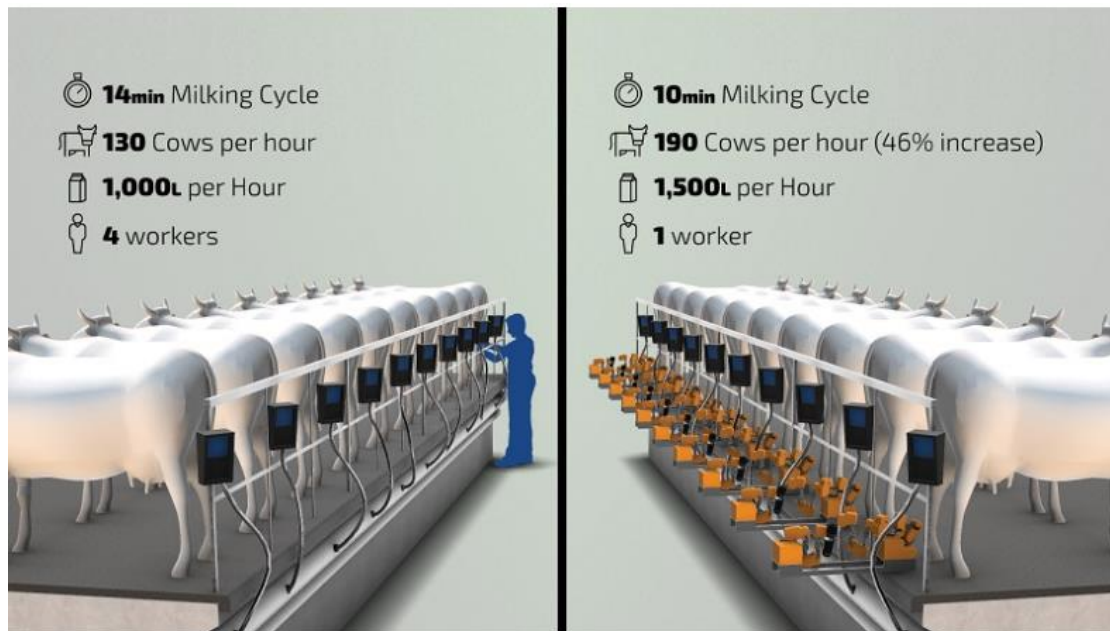


The Robotic Dairy Farms Paving the Way for Big Milk

“Once robots will be doing the hard work, I’ll be a better farmer. I’ll have more time ... to look [the cows] in the eyes, speak to them, and, in turn, bring me a better profit.”

Shira Rubin



KFAR CHASIDIM, Israel– From the roadside, this 800-acre dairy farm is indistinguishable from the dozens of others that dot this bucolic stretch of northern Israel.

But nestled among the 300 mooing cows and the hustling farmhands is the MiRobot startup, which in a stark, one-room laboratory is seeking to modernize this agricultural space by almost completely eliminating its humans, stools, and tin buckets from the cow milking process.

“As it is now, humans are basically slaves to the farm, requiring you and your children to get up at ungodly hours to arrange things and collect the milk,” David Rubin, MiRobot’s business development manager, said. “That people who work makes [them] have less energy and less patience is all sensed by the cows, who need stability and calmness in order to be productive.”

Robots, by contrast, have an endless reserve of patience, and their seeming mythical benefits have been probed for years as

dairy farms have been increasingly consolidate into larger, more labor-intensive entities.

The MiRobot, designed for the large-scale robotic farms holding many hundreds, or even thousands, of cows, does not resemble the Jetsons-style Rosie the Maid, but is instead a spat of durable plastic arms fashioned for being stepped on by the 1,000-pounders, and ready for use at any time of day or night.

The cow is free to meander into the milking parlor multiple times a day, with minimal supervision. When she approaches the gates, her Wifi-based tag opens and shuts the gate behind her, and she heads to her station where food awaits. A computer system splashes tiny dots of green light on her body that silently trigger the robot's teat recognition, collecting data on everything from her weight to her cud chewing movements to her fertility status, while simultaneously drawing her teats into black suction cups that disinfect and do the milk.

The process, over in a matter of seconds, yields more milk than if it were done by human hands, say MiRobot's designers.

Yair Barezer, the owner of the dairy farm, hopes that the robot will end the backbreaking and mind-numbing hauls and 3:00 am wake-up calls, but also, most importantly, will cut costs.

Barezer's employees are all foreign workers, including a part-time cadre of Rwandan agriculture student interns, and day laborers from Thailand. But as minimum wages and the costs of living continue to rise, milk prices, tied to global market standards, remain consistently low – pushing Barezer's farm and many others like it toward financial ruin.

“Local Israelis, of course, are not willing to do this work, but even for foreign workers, it causes burn-out pretty quickly,” Barezer, a husky farmer with searing blue eyes and a baseball hat that covers his receding hairline, noted.

Barezer's grandparents first opened the dairy farm with four cows in Kfar Chasidim, a rural town near the northern Israeli port city of Haifa. That was in the 1920s, before the establishment of the state of Israel, and before the country—which is two-thirds desert with very little grazing land—developed cutting edge bovine tech that made its cows the world leaders in milk production.

Despite their conservative reputation, struggling farmers worldwide have been embracing automation for decades and have been importing agrotech from countries like Israel. Agricultural robots, or agbots, are now a planting and harvesting staple in most developed countries as low-wage manpower remains a consistent challenge. The U.S. Bureau of Labor Statistics estimated in 2014 that the U.S. will lose approximately 110,500 jobs in agriculture and related industries by 2024.

Robotic milkers are billed primarily as money savers. But Ephraim Maltz, a professor emeritus from Israel's Agricultural Research Organization, said that robotic milkers were originally created for "less politically correct reasons: out of the fear in Europe that foreign workers were coming into small communities and causing not environmental pollution, but 'social pollution.'" As xenophobia fuels far-right parties across the continent and the world, that advantage for politicians remains a hushed selling point.

Milking robots also fueling the controversial rise of Big Milk—a supersized industry made possible by enormous farms, in some cases, holding more than 15,000 cows. Some studies say that as dairy farms expand to meet a growing, multi-billion dollar industry, their high concentration of manure and methane gases pose environmental threats. The USDA estimates that the manure from 200 milking cows produces as much nitrogen as sewage from a community of 5,000 to 10,000 people, and inappropriately disposed waste has made its way into waterways and aquifers.

Robotic milkers have been unveiled across the developed world, but, for many, they are still prohibitively expensive. The MiRobot is an add-on extension piece estimated to cost around \$12,000, compared to the \$100,000-plus price tags of other models that require the installation of fully new systems.

Yair Barezer, whose farm is almost completely powered by solar panels, says that he hopes that doing away with most of his farmhands will allow him to get to the real heart of his work: connecting with the cows.

"Once robots will be doing the hard work, I'll be a better farmer," he said. "I'll have more time to spend with the cows, to look them in the eyes, speak to them, and understand how to help them have a better life, and, in turn, bring me a better profit."