



Enterprise

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"Our target is to sell 200 units during the current fiscal and 400 in FY15" —Rustom Irani, CEO, Promethean Spenta

FEATURE

Full Cream Ahead

Promethean's innovative battery-driven milk chillers is a win-win proposition for dairy owners and farmers

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- **Started** 2007
- **No. of employees** 20
- **Initial Investment** Rs 3 crore
- **Clients** Hatsun Agro Product, Amul, Prabhat Dairy and Chitale Dairy
- **Available in** Tamil Nadu, Maharashtra and West Bengal

It is dark and damp at 6 pm in Malwada, about 85 km from Mumbai. This is small-town Maharashtra and the power shortage is a sad reality that residents have learnt to live with. The healthy monsoon, while bringing some relief after a torrid summer, also means there is little sunlight after 5 pm. Jagannath Chaudhary, a 62-year-old farmer, gets off his Honda Pleasure scooter and makes his way into a new facility that Amul has set up in a small room of about 400 sq ft

. The rapid milk chiller (RMC) installed in July this year is worth the 5 km ride for Chaudhary every morning and evening. Five of his seven buffaloes back home are productive, giving approximately 40 litres, which Chaudhary brings to the Malwada centre every day, after keeping aside two litres for his family.



The rapid milk chiller runs on a thermal battery in



The price he gets per litre depends on the milk's fat content. This evening it's 6.3 ₹, which means he has made Rs 700. The milk in Malwada comes almost entirely from buffaloes, and the fat content is greater leading to better prices. (The range today is Rs 30 per litre going up to Rs 38, though the hope is with more fat, it could touch Rs 50). "This facility has helped us in preserving the freshness of the milk. In the past, if nobody bought the milk, it would get spoilt in four hours," he says

the event of a power failure

Since the milk stays fresh longer, it encourages farmers to increase dairy production

. The RMC, created by Promethean Spenta Technologies, ensures milk remains fresh for at least 24 hours in the absence of power. As a result, folks like Chaudhary are assured of a fair price for their milk and they do not have to worry about unsold milk getting spoiled.



A cool concept

Sam White and Sorin Grama founded Promethean Power Systems in the US in 2007, after their idea placed second at an MIT business plan competition for a solar-powered turbine project. White, who was working for a startup, soon quit his job to set up the new venture with Grama, then fresh out of MIT. They were inspired after hearing Harish Hande, the founder of Selco, an organisation that is working to eradicate poverty through sustainable technologies, speak at MIT on the micro-finance infrastructure in India. Exploring further about India, they discovered that at least 13 billion kg agricultural produce was wasted each year owing to a poorly developed supply chain. "This was a huge business opportunity. In our own minds, we realised that the more successful we were, the greater the social impact," says White.

In November, while visiting India, a conversation with senior executives at a dairy in Bengaluru revealed the practical difficulties of transporting milk in rural India. Milk was collected twice a day from a large number of villages, and it had to be chilled in four hours to prevent spoilage. Most states (except Gujarat) face severe power shortages, and diesel generators kept the chillers running at collection centres. This meant that costs were high, making the complete proposition uneconomical.

With the ₹10,000 they had won at MIT, Grama and White went about developing a thermal battery that could power the chillers more economically in the event of the power failure, thereby addressing the issue of power outage in remote locations. “We had to create something that worked well in the Indian context,” says White.

In September 2011, Billgro Innovations Foundation, a social enterprise incubator, invested in Promethean by way of a technical services fee. Its founder and CEO Paul Basil explains that the trigger was the fact that milk being a perishable commodity, large quantities were being wasted in its collection and storage in rural areas. “Besides, many farmers are left out of the organised supply chain as they are located away from the optimised milk collection route. Micro and decentralised chilling has been spoken about, but has not taken shape,” he points out.



