factors affecting a project's profit potential, from feedstock costs to ethanol prices, change quickly, and so must an ethanol plant project in order to succeed.*

*This is the fourth in a series of articles that will provide business strategies on nurturing a project from concept to production, in light of the latest market trends. In this issue, we cover plant startup and training. Other articles in the series dealt with feasibility studies, permitting and financing and construction. The last article in the series will cover marketing/expansion plans.*

students, and the Montreal course is restricted to alcohol plant employees.

The school includes commercial-free lectures from leading industry, government and academic speakers as well as Ethanol Technology staff with extensive experience. Presentations from the school this September ranged from

substrates, milling, yeast propagation, enzyme use, fermentation, dryhouse technologies, distillation and molecular sieves to cellulose technologies, grain fractionation and energy/water balance. A concurrent session dealt with potable alcohol production covering unique aspects of the processing. A prospective

on the alcohol industries now and in the future was given.

In addition to the lectures, students toured the new GreenFields' fuel ethanol plant, the Lallemand Yeast Plant and Schenley Distilleries. They also spent half a day in The Biotechnology Research Institute, where Lallemand and

### Ethanol producers must use strategy to find workers in tight job market

The rapid expansion of the U.S. ethanol industry has made it difficult to find qualified employees to run those facilities, particularly mid- to upper-level managers.

A typical 100-million-gallon-per-year ethanol facility will employ about 45 workers, from plant operators and lab techs to office workers and senior management.

For the past year, it's been increasingly difficult for ethanol plant operators to fill those positions, and it doesn't appear the market will loosen any time soon. Results of a survey released in September by The Richmond Group-BioEnergy Division found that two-thirds of biofuels producers plan to increase the number of full-time employees in the next three months.

Survey results also showed that 80% of the companies interviewed believe they will be facing a shortage of candidates due to the candidates lacking the required skills or because of an increasing number of facilities vying for a finite number of people. The survey included U.S. biofuels plants that produce from 1 to more than 50 million gallons per year.

"The pool of available talent is still limited," said Chris Hillman, SearchPath International. "The struggle to identify, attract and deliver talent is equal to last year. Ethanol plants will still need solid connections in the market to find qualified candidates."

It may take a little cunning and willingness to train and search outside of the renewable energy industry to find the right candidate.

"Renewable energy is the fastest growing industry in the U.S. today," said Dee Haase, director of marketing for Energy Hound, an online job board dedicated to renewable energy. "Employers have to be willing to look outside the typical candidates. They're not going to be able to hire people with experience all the time."

One possibility, Haase said, is to hire people with experience in related industries. This would include individuals working in food processing, chemical processing and pulp and paper.

"This is where the renewable energy industry is going to have to go in order to keep on growing," Haase said.

Plant operators are willing to train employees, according to The Richmond Group-BioEnergy Division Survey. Not one respondent said they would rule out that option.

"They'd much rather have somebody who is going to be capable with less experience in ethanol than the other way around," said Michael Jones, president of The Richmond Group-BioEnergy Division. "You can train people on a process; you can't train them to be leaders."

Timing is key in hiring quality people, Hillman said. New plants coming online should begin searching early in the construction phase for employees.

Another strategy for finding employees is offering non-typical benefits, Haase said. People will take a lower paying job if the benefits are better. Hillman said a plant needs to make itself stand out among the hundreds already in operation.

"They need to show potential employees a bright future with growth opportunities. They need to be prepared to give employees autonomy and promote from within," he said.

Hillman suggests hiring an internal human resources director early in the process who can present the company in the best possible light and leave a good first impression with potential employees. Finding employees may be as simple as an attractive web site with a career section, particularly with local residents, he said, or networking at an industry trade show.

Be aware of company mergers, Hillman said, because they typically create unhappy people and there are usually a few who lose their jobs.

#### UPPER MANAGEMENT CHALLENGE

It is easier to fill operator positions, Haase said, than some of the key management positions. Somewhere in the company there needs to be an individual, usually a manager, with a background in ethanol, she said. Managers also need people skills, communication skills, experience managing a 24-7, year-round operation.

"The financial world feels more comfortable when those managers come to the table with past, proven experience in the industry," Haase said.

As market forces cause some ethanol projects to halt or delay construction, there are likely to be some experienced managers looking for work, Hillman said.

"These projects are leaving behind some really good people," he said.

Retention of top workers will quickly become an issue beyond 2008, according to The Richmond Group survey. Competitors will begin to look for and woo individuals that have a proven track record in the industry.

To hold on to those experienced workers, Jones suggests improving the benefit structure and taking a professional approach to plant management and leadership.

