

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Delta States
State	Louisiana
Discipline Group	Agricultural Engineering
Practice Code/Name	374 - Farmstead Energy Improvement
Scenario ID	20
Scenario Name	Grain Dryer
Scenario Description	A replacement continuous-flow dryer rated for an appropriate bushel/per hour capacity for the operation that includes a microcomputer-based control system that adjusts the amount of time the crop remains in the dryer in order to achieve a consistent and accurate moisture content in the dried product. Alternate types of replacement dryers which reduce energy use are acceptable as evidenced by the energy audit. The typical operation requires a rated capacity of 860 bushels per hour.
Before Practice Situation	Wet crop is loaded in the top of a horizontal, continuous dryer. Dried crop is agured from the bottom of the dryer. The heated air from the unit's burners passes from the burner plenum through the grain. An on-farm energy audit has identified inefficient manual control of the dryer where the operator controls the plenum temperature and the discharge auger speed to achieve the desired final moisture content. Moisture content is based on measurement of grain leaving the dryer. The plenum temperature setting depends on the moisture content of crop with a typical value of 220 F. The burner cycles on and off, automatically, as necessary to maintain the plenum temperature selected by the operator.
After Practice Situation	Energy use is reduced through installation of a more efficient continuous dryer that uses a microcomputer-based controller to reduce overdrying and total time of operation. Associated practices/activities may include: 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.
Scenario Feature Measure	Rated capacity of the dryer
Scenario Unit	Bushels/Hour
Scenario Typical Size	860

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$78,346.00	\$91.10
Equipment/Installation	\$0.00	\$0.00
Labor	\$429.12	\$0.50
Mobilization	\$25.75	\$0.03
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$78,800.87	\$91.63

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1160	Grain dryer, Centrifugal, 20'	Grain dryer, 20 foot Centrifugal with rated capacity of 785 bushels/hour. Materials only.	Bushels per Hour	\$89.00	172	\$15,308.00
Materials	1159	Grain dryer, Axial, 16'	Grain dryer, 16 foot Axial with rated capacity of 600 bushels/hour. Materials only.	Bushels per Hour	\$83.50	172	\$14,362.00
Materials	1161	Grain dryer, Centrifugal, 24'	Grain dryer, 24 foot Centrifugal with rated capacity of 860 bushels/hr. Materials only.	Bushels per Hour	\$94.50	172	\$16,254.00
Materials	1162	Grain dryer, Axial 28'	Grain dryer, 28 foot Axial with rated capacity of 990 bushels/hr. Materials only.	Bushels per Hour	\$93.00	172	\$15,996.00
Materials	1158	Grain dryer, Axial, 12'	Grain dryer, 12 foot Axial with rated capacity of 460 bushels/hour. Materials only.	Bushels per Hour	\$95.50	172	\$16,426.00
Labor	230	Skilled Labor	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	\$26.82	16	\$429.12
Mobilization	1141	Mobilization, Skilled labor	Mobilization of skilled labor: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	\$25.75	1	\$25.75