

# The Quarter

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**From the Director's Desk**

Jayraj A. Doshi

**Zytex Ethanol Technology**

Training Seminar



## From the **Director's Desk** Jayraj A. Doshi



This quarter, Zytex set another milestone by bringing the globally well-known “The Alcohol School” organized by Lallemand biannually to India. It's a one week course targeted towards educating the customers about all aspects of alcohol production with well-renowned speakers. Zytex had been sending invites to customers since couple of years but there was a common request from many - “Why not introduce such a program for India?”



Earlier this year, this idea was presented to Chris Richards and Robert Piggot - both are faculty at “The Alcohol School”. They were very excited and immediately agreed. However the challenge was that not all the speakers from “The Alcohol School” could travel to India. It was then decided to have an abridged version with Chris and Robert as the main speakers supported by Rishi Shah and Gaurav Tyagi from Zytex. Chris and Robert would be able to bring to the audience the global aspects of the process, best practices and theories for achieving the maximum. Rishi and Gaurav's presentations included Indian scenario. A great synergy was established amongst the speakers for the two day “Zytex Ethanol Technology (ZET) Seminar”.

Day one started with a short talk by Jayraj Doshi setting the motif for the two days. This was followed by Chris giving the entire process overview. This was followed by Rishi talking about the opportunities for water reduction in the alcohol plant. Chris then took the stage again and gave a great perspective of looking at yield improvement for a distillery. This was followed by Robert's talk on milling and slurry preparation. Gaurav spoke on cook optimization and enzyme optimization. The day ended with Robert's talk on distillation. Day two talks were around the fermentation process where Robert spoke about the basic fermentation process in India and bacterial contamination, Chris covered yeast stress and nutrients and cleaning in a distillery. Rishi spoke about various case studies where Zytex has helped customers achieving more from their plant using Thermosacc and Gaurav spoke about deciphering the sugar profiles. Dr. Kelkar also presented a talk on the HPLC.

We would like to thank all the participants of the first version of the ZET in Delhi and Hyderabad. Lot of customers, prospective customers and Zytex Distributor team were present at both the venues. Dr. Kelkar from Shimadzu was the special invited guest, to give all an insight of the HPLC. A demo HPLC was also arranged. This newsletter covers the success of the two ZET held. The great participation from all of you has now encouraged and motivated us for organizing ZET 2013. We hope to have similar or greater success and can form a trend like “The Alcohol School” which is being organized for over three decades.

A special thanks to Chris and Robert for organizing a highly technical program for India. The take away are immense. The Indian alcohol industry can now look at achieving greater heights - 18%v/v alcohol.

Enjoy your quarter !!!

## Ethanol Technology Seminar

organized by Zytex in Delhi and Hyderabad

The seminar at Delhi



When soldiers are trained for battle, the main advice given to them is "The more sweat you shed in training, the less blood you shed in the battle".

The same is true for any area be it sports or be it industry. Training is a time to brush up on your skills, sharpen your observations and analysis, speed up your responses and in totality improve your performance. The grain ethanol industry is going through a challenging time with increased grain prices, shortage of water, pressure to reduce effluent and maximize yields and bring down costs.

With a goal to achieve the same, Zytex in association with its principal, Lallemand, organized a training seminar on Ethanol Technology in Delhi and Hyderabad. The core focus of the seminar was on yield improvement, cost reduction, water saving and effluent reduction. The main speakers were Mr. Chris Richards and Mr. Robert Piggot, both renowned experts in this field and veterans in ethanol production, with an experience spanning almost 3 decades, working with a variety of starch and sugar based raw materials and making potable as well as fuel ethanol. The seminar was held consecutively on 13-14th Aug in Delhi followed by 16-17th Aug in Hyderabad.

It was a small but intense group of participants - from production units to leading beverage makers, from consultants to engineering companies from venture capitalists to plant owners. There was active participation and interest mainly to know the global performance scenario in this industry - how are plants in the US, EU and other countries faring in terms of yields, ethanol % in fermentation, automation etc.



Mr. Chris's talk in progress

The tone for the meet was set by the opening presentation from Mr. Jayraj Doshi - what is the nature of competition today with an example of the recently concluded Olympics.

Mr. Robert's talk in progress



The talks focused on all aspects of the process - from milling to liquefaction, from fermentation to distillation, from plant hygiene to troubleshooting, innovative means to conserve water - thin slop recycling and high gravity fermentation. Very high gravity fermentation has been introduced in India in the last 2 years by Zytex and the massive benefits for the same were highlighted in 2 talks on water conservation and process improvement. Several plants in India have had huge benefits with water saving, energy saving, reduction in effluent, increase in throughput, zero liquid discharge etc.

An important part of the seminar highlighted the use of modern analytical techniques to improve the process - you can improve only if you can measure. HPLC is an invaluable tool to get a snapshot of the whole process. There was interesting presentation by Shimadzu, a leading manufacturer of HPLC systems on the same, followed by a talk on interpretation of the numbers thrown up by the HPLC. This is one tool which is extensively used in the US and EU plants and can bring huge benefits to the plants in India.

Another area of interest was the benefits of having a consistent performance in the plant. It is no use having a fantastic performance on 1 day and not being able to repeat the same day after day. Any process improvement can only be done, if there is consistent baseline data over which the improvement can be measured. Consistency is an area which is more to do with process management and doing the basic things right day after day. It is something which doesn't require much investment but can give any plant huge benefits.



Speakers from Zytex



Milling and liquefaction are areas which are frequently not looked upon for their impact on the yield. However the talks covering them highlighted how a wrong grind size or improper liquefaction can have a substantial effect of same. An in-depth detailed look at the mill, its working principle and mechanism and what are the possible problems that can occur and means to troubleshoot them was presented in the talk by Robert. The following talk on cook and enzyme optimization by Gaurav highlighted the mechanism of starch hydrolysis by enzyme action and cooking and the way viscosity is reduced. This is the part where conversion process starts and it is very important to have all the starch converted at this stage to get the maximum yields.



Questions by delegates

Fermentation is an area which continues to remain a black box even with the most sophisticated analytical techniques. That along with liquefaction is the only area where yield can be made or lost. Good fermentation has more to do with yeast stress management, correct nutrition and proper process hygiene. The impact of these on the bottom line were highlighted in the talks covering all these aspects of fermentation management and yield improvement.

It is said that if you are not going forward, then you are going backward. The focus of the final talk was on future technologies to appear in this industry which can make today's numbers obsolete - A corn species which produces its own Alpa-amylase? A yeast which makes its own Glucoamylase? 18% v/v alcohol in the fermentation (for India)? Oil extraction as a valuable by-product? Where do we go from here? Some food for thought for everyone ...

The seminar ended with distribution of certificates and mementos. All in all it was a great experience for everyone. The desire to be the best is already there - what with India winning the under-19 cricket world cup, we can definitely be the best in the world !

#### Some of the comments from the delegates

"Very informative and useful training, got to know about modern technologies in the global grain ethanol industry."  
Mr. Dinesh Pandey –  
Vice President  
(Operations),  
NV Distilleries Ltd.



"Gave insights into various aspects of alcohol manufacture and practical suggestions to implement."

Mr. Chalam  
Surampudi – Director, Globus Spirits Ltd.



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Better Technology.  
Better World.

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WARNING: Please refrain from duplicating these procedures.

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