

# Save heat, energy in farm shop

**B**ONUS depreciation for tax purposes has spawned a variety of construction projects this past year, including many new farm shops. This income-tax provision can substantially reduce the initial cost of a farm shop. Energy-efficient features can also help you reduce farm energy costs long after the glow of bonus depreciation has faded.



## Farm Energy

By DANA PETERSEN

"Good insulation is critical for energy efficiency," points out Greg Brenneman, Iowa

State University Extension ag engineer. Minimum recommended insulation levels are R-values of 10 for shop doors, 15 to 20 in sidewalls, and 30 in ceilings. A vapor barrier of 6-mil polyethylene should be installed between the inside wall or ceiling panel and the insulation to keep moisture out of the insulation.

The building's foundation should be in-

ulated with at least 2 inches of extruded polystyrene insulation with an R-value between R10 and R12. This will reduce heat loss through the floor and keep the floor warmer. Perimeter insulation can be put under the floor for 4 feet around the outside edge or outside of the foundation wall to a depth of 4 feet. For diagrams, download the ISU Farm Energy fact sheet "Conserve Heat Energy in the Farm Shop," PM 2089P, at [farmenergy.exnet.iastate.edu](http://farmenergy.exnet.iastate.edu).

"Windows in walls and overhead doors should contain double glazing," says Brenneman. Windows should be installed primarily on the south side of the building to capture sunlight during winter and allow minimal solar gain in summer. Large doors for equipment should be on the south or east side of the shop, if possible, to avoid winter winds from the north and west.

As cold weather closes in, maintaining a minimum shop temperature of 40 degrees F protects shop supplies and equipment from freezing. It is also easier to warm the space to a comfortable working temperature, typically 55 degrees to 65 degrees F.

### Sizing the heating system

According to Brenneman, the size of a heating system depends on the size of the shop, how often it's used, and how often large doors will be opened and closed. Forced-air furnaces, infrared heaters and in-floor heating systems are commonly used, and typical heating fuels include propane, wood, fuel oil or waste oil.

Ceiling-mounted, forced-air space heaters prevent hot air from stagnating near the ceiling. The furnace should be sized at about 50 Btu per hour per square foot of shop floor area.

Power-vented or condensing heaters are more energy-efficient than natural draft heaters. A power-vented heater and a condensing heater are about 13% and 25% more efficient, respectively, than a natural draft heater. Unvented liquid propane, or LP, heaters commonly used in livestock buildings are not recommended for farm shops, due to the lack of ventilation and the danger of carbon monoxide poisoning.

In-floor heating systems are best-suited for shops that are frequently used during cold weather. Floors retain heat for long periods and provide a comfortable working surface. But these systems are fairly expensive and not suited for occasional use.

Besides heating systems, consider energy-efficient lighting, such as T5 or T8 fluorescent fixtures for bench lighting, LEDs for task lighting, or high-intensity discharge lamps such as metal halide for ceilings. Don't forget traditional incandescent bulbs are being phased out: 100 watt on Jan. 1, 2012; 75 W, Jan. 1, 2013; 60 W and 40 W, Jan. 1, 2014. Remember to check with your local utility providers for potential rebates on insulation, lighting and heating systems for the farm shop.

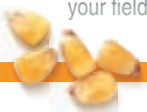
If you're looking for more than just shop talk, join us at the Integrated Crop Management Conference Nov. 30 and Dec. 1 at ISU in Ames. ISU Extension ag engineer Mark Hanna will share a variety of farm energy-efficiency techniques. For online registration, visit [www.aep.iastate.edu](http://www.aep.iastate.edu).

Petersen is program coordinator for the ISU Farm Energy Initiative sponsored by the Iowa Energy Center.



### CONTROL MORE INSECTS THAN ANY OTHER TRAIT STACK WITH AGRISURE VIPTERA™3111.

The Agrisure Viptera™ 3111 trait stack from Syngenta Seeds delivers breakthrough control over corn earworm, black cutworm and 12 other corn pests. Control of the broadest spectrum of above-and-below ground insects is ready for your fields today. Call your Golden Harvest dealer today at 1-800-944-7333, or visit [GoldenHarvestSeeds.com](http://GoldenHarvestSeeds.com).



**GoldenHarvest**

syngenta