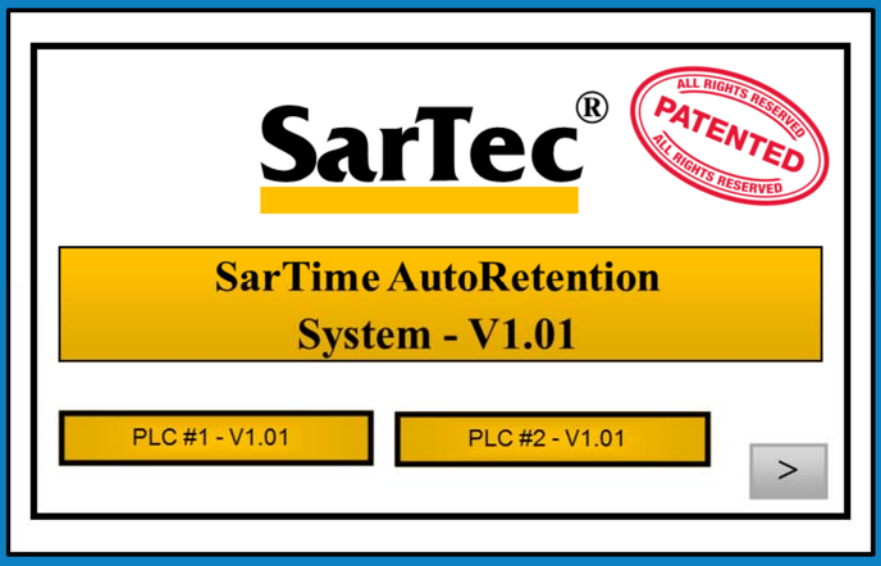
SarTime™

Automatically measure the residence time of the grain in your steam chest.



Do you know:

- *What is the residence time of the grain in your steam chest?*
- *How often is it measured?*
- *Why is it important and how does it affect the bottom line?*

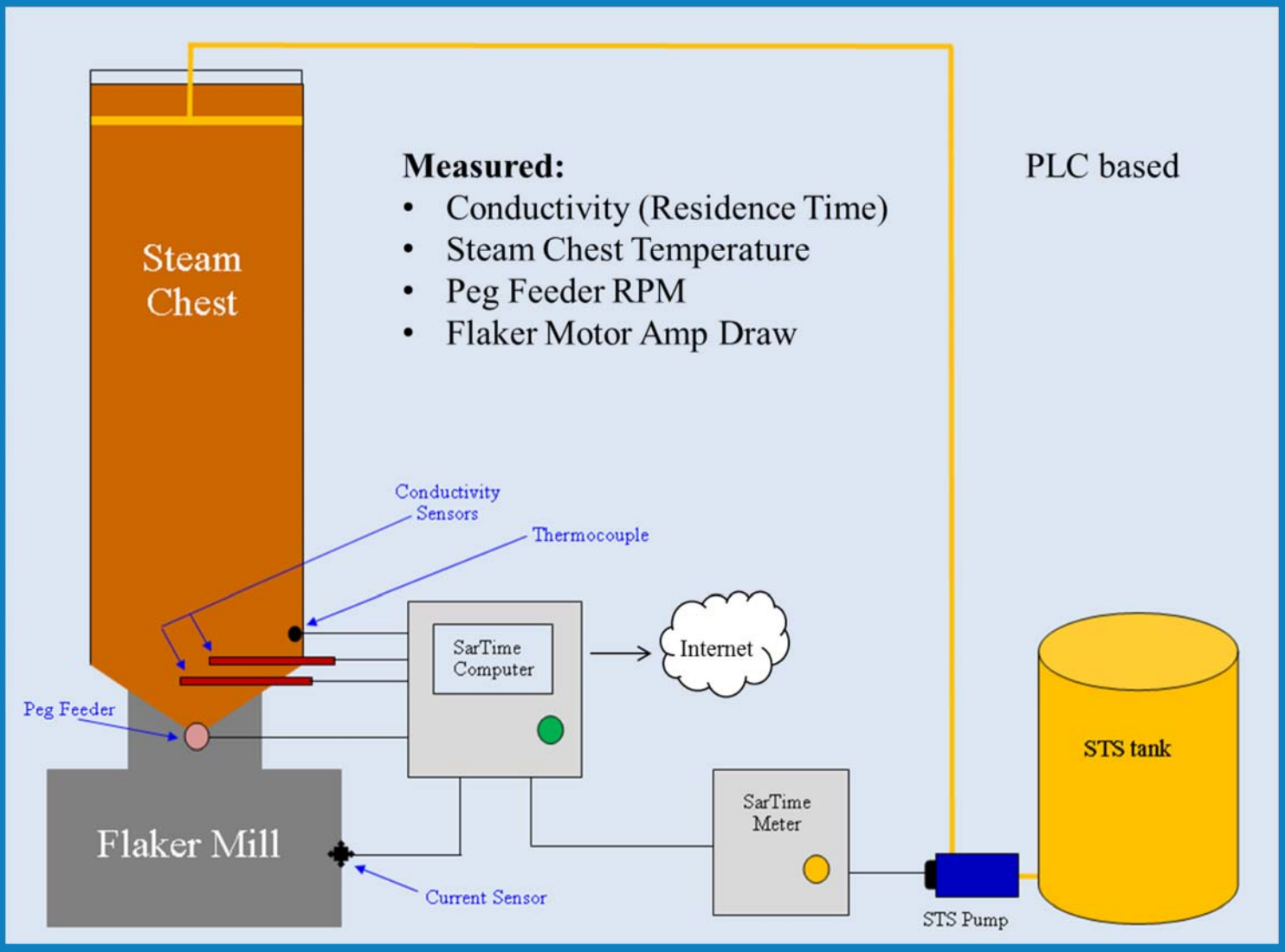
With a SarTime™ system, you get answers to these questions.

