


## Step 3: Analysis

If you provided "Production and Energy Use" data, the table "Summary of Your Current Operation" is a comparison of your dryer to typical efficiencies recorded in university studies of grain dryers. The efficiency of grain dryers is reported as Btu per pound of water evaporated from the grain. The estimated baseline energy use and cost to dry the grain in an average year is listed in the lower part of the first table along with the total energy use in British Thermal Units (Btu's) and the estimated carbon dioxide ($CO_2$) emissions from combusting fuels to produce electricity and heat for drying.

The second table, "Energy and Cost Comparison Summary", summarizes the energy and cost savings of all dryer types known to be commercially available in North America. If the value in this table is positive, then using that dryer type with **all** energy efficiency options would be expected to result in lower energy costs. If the value is negative, then the dryer type is expected to use more energy than the dryer you've selected. Click here for a bar graph that illustrates a general comparison of all the dryer types without optional heat recovery or energy saving cooling processes.

Click on the dryer type in the summary table to display a detailed summary for each dryer. Each summary includes estimated differences in fuel consumption and the cost savings from the dryer options such as in-bin cooling, dryeration, heat recovery and stirring devices, if applicable. At the bottom of the table is the expected increase or decrease in carbon dioxide emissions, the principle greenhouse gas causing global warming.

| **Summary of Your Current Operation** | Your dryer efficiency is abnormally high based on research data for this type of dryer.Typical efficiency values will be used for calculations. | |
|---|---|---|
| **Dryer type Selected** | High Temp Batch Bin Dryer | |
| **Estimated efficiency of your dryer** | 63 | Btu/#H2O |
| **Typical efficiency for dryer type selected** | 2,430 | Btu/#H2O |

| **Energy Type** | **Estimated Baseline energy usage** | |
|---|---|---|
| **Energy Use Based on Drying** | 60,000 | bushels of corn |
| **Water Removed** | 105,000 | pounds |
| **Natural Gas** | 2,500 | Therms |
| **Electricity** | 1,495 | kWh |

| | | |
|---|---|---|
| **Average Annual Drying Cost** | $2,897 | $ |
| **Total Energy Use** | 255,150,000 | Btu |
| **Greenhouse Gas Emissions** | 31,716 | lbs. / yr. |

**Energy and Cost Comparison Summary**

For each dryer listed below, the savings indicated is for the dryer type configured with best possible energy efficiency measures.

Click on Dryer Name (below **Dryer Type**) for more detailed analysis.

| Dryer Type | Potential Cost Savings | Potential Energy Savings (Btu) |
|---|---|---|
| **Natural-Air Bin Dryer with stirring device** | $-5,668 | 129,150,000 |
| **Low-Temperature Bin Dryer with stirring device** | $-6,524 | 116,550,000 |
| **High Temperature Batch Bin Dryer with stirring device** | $724 | 63,787,500 |
| **Roof Batch Dryer with aeration** | $215 | 18,900,000 |
| **Continuous Cross-Flow Dryer with dryeration (full heat mode)** | $393 | 34,650,000 |
| **Cross-Flow Batch Dryer with dryeration** | $560 | 49,350,000 |
| **Mix-flow dryer with dryeration (full heat mode)** | $1,064 | 93,712,500 |
| **Continuous-Flow In-Bin Dryer with dryeration** | $751 | 66,150,000 |
| **Combination High/Low Temperature Drying** | $-208 | 129,150,000 |

**How can a dryer use more energy but save money?**

**What does a negative number mean?**

**Natural-Air Bin Dryer**

| **Annual Energy Cost Savings** | | |
|---|---|---|
| **Natural Gas** | 2,500 | Therms |
| **Electricity** | -44,652 | kWh |
| **Energy Savings - Dryer Only** | 97,650,000 | Btu |
| **Percentage of Energy Savings** | 38% | % |
| **Annual Potential Cost Savings** | $-7,809 | $ |
| **Optional Equipment/Process** | | |

| | | |
|---|---|---|
| With Stirring Device | 31,500,000 | Btu |
| **Cost Savings for Optional Equipment/Process** | $2,141 | $ |
| **Energy Savings** | | |
| **Max. Total Energy Savings** | 129,150,000 | Btu |
| **Percentage of Energy Savings** | 51% | % |
| **Total Estimated Cost Savings** | $-5,668 | $ |
| **Greenhouse Gas Emissions Reduction** | | |
| **Carbon Dioxide - Dryer Only** | -44,212 | lbs. |
| **Carbon Dioxide w/Energy Saving Options** | -29,026 | lbs. |

