

Dear Reader,

“And we welcome the new year, full of things that have never been.”

– Rainer Maria Rilke, famous Austrian poet and novelist

Sustainability is a non-negotiable element in all of Praj’s activities. It is reflected not only in our focus industry verticals but also in our everyday conduct. As we usher in the new year, we are excited about the possibilities that year 2018 holds for us – especially in the clean energy space.

Our 2nd generation ethanol technology (biomass to ethanol) endeavour is a prime example of how sustainability is our second nature! At the recently held 6th International Conference on Advances in Energy Research at IIT Bombay (India) on 12th Dec, 2017, Shri. Dharmendra Pradhan, Minister of Petroleum & Natural Gas (India) visited the Bio processing Lab, co-funded by Praj. Mr Pradhan reiterated, **“Scientific innovations are beneficial to the country’s economy when citizens can reap their benefits”**. 2nd Generation ethanol is one such innovation driving the whole nation towards enhanced energy self-sufficiency. The focus is also on energy savings and superior product quality and flexibility, as demonstrated by our EcoSmart™ technology.

Supply chain is the backbone of the complex delivery proposition for our global customers. More than business associates, suppliers are our partners in growth. With Praj’s Green Supply Chain Initiative, now they are our partners in sustainability too. We have closed the year 2017 with an elegant sustainability Summit – Accord 2017 for our supply chain partners.

In closing, I wish you and your loved ones a very happy, blessed and sustainable new year 2018. We welcome your feedback. Please write to us at info@praj.net.



Yours truly,
Atul Mulay

President – Bioenergy Business

UNGDA asserts the superior quality of
Extra Neutral Alcohol produced by deploying
Praj's EcoSmart™ technology



EcoSmart™ is Praj's novel technology for producing high quality alcohol.

- 30% lower energy and water consumption compared to conventional process
- Product flexibility to produce multiple grades of ethanol in a single plant enabling producers to quickly respond to the market dynamics

With multiple installations across the globe, EcoSmart™ firmly establishes itself as the technology of choice for production of superior beverage grade ethanol. L'Union Nationale des Groupements de Distillateurs d'Alcool (National Union of Alcohol-Distillers Groups) represents French producers of alcohol.

An eminent global institution, UNGDA has been involved in strategic research programs in the agri-processing for over seven decades with ethanol/alcohol production as its focal point.

Two samples secured from plants supplied by Praj deploying our EcoSmart™ technology were tested by UNGDA experts. Total aldehydes as acetaldehyde, a key component deciding the alcohol quality was less than 1 ppm. Sum of higher alcohols was also lower than 4 ppm.

“The alcohol samples from plants supplied by Praj possess olfactory characteristic of excellent quality neutral alcohol”

– UNGDA experts

A panel of 5 experts performed organoleptic tests on the samples using standard method. Both samples have received a rating of 17.75 on a scale of 15 to 18 (where 15 is the lowest and 18 is the highest).

Analyses report			
Analyses and methods	Results	Units	Reference text
Tatsting <i>(Organoleptic Test)</i>	Alcohol with the olfactory characteristic of a neutral alcohol of very good quality	-----	Internal Method MO 504.1.050
Tatsting <i>(Organoleptic Test)</i>	17,75	-----	Internal Method MO 504.1.050

Observations:

Anne-Sophie UGUEN



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Customer speak

With presence in the continent for over 20 years and marquee clientele, our commitment to Africa remains undeterred. The recent testimony comes from Royal Swaziland Sugar Corporation (RSSC), Swaziland. The 140,000 liter per day (36 MLPA) capacity molasses based ethanol plant located at Simunye, the sugar hub of Swaziland is known for the superior quality extra neutral alcohol. It mainly

caters to the African premium segment liquor requirement along with exports to Europe.

Mr Shishir Kumar Saxena, Head of Operations and Projects of RSSC recently visited our headquarters in Pune, India. In a verbatim testimonial, Mr Saxena exclaimed on Praj's Engineering support & high level of commitment.

“At RSSC, Praj team has delivered timely support for revamping and restart -up of the plant. The ASME compliant equipment were engineered, fabricated by Praj in shortest possible time, duly certified by 3rd party and are in operation.”

Mr Shishir Kumar Saxena,
Head of Operations and Projects of RSSC



Please find the video testimonial here - www.youtube.com/watch?v=2gRZnDXaF3U

Product diversification and expansion of an existing plant – A case study from the Indian Ethanol Industry

Background :

Vishwasrao Naik Sakhar Karkhana (VNSK) is located in the state of Maharashtra. Maharashtra is the 2nd largest producer of sugar and largest producer of fuel ethanol in India. The sugar mill has an annexed ethanol plant (fermented mash to rectified alcohol) based on sugarcane molasses Indian ethanol blending program has caught tremendous momentum in last 2 years with blend ratio at 4.4% and 2.5% in the sugar year 2015-16 and 2016-17

