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Editorial

The Food vs. Fuel debate has thrown fresh challenges in front of the ethanol industry. Even when the ethanol industry stands vindicated, the need to explore second generation energy feedstock has become even more intense. Praj realized this very early on. Sweet Sorghum was one such early effort, which is acting as a bridge between first and second generation feedstocks. For biodiesel too, Praj is engaged in similar efforts.

In the second generation fuels, Praj is upscaling to pilot test labscale technologies. The feedstock will vary from agri-waste like bagasse, straw, wood chips to grasses like switchgrass, miscanthus, etc. The effort is to integrate the entire chain and demonstrate viability.

For first generation feedstock, efforts will continue for increasing yields and to bring in more environmental conformance with introduction of technologies like incineration and plant designs which will reduce wastewater. The quest to reduce carbon footprints goes on. For beverage grade alcohol plants too, enhancement in performance is a continual effort.

Shashank Inamdar

CEO and Managing Director

PRAJ

The Spirit of Dynamism

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Spirit of Progress

Sweet Sorghum to Ethanol

2002

Launched Sweet Sorghum development for ethanol production.

2004

Announced filing of process technology for sweet sorghum to ethanol production.

2006

Intensified demonstration of sweet sorghum cultivation for various clients globally.

2007

- Signed MOU with Government of Philippines, Department of Agriculture for sweet sorghum and energy crops development.
- Contracted the first dedicated sweet sorghum to ethanol plant from Tata Chemicals to be installed in India.

2008

- Conducted developmental assignments in over 18 countries globally.
- Signed MOU with Government of Mexico and Taiwan.
- Developed a 700 acres plantation in Louisiana.

Steam integrated Wash to Superfine Beverage Alcohol Plant

Praj recently commissioned a superfine alcohol plant wherein falling film evaporator has been integrated with the main process plant. This effectively reduced the vinasse (spentwash) generation with no additional steam consumption. The quality of alcohol remained unchanged.

Spirited Development

Zero Discharge in Cane Molasses Distillery - Evaporation Followed by Incineration

This technology involves evaporation of Vinasse (raw pentwash) upto 55-60% solids using a combination of falling film and forced circulation evaporator. It also incorporates the Praj patented self cleaning Flubex based evaporaor, based on the application. The resultant fluid is then fired in a specially designed vinasse boiler.

Praj is currently executing some projects in India, based on this technology.

Evaporation followed by Incineration, being a source of steam and power, is an ideal method if one wants to reduce carbon foot-prints.

Skid Mounted Dehydration Plant

Skid Mounted Ethanol plant is a concept which has been skillfully executed by Praj and extended to other unit operations. The first skid mounted dehydration plant was commissioned for CSR Sarina, Australia. This 100 KLPD plant was installed by putting 10 skids together in a matter of only 2 days. This is the shortest time any dehydration plant installation has taken so far. Plant was commissioned and handed over in 5 days.

The distinct advantages of skid mounted units include faster installation at site and ease of transportation.

Praj is now designing a skid mounted evaporation plant along with another skid mounted dehydration unit for CSR Sarina.

Toast Toast

"Praj provided a good process which is integrated to the sugar plant concerning energy supply."

- Ingo Kuchenbrandt, Managing Director
Anklam Bioetanol GmbH, Germany

Biodiesel Updates:

Praj launches safflower development as a non-food biodiesel crop. Some highlights of this crop:-

- Availability of non edible varieties
- Short duration crop. Can be harvested twice a year
- Up to 4.7 MT / Hectare – Year yield with oil content of 30 to 36 %
- Fairly drought resistant
- Can grow between 40º N to 25º S in sub-zero to 40ºC temperature

Spirited Innovation

Automation – The 'last mile' technology to get the most out of your distillery

Rand D - Patent Application

Praj Matrix-the innovation center has achieved a breakthrough second generation technology which involves a novel pre-treatment process for agri-waste followed by use of a specific micro-oganism for fermentation. Lab scale studies have been successfully concluded. Further work on improved economic viability is now underway.

Praj has already filed a patent for the process.

