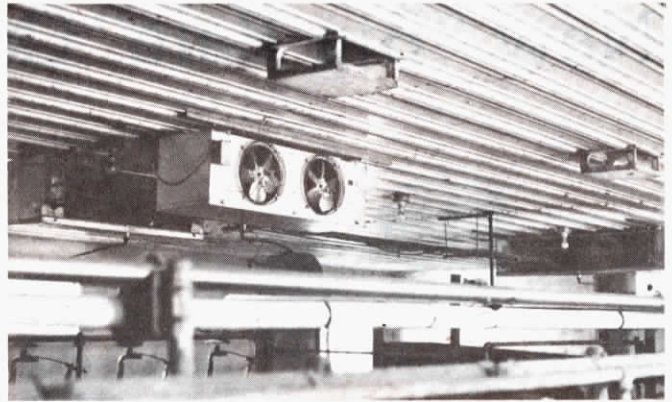


This compressor unit increases heat content of "cow-heated" air which is piped to an adjacent calf barn.



Pictured are two of the collectors mounted on David Thiele's dairy barn ceiling. They collect the heat from 8 cows to heat a calf barn.

## TAKES JUST 15 COWS TO HEAT A HOUSE

# Cowpower: New Energy Source For The '80's

by Lonnie Stauffer Associate Editor

An innovative idea from a Wisconsin manufacturer captures body heat given off by dairy cows to heat a farm home, barn or possibly serve as a heat source for an on-farm alcohol plant.

"You can heat a 2,000 sq. ft. house with the heat from just 15 cows," says Brian Ramlow, of Atmospheric Energy Systems, the Madison, Wis., company which developed "Cowpower".

"Every cow produces 3,500 to 4,000 btu's of body heat per hour. Unfortunately, most of this heat is dumped outside by ventilating fans where it's no good to anyone. We found a way to use that heat," Ramlow told FARM SHOW.

The only Cowpower installation in operation so far is a pilot unit set up for dairyman David Thiele, of DeForest, Wis. Thiele uses the Cowpower to heat a calf barn adjacent to his dairy barn.

"We installed the system last December to heat our calf barn. The previous winter, I was using \$200 worth of LP a month. Last winter, we used less than \$100 worth of electricity to run the Cowpower unit."

Cowpower is based on proven heat transfer principles. One 5-ft. and two 3-ft. long heat absorber panels, equipped with radiator-like cores, hang from the ceiling to collect the warm, cow-heated air.

Small fans on each panel help draw in the heat which is then transferred to a compressor or series of compressors, depending on size of the system. The compressor amplifies the amount of heat in the air by as much as one third in much the same way a diesel engine heats up its fuel-air mixture with compression. Cowpower air is heated in excess of 140°.

At that point, heat is transferred to a freon compound which is piped through insulated copper tubing to Thiele's calf barn. There, a heat exchanger removes the heat from the freon and blows it out to the calves.

"One unexpected advantage of this system is that the heat is dry and seems to keep the calves healthier,"

says Ramlow. "Also, since the heat absorbers take just the heat out of moistened air the excess moisture is condensed on the coils and can be drained away, making the dairy barn a healthier place. Since freon transmits only heat, moisture cannot be transferred."

Do cows overheat, or get chilled, when tapped for Cowpower?

"The temperature in the dairy barn rarely dropped more than a degree or two with the Cowpower system operating," answers Thiele. "Most of the heat we harness would be lost through the ventilating fans anyway."

"We could even let the cows out to exercise a couple of hours a day without a significant loss of heat, except in extremely cold weather. We also noticed that we could shut down a couple of the ventilating fans when the Cowpower was working. That practically saves as much electricity as the Cowpower motors and compressor consumes," Thiele adds.

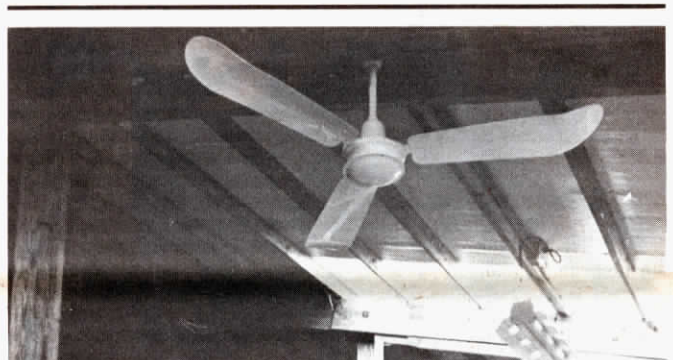
Ramlow says his company is researching the use of Cowpower with other animals. "Hogs raised in confinement show some promise as a heat source, but poultry and most other animals probably don't produce enough excess heat to make this system feasible."

Thiele's prototype Cowpower system cost about \$8,500 and may be eligible for the 40% tax break available for solar and other alternative energy systems.

The company is now taking orders on three models, ranging from 67,000 to 87,000 btu's.

"A house-sized system needs about 15 cows and four of the 5-ft. long absorber panels. The heated freon can be piped up to 300 ft. and adapted to any type of home heating system with the use of heat exchangers," Ramlow says.

For more information, contact: FARM SHOW Followup, Atmospheric Energy Systems, 909 B Stewart St., Madison, Wis. 53713 (ph 608 271-1692).



You can save 20 to 40% on your heating bills with these 56-in. dia. fans, says manufacturer.

## ELIMINATE MOISTURE, ODORS; SAVE FUEL

# Energy-Saving Ceiling Fan

Out of the tropics comes a simple energy-saving idea that its promoters say can save 20 to 40% on heating and cooling bills in barns, shops and other farm buildings, yet costs less than a 100 watt lightbulb to operate.

"Until the energy crisis, you only saw fans like these in warm climates. But they'll save money anywhere, either by knocking warm air from ceiling areas back down to livestock confinement pens in barns, or by cooling in the summer and letting other fans and air conditioning run less," explains Paul Fowler, president of Northwest Environmental Systems, manufacturer of Enviro barn fans.

In heated buildings, where temperatures can vary as much as 15° to 25° from floor to ceiling, the 56-in. dia. fans are commonly adjusted to operate at about 5600 cfm. In the summer, though, the fans are speeded up to move 16,800 cfm, thereby circulating enough air to keep animals cool.

"It also helps get rid of odors and

keeps floors, walls and ceilings dry. Everything is cleaner and healthier," says Fowler.

Northwest Environmental Systems all-metal fans simply attach to the ceiling and either plug in or wire into the electrical system. (A 15-amp circuit runs 12 fans.) Motors are enclosed and bearings sealed — no regular maintenance is needed. The company will help you place fans within a barn for maximum benefits. They're effective in ceilings up to 60-ft. high and down to any minimum height without getting in the way. One fan adequately covers a 2,000 sq. ft. area.

Enviro fans range in price from \$119 to \$199.

For more information, contact: FARM SHOW Followup, Northwest Environmental Systems, 5333 Fahrwald Road, Oshkosh, Wis. 54901 (ph 414 235-7808).

In Canada, contact: FARM SHOW Followup, Wilcorp Manufacturing Co., Toronto, Ont. (ph 416 789-1164).