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| Low-Temperature Bin Dryer | | |
|---|---|---|
| **Annual Energy Cost Savings** | | |
| **Natural Gas** | 2,500 | Therms |
| **Electricity** | -49,267 | kWh |
| **Energy Savings - Dryer Only** | 81,900,000 | Btu |
| **Percentage of Energy Savings** | 32% | % |
| **Annual Potential Cost Savings** | $-8,879 | $ |
| **Optional Equipment/Process** | | |
| With Stirring Device | 34,650,000 | Btu |
| **Cost Savings for Optional Equipment/Process** | $2,355 | $ |
| **Energy Savings** | | |
| **Max. Total Energy Savings** | 116,550,000 | Btu |
| **Percentage of Energy Savings** | 46% | % |
| **Total Estimated Cost Savings** | $-6,524 | $ |
| **Greenhouse Gas Emissions Reduction** | | |
| **Carbon Dioxide - Dryer Only** | -51,804 | lbs. |
| **Carbon Dioxide - Dryer w/Energy Saving Options** | -35,100 | lbs. |

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| High Temperature Batch Bin Dryer | | |
|---|---|---|
| **Annual Energy Cost Savings** | | |
| **Natural Gas** | | Therms |
| **Electricity** | | kWh |
| **Energy Savings - Dryer Only** | | Btu |
| **Percentage of Energy Savings** | % | % |
| **Annual Potential Cost Savings** | $ | $ |
| **Optional Equipment/Process** | | |

| | | |
|---|---|---|
| **With Stirring Device (Bin Dryer)** | 63,787,500 | Btu |
| **Cost Savings for Optional Equipment/Process** | $724 | $ |
| **Energy Savings** | | |
| **Max Estimated Energy Savings** | 63,787,500 | Btu |
| **Max Percentage of Energy Savings** | 25% | % |
| **Total Estimated Cost Savings** | $724 | $ |
| **Greenhouse Gas Emissions Reduction** | | |
| **Carbon Dioxide - Dryer Only** | | lbs. |
| **Carbon Dioxide - Dryer w/Energy Saving Options** | 7,929 | lbs. |

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| **Combination High/Low Temperature Drying** | | |
|---|---|---|
| **Annual Energy Cost Savings** | | |
| **Natural Gas** | 1,555 | Therms |
| **Electricity** | -7,734 | kWh |
| **Energy Savings - Dryer Only** | 129,150,000 | Btu |
| **Percentage of Energy Savings** | 51% | % |
| **Annual Potential Cost Savings** | $-208 | $ |
| **Greenhouse Gas Emissions Reduction** | | |
| **Carbon Dioxide - Dryer Only** | 5,474 | lbs. |

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| **Roof Batch Dryer** | | |
|---|---|---|
| **Annual Energy Cost Savings** | | |
| **Natural Gas** | 185 | Therms |
| **Electricity** | 111 | kWh |
| **Energy Savings - Dryer Only** | 18,900,000 | Btu |
| **Percentage of Energy Savings** | 7% | % |
| **Annual Potential Cost Savings** | $215 | $ |
| **Greenhouse Gas Emissions Reduction** | | |
| **Carbon Dioxide - Dryer Only** | 2,349 | lbs. |

