

Innovation

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The Power of Focus: Praj Industries, India's Leading Bioindustrial Company

The next time you have a drink of your favourite Indian beer or Indian Made Foreign Liquor, pause for a moment to think of the company that most likely designed and implemented the core process for the production of your beverage – Praj Industries. Praj is India's leading bioindustrial company with a FY2012 sales of Rs. 910 crores. Even more impressive is the fact that Praj's technology is used in 50 countries across 5 continents including the United States.

Pramod Chaudhari, the founder of Praj, is an alumnus of IIT Bombay. He started his working life at Bajaj Tempo, and then went on to work in Sales at Widia with the objective of getting some commercial experience. But he had a gnawing urge to do something on his own. His father had worked closely with sugar mills, and Pramod was himself committed to involvement in Maharashtra, the state he comes from. In 1983, he founded Praj in Pune.



Much of the potable alcohol in India comes from processing cane molasses, a waste product from sugar production. Traditionally, fermentation happened through a batch process. Praj introduced a continuous process based on a technology originally sourced from Europe. But the process didn't deliver the same results in India because of the messy state of the sugarcane molasses that constituted India's inputs to the fermentation process, and the significant climatic differences between Europe and India. Adapting the process to Indian raw materials and weather conditions was the problem that initiated R&D at Praj Industries.

Adapting processes to Indian inputs/conditions was a common trigger for R&D efforts in India prior to liberalization. Prominent examples are the modifications in steel making processes at companies like Tata Steel to adapt to the higher ash content of Indian coal, and the additional

desulphurization steps introduced at Indian refineries. But it is to Praj's credit that it didn't stop with this. The composition of molasses can vary from region to region, from sugar factory to sugar factory. Today, Praj is the company with the ability to handle perhaps the broadest array of molasses and agricultural waste in the world. They have characterized ("fingerprinting" as Pramod Chaudhari calls it) samples of thousands of different inputs from across the world and can therefore make processes suited to the particular input of a given geography. This is in sharp contrast to some of their competitors in the west who can handle a narrow range of clean inputs. This knowledge advantage combined with a flexible engineering design capability allows Praj to customize processes quickly and at reasonable costs.

Praj not only designs processes to meet these myriad requirements, but also manufactures much of the process equipment in-house. They are therefore able to provide effective turnkey solutions to customers. Praj's expertise is appreciated as far away as Brazil, Colombia and the United States. Half of Praj's revenues come from outside India.



Pramod Chaudhari's Dream

But Praj's capabilities extend beyond the core fermentation and distillation processes to provide an energy-efficient, water efficient and environment-friendly process. The "dream" is to create a plant that involves "waterless fermentation, steamless distillation and zero pollution." The aim is to raise the bar on use of steam and energy without any compromise to the quality of alcohol produced.

Listening to Pramod Chaudhuri, I was reminded of an interview I read with the then CEO of Toyota, Katsuaki Watanabe, some years ago (*Harvard Business Review*, July-August 2007) – "I want Toyota to come up with the dream car – a vehicle than can make the air cleaner than it is, a vehicle that can not injure people, a vehicle that prevents accidents from happening, a vehicle that can make people healthier the longer they drive it, a vehicle that can excite, entertain and evoke the emotions of its occupants, a vehicle that can drive around the world on just one tank of gas." Today, Praj is focused on integrating sustainability with all its new processes.

In its early years, Praj became one of the first companies funded by a fledgling Indian venture capital industry. Pramod gives credit for the funding to the doyen of India's financial services

industry, Mr. N. Vaghul, then Chairman of ICICI. Later, Praj received funding from the iconic Indo-American investor, Mr. Vinod Khosla, who has spent the last decade or so backing a range of start-ups and technology companies that can provide an alternative to fossil fuel technologies.

Praj Technology Development 2.0

About 5 years ago, Praj embarked on a more audacious and challenging innovation journey. It went beyond process design and application engineering to enter the demanding field of new generation biofuels.