"The old style of plant management used to be autocratic," he said. "Now, many are taking more of a team-based approach. You end up getting better retention and better productivity."

Ethanol Technology's research laboratories are located, learning about relevant measurements and handling procedures in ethanol plants, Ingledew said. Every student received the 4th Edition of the Alcohol Textbook compiled by outside authors as well as those from Ethanol Technology. The textbook is a good reference tool for students when they're back at their facilities.

"The Alcohol School provides an upgrade of knowledge on ethanol production," Ingledew said. "There are good interactions between staff and the students during the day and at social events. It's an opportunity to question the experts and talk about common problems."

NABC's Ethanol Short Course covers the basics of fuel ethanol production as well as an in-depth study of related principles. It is taught through presentations as well as hands-on workshops. The course is designed for anyone who wants more understanding of the ethanol production process. Attendees typically include plant operators, plant managers, lab technicians, lab managers and maintenance staff.

An optional primer is available to those who are new to the ethanol industry. It includes an initial three-hour session and continues for one hour each morning prior to the main course. The main content of the Ethanol Short Course covers the entire ethanol production process as well as enzyme biochemistry, yeast nutrition, advanced lab procedures, alternate energy sources and cellulosic research and development.

Speakers include industry leaders and academics, ranging from engineering firms and industry vendors to ethanol plant management.

"Ethanol facilities will benefit from the well-rounded knowledge their employees will gain," said Bill Rice, marketing manager, NABC. "The Ethanol Short Course provides practical, relevant training focused specifically on the production of fuel ethanol."

Ethanol Technology also is in the process of starting an operator pro-

gram that will be at a location close to the National Corn-to-Ethanol Research Center (NCERC) in Edwardsville, Illinois, U.S. The program, which will last about three days, will initially be scheduled once a year. The frequency could increase to four times a year depending on the response and feedback from the first school.

"We will utilize the NCERC equipment for demonstration and hands-on understanding to bolster classroom lectures," said Chris Richards, global sales manager, Ethanol Technology. "We're hoping to focus on plant operators."

The school will have space for between 80 and 100 students. Richards said they anticipate most of the students will already be working at an ethanol facility.

#### BACK TO SCHOOL

Several technical schools and colleges, primarily in the Midwest, have started certificate and degree programs in biofuels at the request of ethanol facilities.

Minnesota West Community and Technical College, Granite Falls, Minnesota, U.S., started its renewable energy program in 1999, said Duane Carrow, director of the Minnesota Energy Enterprise Center. The college worked closely with the ethanol industry to develop the program. It covers general biology and chemistry and includes a specific course on the production of ethanol. The college had one of the first programs developed for the ethanol industry, Carrow said.

"One of the big challenges of developing the program was the lack of curriculum," he said. "From the presentations of industry experts, we developed training materials."

At the end of the program, which typically takes four semesters, a student will have an associate's degree in applied science. Most students go directly into the industry, Carrow said, while some go on to a four-year college for a business degree with the intent of becoming plant

### Ethanol Technology's 2008 Alcohol Schools

June 2-6, Toulouse, France  
 Sept. 28-Oct. 3, Montreal, Quebec, Canada  
 For more information, visit  
[www.ethanoltech.com](http://www.ethanoltech.com)  
 NABC's 2008 Ethanol Short Course  
 Feb. 11-15, Schaumburg Renaissance Hotel & Convention Center, Schaumburg, Illinois, U.S.  
 For more information, visit  
[www.ethanolshortcourse.com](http://www.ethanolshortcourse.com)

managers.

"The biggest problem is students getting recruited by ethanol facilities before they graduate," he said.

The college also offers an online certificate that focuses on ethanol production. Many of those students already work at an ethanol plant and are trying to update their skills or advance their careers, Carrow said.

Carrow said participation in both programs has increased in the last several years.

"The general public is becoming more aware of the excellent career opportunities available in the ethanol industry," he said.

Bismarck State College, Bismarck, North Dakota, U.S., offers an online and on-campus Process Plant Technology program in which students can choose whether they want to earn an associate degree in applied science; a diploma in process plant technology; or a program certificate in process plant technology.

Lake Area Technical Institute, Watertown, South Dakota, U.S., also offers an associate of applied science degree that emphasizes ethanol production. The school's Energy Technology program includes technical theoretical training and practical experience.

GEAPS is partnering with Purdue University, West Lafayette, Indiana, U.S., on several new distance-education courses, including fuel ethanol production. The course is expected to launch in January 2008. **BB**

We want your feedback. Send comments and inquiries to [BioEditor@sosland.com](mailto:BioEditor@sosland.com).