SarTime™ is:

- **Safe -** Employees no longer need to do manual dye tests.
- **Quick -** Perform a measurement with the push of a button.
- **Reliable -** Computer PLC based system automatically senses when it can proceed.

SarTec®

Overview of The SarTime™ System



SarTime™ measures the conductivity of the wet grain to determine the residence time. A conductive SarTime™ Solution (STS) is injected into the grain at the top of the steam chest. The time of the "injection" is recorded. The conductive band of STS migrates down the steam chest as grain is flaked and eventually passes between the conductivity sensor rods. This is recorded by the SarTime™ computer as a "peak" in the conductivity signal and the time of this event is recorded. The time elapsed between the "injection" and "peak" is the residence time. Other measurements that are continuously recorded include the steam chest temperature, peg feeder RPM and flaker motor current draw. All measurements are taken for each flaker and all data is stored on a secure cloud drive that can be accessed via the internet (smart phone, tablet, computer, etc.).

Overview of The SarTime™ System

Features:

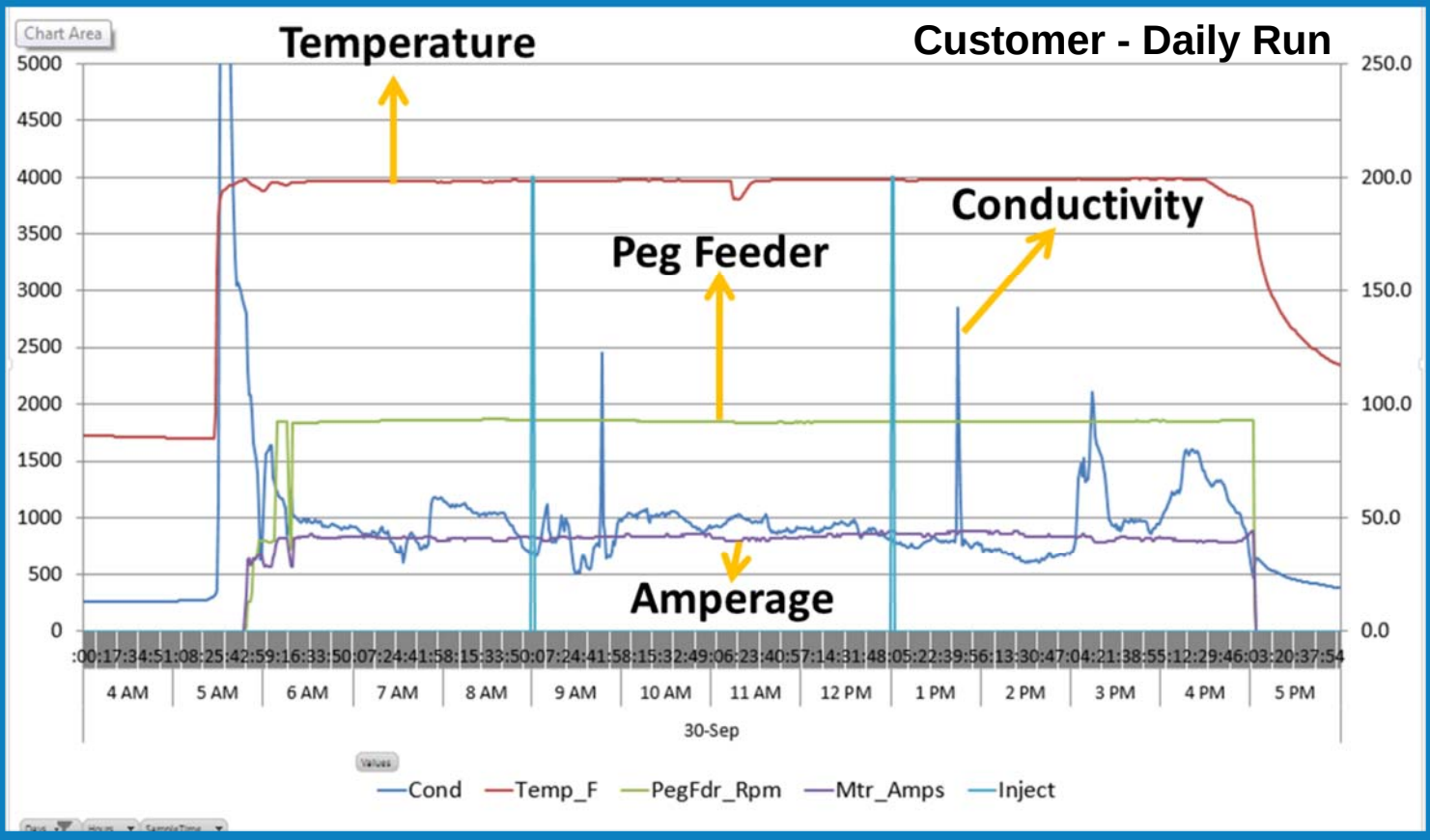
- Automatic, computerized system
- Touch screen and PLC based
- Measures conductivity (residence time), steam chest temperature, peg feeder RPM and flaker motor amp draw
- Data is emailed daily to the customer
- Real time and historical data is accessible from all mobile (smart phone, tablet, etc.) and desktop devices
- Bushel weight, starch availability and moisture inputs
- Event alerts via email/text
- Control of flaking costs