The endeavour to “move beyond hydrocarbons to carbohydrates” is not new – interest in blending ethanol with fuels dates back to the first oil shock in the early 1970s. Much of Praj’s business in the United States came from a major shift towards blended fuels in states like California in the late 1990s. Such blending reduces particulates in emissions and also allowed enhancing the octane number without the use of carcinogenic additives such as lead.

But, what is new is the effort to move beyond traditional raw materials such as corn or molasses to a wide variety of biowaste. Interest in processing of biowastes is high because of the “food vs fuel” debate (use of corn for the production of alcohol has led to higher prices of corn and lower availability of corn as food). Effective processing of such wastes requires understanding of molecular biology and the identification of new organisms for the fermentation process. In other words, research has to become more fundamental in nature. Praj moved into this arena when it created the Praj Matrix Innovation Centre in 2005. The vision is to “be a global leader in Breakthrough, Sustainable and Commercializable Technologies for Renewable Energy and Biobased Chemicals and Materials, Environment and Health solutions while enhancing societal and stakeholder value.”

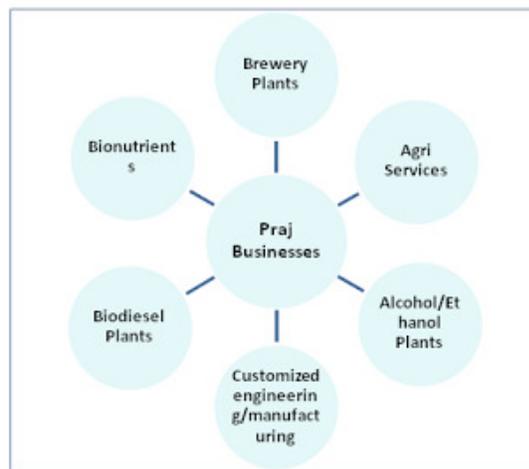


In its endeavour to create 2nd generation biofuels, the Praj Matrix Innovation Centre has set up a pilot plant for the conversion of lignocellulose to Bioethanol. Efforts to scale up this technology further will follow, and Praj hopes to be able to commercialise the technology in the

next few years. Finding partners to share risks of commercialization will be the next challenge; even outside India, a company in the same space has had to set up a plant at its own cost to take commercialization forward. Hopefully, the Clean Energy fund of the government will help Praj when it reaches this stage.

Praj: The Power of Focus

What particularly impressed me was Praj's focused attention to strategy and innovation. At the base of this is Pramod Chaudhari's passion and desire to shape the future of the ethanol industry. Diversifications have been related to the core areas of expertise of the company. One such area is waste water treatment. Another is its recent entry into the high purity water business through the acquisition of Neela Systems. Praj's technology team keeps its eyes and ears open for technologies that can be adapted to its business, both in India and outside. Pramod is advocating a new model where companies like his work with laboratory technologies from anywhere in the world that have not been developed further, and use low cost Indian engineering skills to commercialise these technologies. While the intellectual property rights remain with the original inventors, Praj will seek territorial rights to exploit the technology if the commercialization efforts succeed. This is a potential win-win for both, and is possible because of the end-to-end technological capabilities that Praj has built.



Praj uses standard innovation management tools like the stage-gate model to manage the innovation process. Pramod Chaudhuri's innovation grid centres on three challenges (security, scarcity and scalability) leading to the triple bottom line results of people, profits and planet. The connectors between these two are education, innovation and entrepreneurship. In particular, he believes that intrapreneurship is the key to ensuring that innovation goes beyond ideas to reach the market. Praj works with local education institutions to give Praj Maha Intrapreneurship awards to individuals in the private sector and social sector in Maharashtra who have made significant impact as intrapreneurs.

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(Prof. Rishiksha Krishnan is Professor of Corporate Strategy at IIM Bangalore)