Praj Matrix – the innovation center is involved in development of second generation, non-food biofuels based on lignocellulosic substrates and algae.

"AlcoMate" – Performance Monitoring Software for your plant

Ethanol industry has became one of the key driver in view of energy security. In times of high input cost and increased demand for competitiveness,it is imperative that the ethanol plant must deliver peak performance.

'AlcoMate', an innovative software solution enables the plant to optimize all performance parameters so as to maximize yields and minimize input costs associated with ethanol plant operations.

For this purpose, it is essential that not only the plant operators, but also the management must have the same data in time so as to make split-second decisions which will drive the profitability of the operations. AlcoMate collects plant wide technical data in realtime, analyses it to generate meaningful information which helps to identify the improvement opportunity in plant operations.

AlcoMate Features:

- Realtime, Online data which is available 24 x 7
- Data integration from various plant locations
- Online trouble shooting guide and knowledge management
- e-documentation of logbook, operation manual, drawings etc.
- Downtime analysis to avoid repeat occurrence
- Alerts on mobile for alarm condition and production data
- Auto generation of reports and auto e-mail
- Effective planning and tracking system
- Scheduling and tracking of plant operations/maintenance job

"AlcoMate looks like a good tool to organize plant information and convey that information to those who can use it for decisions making. It appears to be user friendly. AlcoMate has useful feature like batch planning and integrated view of Laboratory information along with operational parameter." Jason Logemann, Plant Manager, Cilion, USA.

Tips

Fire Safety in Distilleries

Distilleries are frequently located in remote areas where public fire protection is either inadequate or unavailable. Hence, adoption of proper fire prevention measures and up-to-date maintenance of fire fighting facilities assume vital importance.

Alcohol/Ethanol production units have been classified as high hazard occupancy therefore proper fire fighting equipment must be installed in adequate numbers throughout the entire facility.

Fire Extinguisher: Extinguishers that can be used on such fire are Foam, DCP and CO2 type.

Hydrants: In a distillery, hydrants play the dual role of providing water for extinguishing tank fires as well as protection against fire exposure of other equipment in the vicinity. The entire manufacturing and spirit handling facilities should be protected by an adequate number of hydrants. Alcohol fires require huge quantities of water.

Automatic Sprinklers: The distillation plant as well as the spirit storage area should be protected by open head deluge system. Because of the height of the distillation plant, sprinklers must also be provided at each floor. All sprinkler system must be equipped with water flow alarms connected to a central board.

Ventilation: Proper ventilation must be provided both in the distillation plant and in the spirit storage tank area to prevent accumulation of alcohol vapours in the air. If the building is tall, permanent openings may be provided. However mechanical exhaust ventilation can be provided if the natural ventilation is not enough. Mechanical ventilation should be to the order of 1cfm/sq.ft. or floor area, (0.3m3/min.-m2) by fans of adequate capacity having their suction intake located near floor level to ensure a sweep of a air across the entire area.

Vapour density of alcohol vapour is 1.59; alcohol vapours, being heavier than air, tend to settle at ground level, hence either low-level ventilation arrangement (in case of natural ventilation) or downdraft mechanical ventilation should be resorted to.

An approved, portable, flammable vapour indicator should be used to check for the presence of alcohol vapours in and around the distillation plant and spirit storage tank area at regular intervals.

Any process plant must be well designed and provided with adequate protection systems. But safety is ensured when appropriate training of personnel and proper maintenance of plant facilities are simultaneously undertaken.

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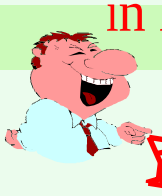
Note: *Safety tips mentioned herein are guidelines and should be read in conjunction with the safety regulations required by the regional authorities. By no means do the above tips replace the prescribed regulation by authorities.*

in Lighter SPIRIT



Never drink while driving. You could spill your beer!

SPIRITED Events

Praj Jaragua stall at Fenasucro Exhibition, Sertaozinho, Brazil during 2-5 September 2008.

Praj stall at Africa Biofuels 2008, Tanzania during 17-18 September 2008.