Control Flaking Costs

The longer the grain spends in the chest, the higher the cost. Principally, the flaker motor electrical and boiler fuel costs contribute to the overall flaking cost. By reducing the residence time to an optimal level, one can reduce the cost of flaking significantly. The grain needs to be at the correct temperature before it enters the rolls for flaking, however, if an abundance of steam is used there is typically quite a bit of cost savings to achieve without affecting flake characteristics. The first step is to know what the residence time is for each flaker and to measure this every day. ***For a 25,000 head yard with one flaker, a reduction in residence time from 60 to 45 minutes can save tens of thousands of dollars per year.***

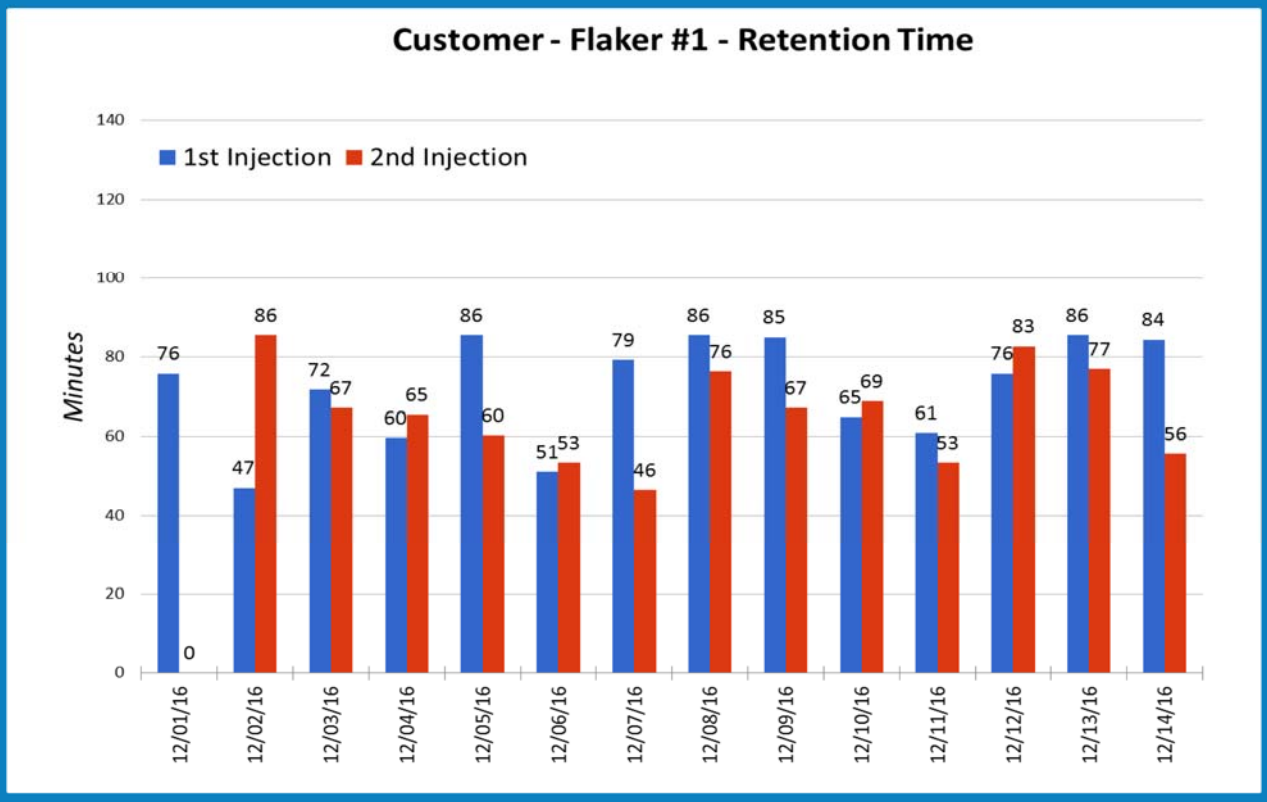
SarTime™ Data

The customer has access to all real time and historical data including the following graphs:

