

Grain drying is a critical phase of the harvesting process that conditions grain for safe storage. As growers seek more efficient farming practices, there is an increased need for large-volume dryers that are more energy efficient and cost-effective.

Manufacturers are developing new propane-fueled grain dryers and enhancing existing models to improve performance. Mathews Co. and the GSI Group are designing and testing new dryers that rely on propane to distribute heat and dry grain more evenly, increasing harvest quality and productivity while improving fuel efficiency.



Grain drying increases the quality of harvested grain by reducing crop exposure to weather, and it allows more time for post-harvest field work.
—North Dakota State University Agricultural Extension Service



Current Status: Development and Testing

Research Development and Testing Demonstration **Commercialization**

Mathews Co. Trilogy Series Grain Dryer

- The Trilogy Series grain dryer is commercially available in various sizes to meet the needs of a broad range of farms.

GSI Energy Reduction Product Testing

- Grain inverter technology and the X-Stream configuration are commercially available in GSI propane-fueled grain dryers.

Technology Features

Mathews Co. Trilogy Series Grain Dryer

Low-profile vacuum-cooled dryer features a horizontal, modular design with a centrifugal fan for quiet operation.

GSI Group Grain Inverters

Inverted grain column eliminates overdrying and maintains optimal grain temperature and efficiency.

GSI X-Stream Configuration

Alternating air flow direction increases efficiency and eliminates front-to-back moisture variation and heat loss.

Propane-Fueled Grain Dryers: Key Benefits

Consume propane at about 130 gallons per hour.

Have the potential to lower costs by increasing efficiency and reducing crop loss.

Require as little as 1,650 British thermal units to remove a pound of water, compared to 3,500 with older technology.

Reduce crop loss caused by weather and mechanical harvesting when crops are left to dry in the field.

Reduce overdrying and produce more evenly dried, higher-quality grain.

Reclaim heated air, lowering fuel consumption and increasing efficiency.

A Closer Look

Propane-Fueled Grain Dryers: How They Work

- The Mathews Co. Trilogy Series dryer can operate in three modes: pressure heat and pressure cool; all heat; and pressure heat and vacuum cool. The flexibility allows farmers to customize their grain drying cycles.
- GSI Grain Inverters circulate the grain during the drying process, maximizing grain quality and minimizing fuel use and operating costs.
- The GSI X-Stream configuration features fans and heaters at both ends of the dryer to distribute heat more evenly, resulting in more even drying and increased efficiency.



Mathews Co. Grain Dryer



GSI Group Grain Dryer

Projects:

GSI/Purdue Dryer Energy Reduction Product Testing (**Docket I6090**)
Vacuum Cooled Low Profile Grain Dryer Development (**Docket I6684**)

Partners:

The GSI Group, Purdue University, Mathews Co.

Research Process (✓ = completed; ➤ = in progress; ★ = upcoming)

Development and Testing

GSI ✓

- Conduct energy performance tests on the already commercialized GSI tower dryer FFI model F-24100 in Norwalk, Ohio.
- Conduct energy performance tests at two locations (Carmi and Oblong, Ill.) on two already commercialized GSI on-farm dryers: model 2326 EMCS (1994) and 2326 X-Stream (2008).

Mathews Co. ✓

- Assemble and test initial prototype for performance validation under properly controlled conditions.
- Review findings of the initial performance testing of the established prototype and make adjustments to the proposed design.
- Release a fully assembled unit for field testing.

Commercialization

GSI ✓

- With substantial field testing complete and commercialization success, GSI continues to document the benefits of the grain inverter device and the X-Stream configuration to drive further adoption of these technologies.

Mathews Co. ✓

- After two seasons of field testing, commercialization of the Trilogy Series vacuum-cooled low-profile grain dryer is under way. Many farmers are already realizing the benefits of this efficient technology.

What's Next?

The Mathews Co. Trilogy Series propane-fueled grain dryer is commercially available. GSI grain dryers that feature grain inverters and the X-Stream configuration are also available now.

FOR MORE INFORMATION:

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