



Energy Conservation in Agriculture

Low-Cost Energy Conservation: Grain Drying

Scott Sanford

Depending on your farm operation, the following activities might reduce your energy consumption. Refer to the references at the end of the bulletin for more information.

Grain drying

1. Delay harvest of grain as long as practical to allow time for field drying.
2. Inspect and clean drying floors and columns regularly to maintain free airflow.
3. Clean chaff and dirt from grain before and after drying operations to permit free airflow through the grain pack.
4. Calibrate grain moisture sensor annually.
5. Check grain moisture content frequently to avoid over-drying.
6. Install automated controls to lower fuel consumption and avoid over-drying.
7. Consider replacing your current dryer with a newer, more efficient type.
8. Retrofit the in-bin continuous Flow drying system into an existing bin and use about 40% less energy than continuous flow column dryers. Capacities can reach 17,000 bushels per day for a 48-foot bin with 10% moisture reduction.
9. Install a mixed flow dryer—a column type dryer that uses higher plenum temperatures without over-drying grain and is about twice as efficient as a typical cross flow column dryer.
10. Install heat recovery on column dryers.
11. Check belt drives for belt condition, tension and alignment of pulleys.
12. Check gas pressure regulators annually by trained gas company personnel.
13. Clean dirt out of the fan housing and check that drain holes are open. Clean dirt accumulation off fan blades.
14. Check all bearings for proper lubrication; check that mounting bolts are tight and locking collars are secure.
15. Check calibration of all thermostats and sensing devices.
16. Check burner flame for proper color: a blue flame indicates complete combustion; a yellow flame indicates poor combustion. Clean burner, check pressure regulator and inlet air adjustment.
17. Consider dryeration or in-bin cooling to increase column dryer capacity and reduce drying energy.

References

- 1) *Grain Drying, Handling and Storage Handbook*, MWPS-13, Midwest Plan Service, Iowa State University, Ames, IA, 1987.
- 2) *Energy Conservation and Alternative Energy Sources for Corn Drying*, NCH-14, National Corn Handbook, Iowa State University, Ames, IA, 1984.
- 3) *Grain Drying*, Kenneth J. Hellevang, North Dakota State University, Fargo, ND, November 1994.
- 4) *Last Minute Grain Dryer Checks*, R.C. Brook & D.E. Maier, Grain Quality Fact Sheet #19, Purdue University, 1994.
- 5) *Optimizing Grain Dryer Operations*, D.E. Maier & R.E. Bartosik, Grain Quality Fact Sheet #15, Purdue University, 2002.



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