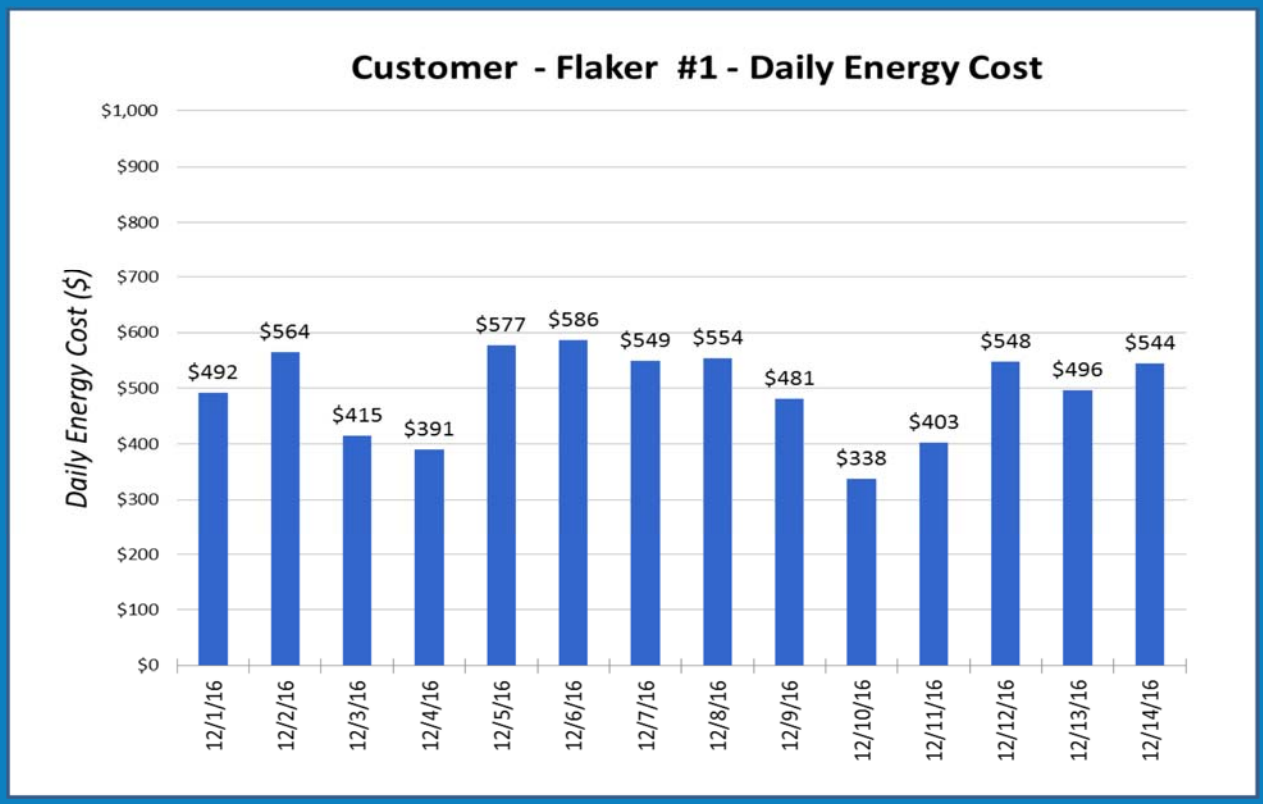


A typical daily run for a flaker is shown above. Conductivity (residence time), temperature, peg feeder rpm and flaker motor current data are recorded every second and graphed. This provides the user with a "fingerprint" of what occurred during each day's operation. All data for every flaker is kept on a secure cloud drive that can be accessed from anywhere via the internet by customer approved users. The time between the light blue "injection" spikes and the subsequent increase in signal of the conductivity measurement (dark blue spikes) is the residence time. A sophisticated computer algorithm, reliably analyzes the conductivity peaks to ensure they are signals from the conductive solution. The SarTime™ system is patented (US Patent 8424451 "Automatically Controlled Steam Flaking Systems and Methods" - issued April 2013).

