

Dear Reader,

It gives me immense pleasure to share that Biofuels Digest has released the list of **“Top 50 Hottest Companies in the Advanced Bio-economy”** globally, for the year 2018 from a pool of 1500+ eligible companies. Praj has secured 34th rank in this prestigious list denoting global recognition of its rising prowess as leading industrial biotech company. USA based Biofuels Digest is widely consulted by key stakeholders such as CEOs, decision makers & influencers, thought leaders, analysts and researchers.

This also came on the heels of the visit of delegation from EU to Praj’s 2nd Gen demonstration biorefinery located in Maharashtra, India. Dr. Kyriakos Maniatis, Principal Administrator – Directorate General for Energy, European Commission and other industry participants from the EU visited the plant to witness the technology and its performance.

India currently has a mandate of 5% ethanol blended with gasoline with aspirations of 20% by 2022. 2nd Generation ethanol technology is expected to enable progressive blends.

It is our constant endeavour to bring value accretive solution to the industry. We recently held an Alcohol/ Ethanol Masterclass at Bangkok with an enthusiastic participation for over 50 professionals from the industry in South East Asia. You will also get to read about the innovative solution offered to Balrampur Chini Mills Ltd. in India.

I take this opportunity to thank you for your constant support to Praj and look forward to a brighter and cleaner future. We welcome your feedback. Please write to us at communication@praj.net.



Yours truly,
Atul Mulay
President – Bioenergy Business

Praj to commence work on India's first commercial scale 2nd Gen biorefinery for BPCL



India's first and Praj's own 2nd Gen integrated biorefinery demonstration plant in Maharashtra, India

Bharat Petroleum Corporation Limited (BPCL), India's flagship oil company has given a formal confirmation by way of Letter of Acceptance to Praj for its proprietary technology, basic engineering and design package. This is a major milestone towards commencement of work on the 2nd Generation ethanol biorefinery with production capacity of 100 kiloliter per day to be set up by BPCL at Bargarh, Odisha. The biomass feedstock will be sourced from the local farming community.

Praj had signed MOU with BPCL in Dec, 2016. Praj also has MOU in place with Indian Oil Corporation Limited (IOCL).

The Letter of Acceptance was awarded to Praj after the performance evaluation of its 2nd Generation integrated biorefinery demonstration plant located

in Maharashtra. It is an indication of recognition of biofuels for their contribution to improve air quality in high-density urban centers. They also provide an impetus to reduced dependence on crude imports for the country.

The techno-socio-economic model of 2nd Generation ethanol technology is aimed at bringing additional revenue streams to the farming community using the abundantly available biomass at the same time striking a balance between India's growth aspirations and environment.

Praj's 2nd Generation integrated demonstration biorefinery plant in India has been operational since Dec 2016, instilling a confidence in the home grown technology.

European delegation visits Praj's 2nd Gen demonstration biorefinery



European delegation visiting Praj's 2nd Generation demonstration biorefinery plant

India is being mentioned on the global renewable energy platform. Praj's 2nd Gen demonstration biorefinery has attracted not only global attention but also industry visitors.

Recently, European delegation comprising of senior executives from bio-industrial sector representing renowned organizations are participating in the

EU - India Conference on Advanced Biofuels being held at New Delhi during 6-9 March, 2018. The delegation was co-led by Dr. Kyriakos Maniatis, Principal Administrator – Directorate General for Energy, European Commission.

As a part of conference, delegates visited Praj's 2nd Generation demonstration biorefinery near Pune to witness the technology and plant performance.

"We participated in engaging and meaningful discussion with Indian stakeholders at the conference earlier. We are impressed with the momentum that 2nd Gen ethanol has gathered in India. Visit to Praj's 2nd Gen demonstration plant has given us new insights into the technology development which, I am sure, will be of interest to European delegates"

Dr. Kyriakos Maniatis

Principal Administrator – Directorate General for Energy, European Commission.

The legislative proposal of European Union known as Renewable Energy Directive (RED) progressively caps the use of biofuels derived from food crops like wheat, beet which are predominant feedstock in the European continent.

The main elements of the RED II proposal on transport are to reduce the cap on food and feed-

based biofuels to 3.8% in 2030 and to establish a mandate on fuel suppliers requiring them to blend 6.8% of advanced fuels by 2030. This means, additional production of biofuels to meet the increasing demand for energy has to come from advanced biofuels derived from crop residue or 2nd Generation feedstock.

Praj's Ethanol/Alcohol Masterclass - A unique knowledge platform for the industry



Mr. Pramod Chaudhari, Executive Chairman
addressing the Masterclass



Participants of various nationalities

Technology changes rapidly and it is important to refresh the learnings every now and then. Masterclass is a unique initiative by Praj which offers a knowledge sharing platform to ethanol industry.

Our team organizes classroom sessions clubbed with site visit for the operational staff of ethanol plants. This is a platform where new technologies are showcased to improve operational efficiency. Plant personnel come together from various parts of the world to exchange ideas and share their experiences.

