



Test Kit Technologies, Inc.

Evaluation of Frying Equipment Modifications and System Changes

Problem: The engineering group for a large manufacturer of fried batter and breaded fillets feels that by reshaping the heating tubes on their fryers, increased operating efficiencies may be achieved. They realize that oil quality and product quality and, therefore, efficiencies are linked. Is there a way to evaluate these proposed changes?

Background: The engineering group in most food production facilities has several charges. These include monitoring and maintaining existing lines, examining new systems to determine if they can be used, and modifying existing lines to increase operational efficiencies. They are also often asked to design and build specialized equipment. A weakness in some engineering groups is a lack of understanding of basic food science, or, more precisely, a failure to understand how the equipment they design really affects the food and processing operation as a whole.

Ideally, when food plant engineers undertake any project to change lines or reconfigure an operation, they should have input and assistance from food scientists and technologists. These persons can provide the expertise and tools to measure and evaluate how the changes will affect other parts of the operation. As an example, a sanitarian should always be consulted when a line or product handling system is to be changed. It will do the operation no good to move food more efficiently, if the new system is impossible to clean.

Using the VERI-FRY[®] Diagnostic Series to Optimize Changes in Fryer Design: Engineers and food scientists can use the VERI-FRY[®] Total Polar Materials (TPM), Water Emulsion Titratables (WET), and Free Fatty Acid (FFA) tests to monitor the effects of changes in oils in new fryer system configurations. The tests can track and predict the effects of these changes on both frying oil quality, and production operating efficiencies. The first step in such a program is to establish baseline data on the existing system. Ideally, a full battery of rapid and analytical tests should be done to obtain a full understanding of the system and oil degradation. Temperature readings, throughput volumes, and other data should accompany this test data on the system. If the analytical capabilities or monies to develop such a full laboratory chemical profile do not exist, the VERI-FRY[®] tests can provide excellent benchmark data. Use the quick tests and system monitoring tools (thermocouples, timers, etc) to determine your baseline data, and then make your changes. The quick tests are very sensitive and information can be gathered right at the line. The tests can provide solid data for decisions as to whether a system modification does or does not have potential benefit.

Benefits of Using the VERI-FRY[®] Diagnostic Series in Product Development: The main advantage of using the VERI-FRY[®] quick tests is the ability to gather a great deal of information very quickly and at a low cost. The quick tests are also less expensive to run than the traditional protocols. Finally, the tests can be saved, because the colors are stable. This allows technical staff to show others how the process modification actually affected the oil. For engineers, baseline VERI-FRY[®] tests from "X" time can be compared side-by-side with those collected at the same time or times in the new system, allowing them to visually see what happened in the system as it is modified.