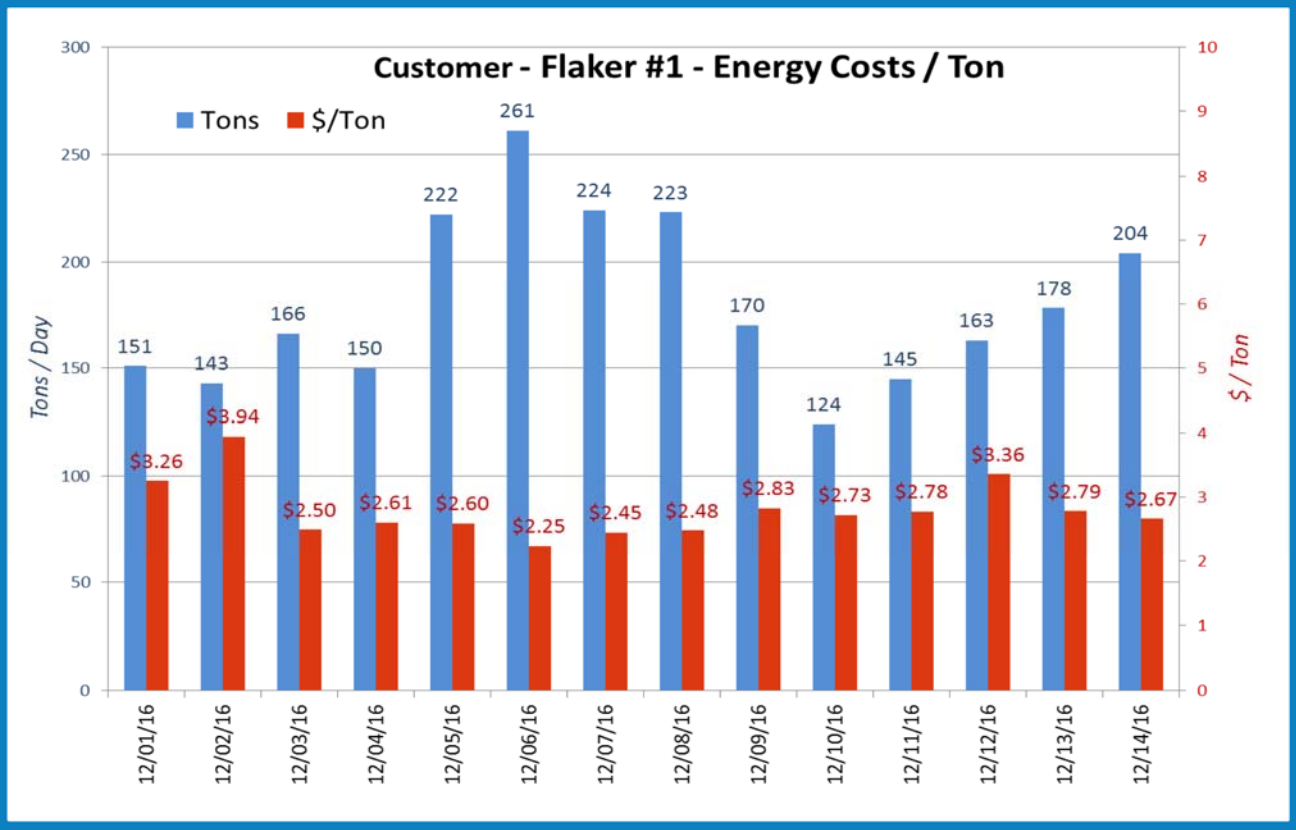
SarTime™ Data



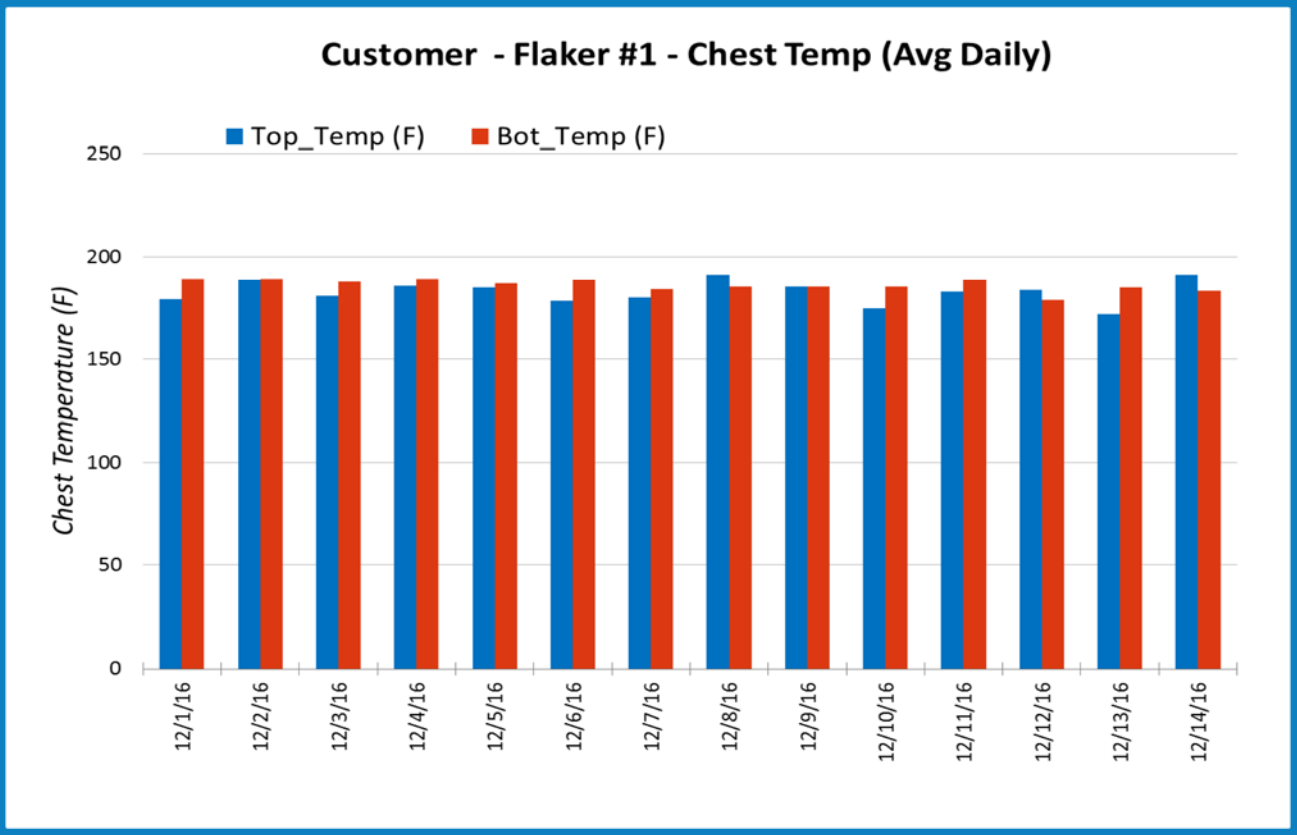
The residence time for every measurement taken is displayed graphically (above) and listed in an easy to read table (not shown). The electrical and boiler fuel costs associated with steam flaking are calculated and displayed graphically (below). All graphical and tabular data is stored on a secure cloud drive.