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| **Continuous Cross-Flow Dryer** | | |
|---|---|---|
| **Annual Energy Cost Savings** | | |
| **Natural Gas** | -381 | Therms |
| **Electricity** | -228 | kWh |
| **Energy Savings - Dryer Only** | -38,850,000 | Btu |

| | | |
|---|---|---|
| **Percentage of Energy Savings** | -15% | % |
| **Annual Potential Cost Savings** | $-441 | $ |
| **Optional Equipment/Process** | | |
| **With In-bin cooling (Full heat dryer)** | 44,100,000 | Btu |
| **With Dryeration (Full heat dryer)** | 73,500,000 | Btu |
| **With Heat Recovery (Heat/Cool dryer)** | 44,100,000 | Btu |
| **Cost Savings for Optional Equipment/Process** | $835 | $ |
| **Energy Savings** | | |
| **Total Energy Saved** | 34,650,000 | Btu |
| **Percentage of Energy Savings** | 14% | % |
| **Total Estimated Cost Savings** | $393 | $ |
| **Greenhouse Gas Emissions Reduction** | | |
| **Carbon Dioxide - Dryer Only** | -4,829 | lbs. |
| **Carbon Dioxide - Dryer w/Energy Saving Options** | 4,307 | lbs. |

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| **Cross-Flow Batch Dryer** | | |
|---|---|---|
| **Annual Energy Cost Savings** | | |
| **Natural Gas** | -21 | Therms |
| **Electricity** | -12 | kWh |
| **Energy Savings - Dryer Only** | -2,100,000 | Btu |
| **Percentage of Energy Savings** | -1% | % |
| **Annual Potential Cost Savings** | $-24 | $ |
| **Optional Equipment/Process** | | |
| **With In-bin cooling (Full heat dryer)** | 25,725,000 | Btu |
| **With Dryeration (Full heat dryer)** | 51,450,000 | Btu |
| **Cost Savings for Optional Equipment/Process** | $584 | $ |
| **Energy Savings** | | |
| **Total Energy Saved** | 49,350,000 | Btu |
| **Percentage of Energy Savings** | 19% | % |
| **Total Estimated Cost Savings** | $560 | $ |
| **Greenhouse Gas Emissions Reduction** | | |
| **Carbon Dioxide - Dryer Only** | -261 | lbs. |
| **Carbon Dioxide - Dryer w/Energy Saving Options** | 6,134 | lbs. |

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| **Mixed-flow dryer** | | |
|---|---|---|
| **Annual Energy Cost Savings** | | |

| | | |
|---|---|---|
| **Natural Gas** | 391 | Therms |
| **Electricity** | 234 | kWh |
| **Energy Savings - Dryer Only** | 39,900,000 | Btu |
| **Percentage of Energy Savings** | 16% | % |
| **Annual Potential Cost Savings** | $453 | $ |
| **Optional Equipment/Process** | | |
| **With In-bin cooling (Full heat dryer)** | 32,287,500 | Btu |
| **With Dryeration (Full heat dryer)** | 53,812,500 | Btu |
| **Cost Savings for Optional Equipment/Process** | $611 | $ |
| **Energy Savings** | | |
| **Total Energy Saved** | 93,712,500 | Btu |
| **Percentage of Energy Savings** | 37% | % |
| **Total Estimated Cost Savings** | $1,064 | $ |
| **Greenhouse Gas Emissions Reduction** | | |
| **Carbon Dioxide - Dryer Only** | 4,960 | lbs. |
| **Carbon Dioxide - Dryer w/Energy Saving Options** | 11,649 | lbs. |

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| **Continuous-Flow In-Bin Dryer** | | |
|---|---|---|
| **Annual Energy Cost Savings** | | |
| **Natural Gas** | 442 | Therms |
| **Electricity** | 265 | kWh |
| **Energy Savings - Dryer Only** | 45,150,000 | Btu |
| **Percentage of Energy Savings** | 18% | % |
| **Annual Potential Cost Savings** | $513 | $ |
| **Optional Equipment/Process** | | |
| **With Dryeration (Full heat dryer)** | 21,000,000 | Btu |
| **Cost Savings for Optional Equipment/Process** | $238 | $ |
| **Energy Savings** | | |
| **Total Energy Saved** | 66,150,000 | Btu |
| **Percentage of Energy Savings** | 26% | % |
| **Total Estimated Cost Savings** | $751 | $ |
| **Greenhouse Gas Emissions Reduction** | | |
| **Carbon Dioxide - Dryer Only** | 5,612 | lbs. |
| **Carbon Dioxide - Dryer w/Energy Saving Options** | 8,223 | lbs. |

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