



Remooooable Energy Down on the Farm

Hancock, Minnesota, is dairy farm country. The tiny Midwestern town, located about 160 miles northwest of Minneapolis, is home to tens of thousands of cows, vastly outnumbering the local population of 760 humans. Besides producing tons of milk, those bovines generate a whole lot of manure, too. Hancock's District 45 Dairy LLP is putting the six million cubic feet of manure produced annually by its nearly 5,560 cows to smart, energy-efficient use. They're using **biogas** — a renewable source yielded by accumulating and processing manure in an airtight, heated anaerobic digester — to fuel a combined heat and power (CHP) plant.

Driving the system is a trio of eight-ton engines supplied by Siemens that collectively provide 2.4 megawatts of electricity (MWe). The CHP plant produces clean power, heat and hot water — beneficial for dairy farms with a year-round demand.



WASTE NOT

Anaerobic digestion is the process by which organic matter, such as animal or food waste, is broken down to produce combustible biogas. As of 2016, there were

242

anaerobic digesters

operating on livestock farms in the U.S.



COWADUNGA!

The average dairy cow weighs about 1,400 pounds and produces

82 lbs

of manure — AKA dung — per day. That's nearly 15 tons a year!



WHAT A GAS!

Biogas is comprised primarily of methane (50%–70%) and carbon dioxide (30%–50%). Animal waste produces about

1.9 billion

metric tons

of renewable, combustible methane in the U.S. each year.



MEGA-WHAT?

A megawatt (MW) is one million watts, the basic unit for measuring power.

2.4 MWe

is enough electricity to power 420 homes.



COW TO CAR

100 cows can produce the energy equivalent of

5,300

gallons of gasoline/year



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