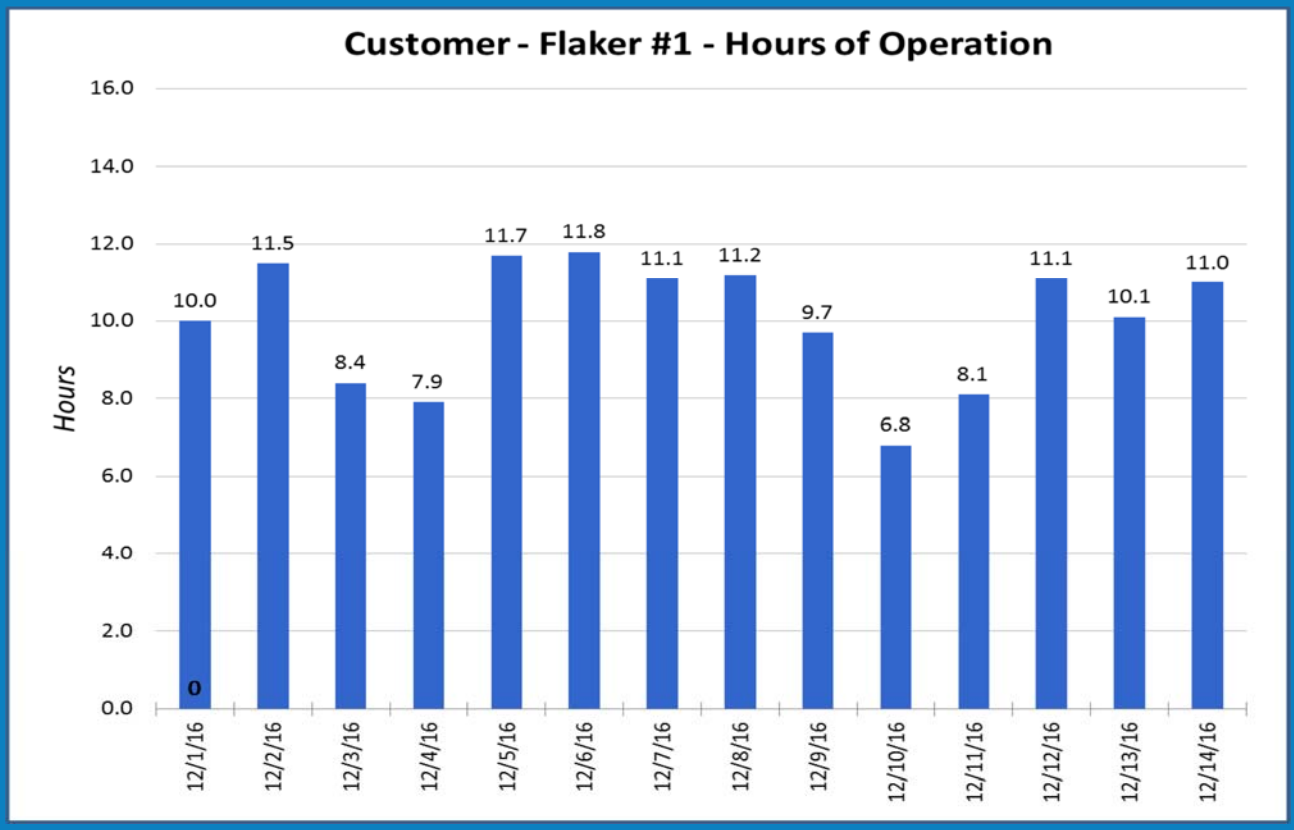
SarTime™ Data



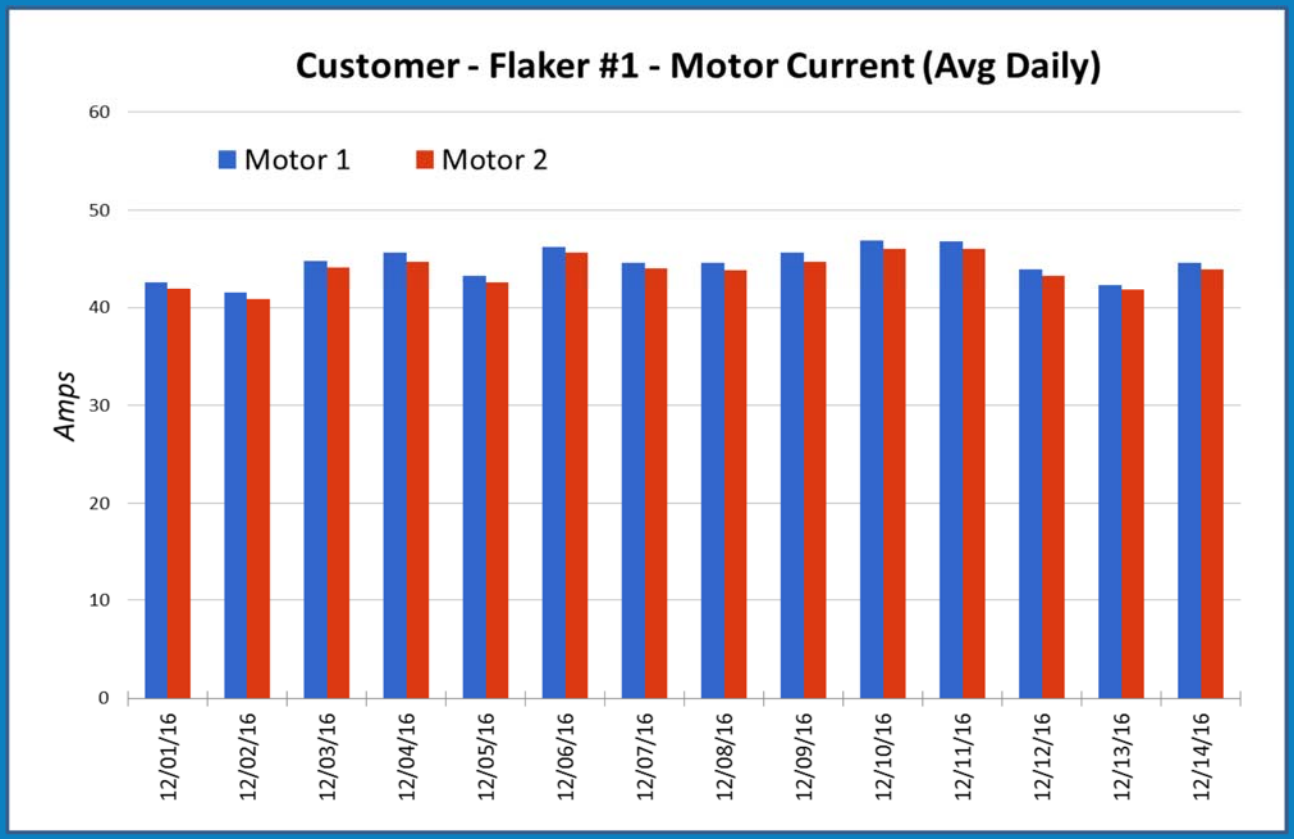
The energy costs per ton* and temperature of the steam chest (at the conductivity sensor rods) are shown above and below, respectively. All graphical and tabular data is stored on a secure cloud drive that can be accessed by customer approved users.