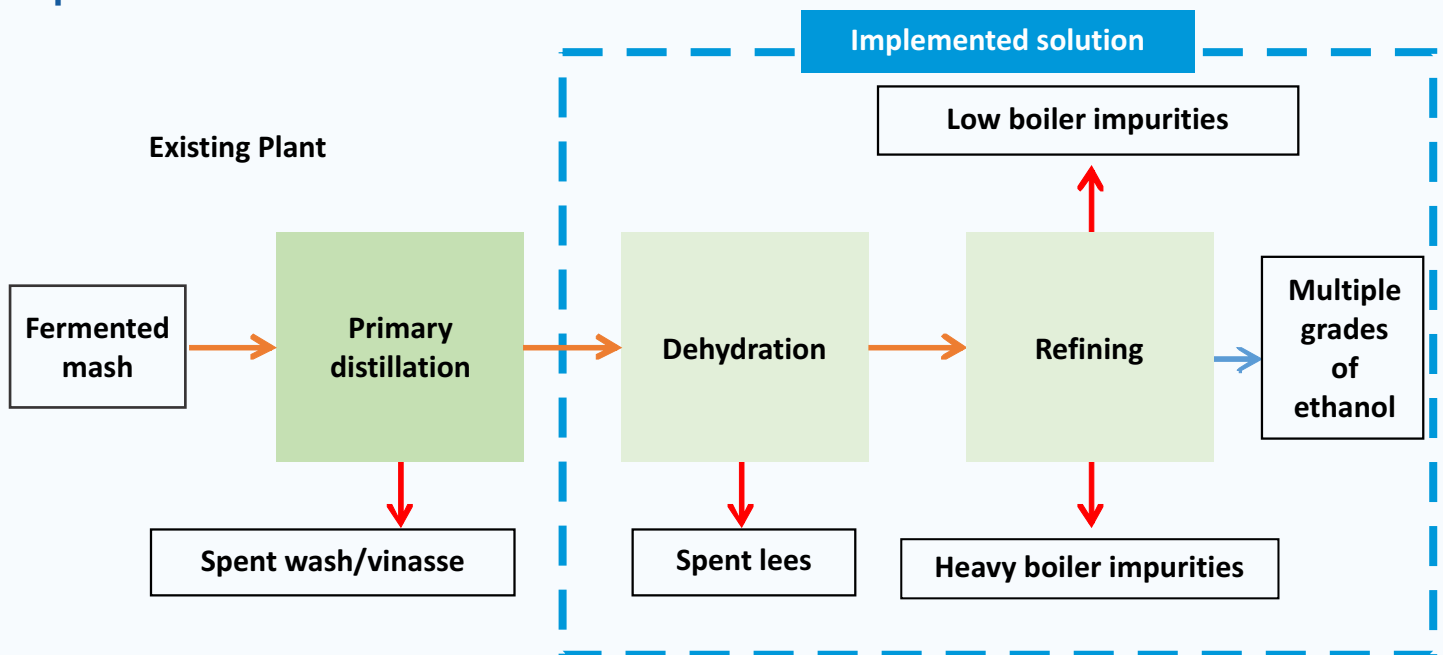
respectively. In addition, extra neutral alcohol demand continues to grow.

Participation in the ethanol blending program and ability to cater to the beverage alcohol market were the prime drivers for product diversification and capacity expansion for VNSK. Also, limited availability of utilities viz. water and steam was a constraint for this project.



Mansing F. Naik,
Chairman, Viraj Alcohols & Allied Industries

Implemented Solution :



Results

- ✓ Capacity enhancement by 50%
- ✓ No additional capex investment for enhancing capacity of boiler and water treatment plan
- ✓ Reduced risk with the ability to swiftly respond to market demands
- ✓ Less than 2 years of capital repayment

Events of the quarter gone by



Commemoration of partnership between Praj and BSI for the Green SCM initiative at ACCORD 2017, Pune; 22nd Dec 2017 (From left Mr. Pramod Chaudhari - Executive Chairman, Praj, Mr. Pankaj Srivastava - Director BSI and Mr. Ravi Pandit - Chairman & Group CEO, KPIT)



Shri. Nitin Gadkari, Minister of Road Transport, Highways & Shipping, India and Mr. Pramod Chaudhari - Executive Chairman, Praj at the Joint event hosted by Central Institute of Road Transport (CIRT) and Indian Federation of Green Energy (IFGE) in Pune, India on 24th November, 2017



Juan Carlos Chavarria Moreno (Sr. Process Engineer and Business Development, PRAJ Americas, Inc.) presented a paper on Upgrading Existing Assets: Boosting Your Ethanol Yield and Production Efficiencies at Ethanol Latin America Conference, Guatemala



Hon Minister of Petroleum & Natural Gas, India, Shri. Dharmendra Pradhan visits Bioprocessing Laboratory at IIT, Bombay co-funded by Praj



Rahul Dagwar (Business Development Manager, PRAJ Industries) speaks on Enhanced Sustainability for Ethanol Plants at The World Ethanol & Biofuels Conference, Brussels



Prashant Raibagi (General Manager, Business Development, Praj Americas, Inc.) presented a paper on Improving the Sustainability of Ethanol Plants Through Advanced & Second Generation Technologies at Ethanol Latin America Conference, Guatemala

Upcoming events

PRAJ Alcohol Master Class 2018 (Asia-Pacific)
31 Jan - 1 Feb, 2018
Bangkok, Thailand

AIDA* Seminar
19-20 February, 2018
New Delhi, India

International Conference on Sustainable Biofuels 2018
26-27 February 2018
New Delhi, India

Advanced Bio economy Leadership Conference on Development & Deployment
28 Feb - 2 March, 2018
Washington, DC, USA

FO Lichts Ethanol Asia
6-8 March 2018
Bangkok, Thailand

EU India Conference on Advanced Biofuels
7-8th March, 2018
New Delhi, India

*All India Distillers' Association

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

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