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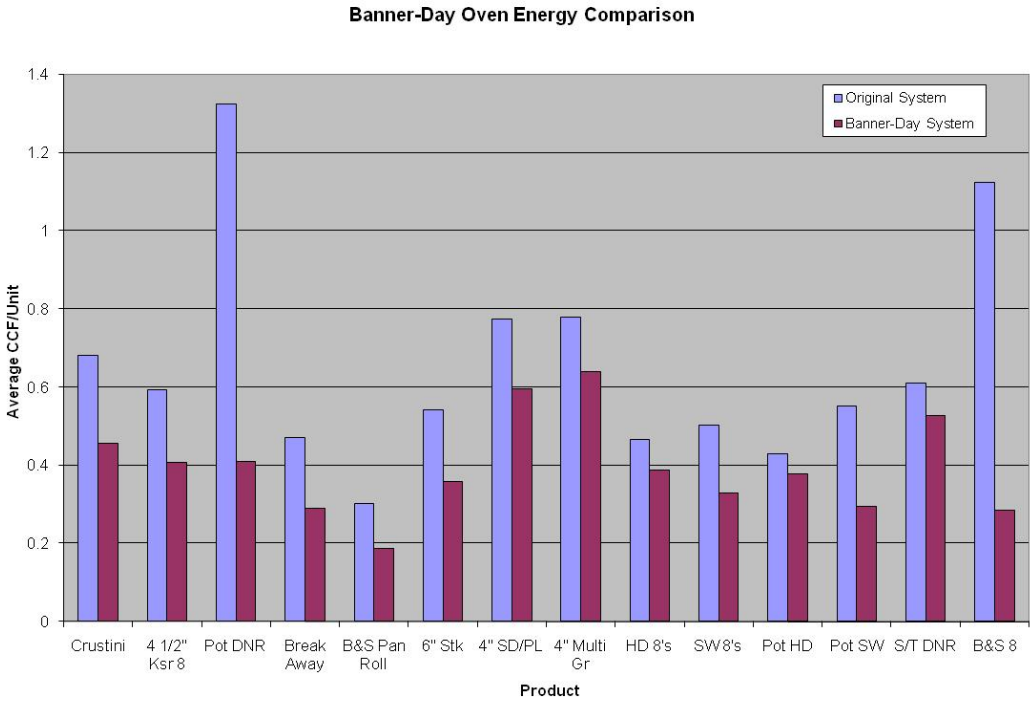
Banner-Day Systems Save Energy

By Joseph P. Day

Banner-Day's overall performance with energy reduction has been up to 20 to 25% while maintaining the high quality standards established by the baker. Recent installations suggest that even greater reductions are available. See chart for more detail.



The Banner-Day Total Oven Control (TOC™) System, which includes such features as "recipe" control, "tray skipping" and panel zone switches, provides for energy conscious oven operation. Techniques include tight product change-over (one zone break); switching off all zones during extended production breaks; and continued operation with a damaged tray.

The system provides precise temperature control under all modes of oven operation: full, empty or partial. Zone temperatures are controlled to ±2°F of set-point. All **"active"** zone burners modulate between high and low fire, typically 3:1 turndown, as a function of thermocouple temperature input and control set-point. The number of "active" burners staged **"on"** (typically 100, 75, 50, 25 or 0%) is a function of zone air header pressure input and oven load. This control strategy, exclusive to Banner-Day, results in high zone heat input turndown, typically 12:1, which does not require deviation from set-point to achieve burner staging. Energy is saved by elimination of zone temperature over-rides (flash heat) which increase oven exhaust stack, radiation, and convection loses. Temperature over-rides during oven breaks can be as much as 75-80°F in constant spark ignition systems.

The system shuts off gas flow to any burner that fails to light or stay lit. Each gas burner is individually monitored and controlled. An electric gas solenoid valve at each burner provides a positive shut off. This is in contrast to typical constant spark ignition systems wherein gas continues to flow through the failed burner(s) and vent, unburned, through the oven.

In addition, the system saves electrical energy by shutting off the ignition spark once the burner is lit. Savings are in the order of 100 Watt-Hrs per burner per hour. This is in contrast to constant spark systems, which, as the name implies, maintain constant spark the entire time the oven is in operation.

The system eliminates nuisance shut-downs from power outages of short duration (up to 8 seconds). Energy and product are saved by the elimination of the necessity to re-purge the oven.