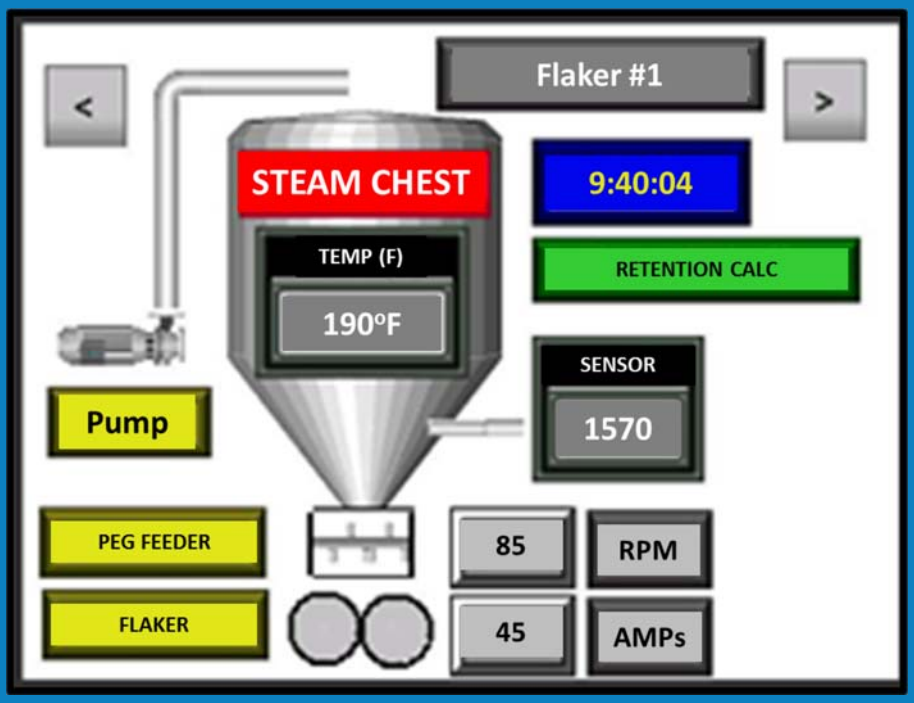
SarTime™ Data



The hours of operation and average flaker motor current draw are shown above and below, respectively. All data is stored on a secure cloud drive that can be accessed by customer approved users. Data is stored in both graphical and tabular format for the entire history of operation.



SarTime™ puts you in control of your flaking costs and maximizes the benefits of steam flaking grain.



- **Know grain residence time**
- **Know the peg feeder speed**
- **Know when flaking started, stopped or was interrupted**
- **Know if your boiler goes down**
- **Know the temperature in the steam chest**
- **Know your flake cost per ton**
- **Track bushel weights**
- **Maintain flake consistency**
- **Simple to use**
- **Track and archive all events**
- **Access historical data**
- **Minimize equipment wear**
- **Maximize productivity**

Contact a SarTec representative to stop by and tell you about the new SarTime™ system today!

1-800-472-7832 **www.sartec.com**

YouTube On You Tube search for *SarTec Corporation* to learn more about SarTec's RSF program and other products.

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* Note: tonnage data is obtained from the SarTec Computerized Grain Conditioning system.

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