Bangkok, the hotbed of South East Asian ethanol industry witnessed the latest Masterclass. Rising feedstock prices pose not only a challenge but an opportunity for technological intervention through process design, engineering and modernization of the existing plants. These interventions are aimed at enhancing efficiency, addition of multiple revenue streams viz. multiple products like speciality spirits, malt spirit, vodka, rum and renewable fuels like BioCNG. At the same time, feedstock flexibility allows ethanol producers to operate plants for longer

duration in a year.

With abundantly available agri-residue like cane trash, empty palm, fruit bunches etc. South East Asia is also set to become a prominent center for 2nd Generation ethanol. The Masterclass also had idea exchange on addition of the 2nd Generation ethanol module to the existing 1st Generation plants.

We are proud to share that this was Praj's 2nd Masterclass in the region and witnessed participants from various countries including Thailand, Philippines, Vietnam and Myanmar. These regions offer equal opportunities for beverage grade alcohol and fuel ethanol. Thailand and Philippines have well established blending norms for ethanol to reduce dependence on oil imports and mitigation of evils of climate change.

Praj has been serving the South East Asian market for over 30 years. Our commitment to give the best solutions to our customers and help them prosper remains as strong as ever.

Praj's technology enables substantial savings on capex for a leading ethanol producer in India

Background :

Balrampur Chini Mills Ltd. is one of the largest integrated sugar and ethanol manufacturing companies in India. Its allied businesses consists of manufacturing and marketing of ethyl alcohol & fuel ethanol and generation & selling of power. Company has sugar factories at 10 different locations having an aggregate crushing capacity of 76,500 tons per day with 385,000 litres per day ethanol production facilities at 3 locations viz. Balrampur, Mankapur and Babhnan in Uttar Pradesh, India.

It is also a pioneer in the adaptation of modern

technologies to achieve operational efficiency and maximize co-product utilization. It also a trendsetter for zero liquid discharge systems at various locations.

As feedstock and utility prices go up and environmental norms become more and more stringent, it is imperative for existing ethanol plants to adapt to newer technologies. Praj offers value maximization solutions based on the customer's requirements to modernize the existing plants and cope up with the technological changes.

Implementation of evaporative distillation at Babhnan unit

Participation in the ethanol blending program and ability to cater to the expanding beverage alcohol market were the prime drivers for product diversification and capacity expansion for the Babhnan unit of BCML.

Praj successfully implemented the evaporative distillation technology with following salient features:

- ✓ Maximum use of existing hardware with minimal additional capex
- ✓ Capacity enhancement from 60 KLPD to 120 KLPD (total spirit basis) without adding new boiler and turbine
- ✓ Integration of dehydration and multi pressure distillation systems resulting into 35% reduction in steam consumption
- ✓ Specially designed evaporator scheme to handle high sludge molasses based spent wash

"We appreciate Praj for the installation of state-of-the-art evaporative distillation and raw spent wash evaporation systems at our Babhnan unit in Uttar Pradesh, India. Evaporative distillation has enabled us to double the production capacity of the existing ethanol plant with 35% reduction in steam consumption as compared to existing technologies. The raw spent wash system consumes 35% less power as compared to other contemporary technologies. The plant is operating continuously due to the consistent performance of the installed system."

Mr. K. P. Singh

Group Head - Technical (Operations) at Balrampur Chini Mills Limited.

Events of the quarter gone by



Mr. Vasudeo Joshi, Vice President presenting at Mission Innovation, New Delhi



Praj listed among the "Top 50 Hottest Companies in Advanced Bioeconomy" by Biofuel Digest, USA



Mr. Ramakrishna Y.B, Chairman - Working Group on Biofuels (Ministry of Petroleum & Natural Gas, Government of India) speaking at the 5th meeting of the core group on methanol economy hosted at Praj Matrix



Mr. Pramod Chaudhari, Executive Chairman, Praj Industries(L) with Dr Kyriakos Maniatis, Principal Administrator – Directorate General for Energy, European Commission(R) after the delegation's visit to Praj's 2nd Gen demonstration biorefinery



Praj bestowed with Corporate Social Responsibility Award organized by Amity Global Business School.
From L to R - Mr. Prasanna Borse, Ms. Bageshri Adkar, Mr. Vinayak Kelkar, Dr. Reshmi Hebalkar, (CoI) Dr. S.V. Sharma, Mr. Krishnan Komandur, Dr. Shailesh Palekar, Mr. Amit Kendale



Praj Supply Chain Management team wins 4th award of the fiscal year
(From L to R - Mr. Jitendra Joshi, Mr. Anant Jog, Ms. Dipali Abhyankar, Dr. Ravindra Utgikar)

Upcoming events

IBC Asia 8th Africa Sugar Conference
10-12 April, 2018
Nairobi (Kenya)

Biorefinery and Alcohol Master Class
25-26 April 2018
Indonesia

BIO International Convention
4-7 June, 2018
Boston (USA)

National Advanced Biofuels Conference
11-13 June, 2018
Omaha (USA)

Fuel Ethanol Workshop
11-13 June, 2018
Omaha (USA)

*All India Distillers' Association

Across 5 Continents | More than 75 Countries | Over 750 References

Praj Industries Limited

info@praj.net | www.praj.net | +91-20-71802000