Ready to milk

After several iterations over four years that included a solar powered chiller, the duo came up with the final prototype in 2013. Once the milk is weighed, it is poured into an RMC, which can store up to 50 litres. Here, the temperature drops from 35 degrees to 3 degrees in a couple of minutes. It's then transferred to a silo, which can store 1,000 litres at a time for approximately 48 hours without spoilage.

In 2012, Promethean (after Prometheus, the Greek mythological hero who represents the quest for scientific knowledge) teamed up, through a common contact, with Rustom Irani of Mumbai-based

Spenta Refrigeration, whose family has been in the manufacturing of packaged ice. With Irani as CEO, Promethean Spenta, which began with an initial investment of Rs 3 crore, has sold 60 RMCs so far to private dairies such as Prabhat Dairy and Heritage Foods, apart from Amul. Its biggest client, accounting for 50 chillers purchased, is Chennai-based Hatsun Agro Product. Dairy cooperatives will be the next focus area, he adds. The complete RMC equipment with the thermal battery comes at a price tag Rs 4.5 lakh without the 1,000 litre silo with the silo it costs Rs 5.5 lakh. "We are developing a 2,000 litre model, which should be ready in about six months," says Irani, adding that the company currently works on gross margins of 10-15%.

For customers, the savings from the RMC are significant when compared with a more conventional bulk milk chiller (BMC), which comes for around Rs 14 lakh with accessories such as a diesel generator and piping. Using the RMC means there is no central chilling centre since it is housed in the collection centre. Moreover, the RMC requires only single-phase power and remains unaffected by rising diesel costs. "The typical operating costs are at least 40% lower for the RMC at Rs 0.5 per litre. The annual savings works out to Rs 3.4 lakh with a payback of 2.5 years," says Irani.

While Promethean makes the thermal battery, it works with suppliers who manufacture the other components of the system. Each unit is made to order with 10-15 chillers being produced each month. Installation and trials take two days and the RMCs come with a one-year warranty. "Our target is to sell 200 units during the current fiscal and 400 units in FY15," says Irani. Hatsun will continue to be a key customer and is expected to buy another 200 units. RG Chandramogan, chairman, Hatsun Agro, says the concept of instant chilling helps enhance the quality of milk. "The instant chiller removes the role of a genset and that is an investment saving," he adds.



lockin value

At Malwada, about 300 litres of milk is sold every day with collection taking place in the morning and evening. There is no limit on how much milk can be sold here and the residents are comfortable about getting a somewhat lower price. "Normally, there is a middleman who says he represents a private dairy. He gives us Rs 38 per litre irrespective of fat content and there is no guarantee on the weights and measures used," explains Rameshwar Patil, who has just brought in 1.5 litres, which will fetch him Rs 30.52 per litre. He is quick to point out that a fat content of 14% could give us much as Rs 50 per

litre. "A transparent process makes us more comfortable," he says. On a good day, a farmer here can make a profit of about Rs 7 per litre of milk.

For Amul, working at the village level is not anything new. Just in the Anand and Kheda districts, says Amul Dairy's managing director Rahul Kumar, there are as many as 1,200 village-level societies. But in places where power is constantly available, this system will be expensive in comparison. "The RMC is not effective in Gujarat since there is no issue with power. But we have gone ahead with it in Maharashtra and West Bengal," he says. Amul now plans to have another five in Maharashtra apart from the one in Malwada. "Our objective is that the RMC should be close to the plant. The big social benefit will be that farmers will be encouraged to produce more milk," says Kumar, calling this the multiplier effect in the milk collection and supply chain.

According to the National Dairy Development Board (NDDB), total milk production in India in FY12 was 127.0 million tonnes. The corresponding number for the previous year was 121.84 million tonnes up from 116.42 million tonnes in FY10. It is estimated that private dairies account for 55% of the total production with the rest coming from cooperative dairies. Uttar Pradesh is the largest followed by Rajasthan and Punjab. The opportunity for Promethean is huge, but then it comes from states that not only produce a lot of milk but also have towns such as Malwada that grapple in the dark.

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