



REDUCING PRODUCT GIVEAWAY AND YIELD LOSS IN FOOD MANUFACTURING

HOW REAL-TIME PROCESS OPTIMIZATION HELPS MANUFACTURERS REDUCE OVERFILLING AND AVOID OVERDRYING

Every food manufacturer is working to maximize yield, maintain quality, and improve profitability from existing production assets.

The challenge is production conditions never stay the same. Ingredient characteristics vary. Moisture changes.

Equipment drifts. Recipes evolve.

To maintain quality and compliance, operations often rely on conservative operating targets and safety margins.

While these decisions reduce risk, they also create hidden costs through product giveaway, excess energy consumption, yield loss, and reduced throughput.

Real-Time Process Optimization helps manufacturers recover that hidden margin by continuously adapting operating targets as production conditions change.

The following examples show how this approach reduces two common sources of loss:

Overfilling and Overdrying.

REDUCING PRODUCT GIVEAWAY FROM OVERFILLING

To maintain compliance, manufacturers often set average fill weights above target.

The amount may seem small for each package, but across thousands of units every day, the financial impact adds up quickly.

Overfilling is one of the most common sources of hidden margin loss in food manufacturing.

As production runs, natural variation means some packages will be lighter and some heavier.

HOW RTPO HELPS



Real-Time Process Optimization evaluates weight distribution, density, moisture, temperature, upstream process conditions, and shift effects.



Using current production conditions and knowledge from historical situations, RTPO calculates the optimal fill target and prescribes the setting required to maintain compliance while minimizing giveaway.



Recommended fill targets update as the process evolves. This allows manufacturers to replace fixed safety margins with condition-based operating targets that balance compliance and material cost.

BUSINESS IMPACT

0.5%-4%

Giveaway

150-400G

Of excess product in every 25 kg bag

\$20,000-\$500,000

In annual losses per production line, depending on production volume

Over time, excess product **reduces margin** and **limits the value** manufacturers generate from the same production volume.

TYPICAL OUTCOMES

0.5%-1.5%

Reduction in giveaway, recovering product that would otherwise be lost through conservative fill targets.

\$12,000-\$400,000

In annual savings per production line, depending on production volume and product value.

10%-30%

Reduction in weight variability, supporting more consistent filling and less reliance on excess safety margins.

The result is more **saleable product and higher margin** from the same production process, **while maintaining quality and compliance.**

REDUCING YIELD LOSS FROM OVERDRYING

Overdrying can also create significant hidden margin loss in food manufacturing.

To reduce food safety risk, manufacturers often dry products beyond the moisture level required. Those safety margins help protect product quality, but they also increase energy consumption and reduce product yield.

Every percentage of moisture removed unnecessarily reduces the amount of saleable product produced.

BUSINESS IMPACT

The financial impact can include:

- Higher energy consumption due to unnecessary drying.
- Lower product yield as excess moisture is.
- Reduced operating margin through higher production costs and lower saleable output.

RESULTS AT A GLANCE

Manufacturers using Real-Time Process Optimization have achieved:

4.5*

ROI within one year through improved moisture performance and lower energy consumption.

120+

Recipes optimized, delivering more consistent drying performance across a wider product mix.

Over time, excess product reduces margin and limits the value manufacturers generate from the same production volume.

HOW RTPO HELPS



Real-Time Process Optimization evaluates drying conditions, including product moisture, raw material moisture, density, dryer temperatures, residence times, upstream process conditions, and shift effects.



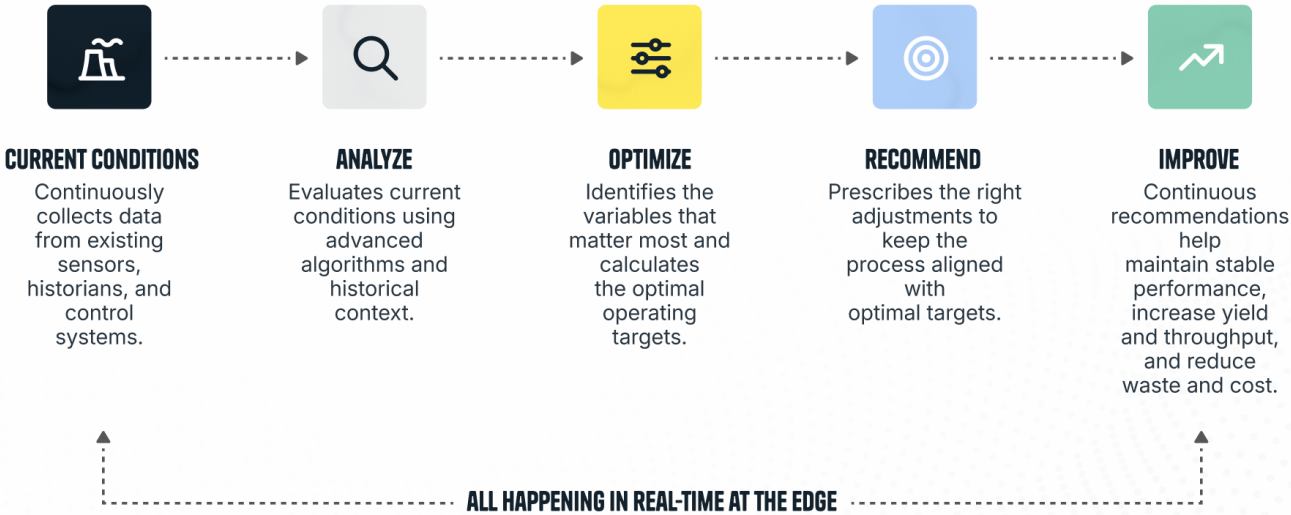
RTPO calculates the operating settings required to maintain product moisture within specification while minimizing unnecessary drying. Updated operating targets replace fixed moisture safety margins with condition-based targets that balance food safety, energy consumption, and product yield.

HOW REAL-TIME PROCESS OPTIMIZATION WORKS

In every area of food and beverage manufacturing, optimal operating targets change continuously as raw materials, equipment performance, environmental conditions, and production demand shift. Static setpoints cannot account for this variability.

Real-Time Process Optimization continuously analyzes thousands of process variables, identifies the factors driving performance, and prescribes updated operating targets as conditions evolve.

Rather than relying on fixed targets or periodic manual adjustments, operators receive continuously updated recommendations that help the process run closer to its optimal operating window.



- Continuously evaluates operating conditions using real-time plant data.
- Identifies the variables impacting performance under current conditions.
- Calculates the optimal operating targets to achieve the best outcome.
- Prescribes the adjustments operators and control systems should follow.
- Updates recommendations as conditions change, driving continuous improvement.

Braincube operates alongside your existing control and APC systems.

Braincube operates alongside your existing control and APC systems. Those systems execute the process. Braincube continuously recalculates the optimal targets those systems should run toward.

PROVEN RESULTS

Real-Time Process Optimization helps food and beverage manufacturers turn process improvements into broader business results.

Here are some examples of the outcomes manufacturers are achieving:

HIGHER YIELD

A global food ingredients processor: 6.5% higher yield in four months, recovering more product from the same production process.

A multi-site meat processor: 12% higher yield across multiple production lines by reducing waste and improving resource utilization.

REDUCED VARIABILITY

A global oilseed processor: Improved production consistency across processes with 700–1,000 parameters by aligning operating settings with current conditions.

LOWER ENERGY CONSUMPTION

A global oilseed processor: Improved energy efficiency by aligning operating settings with production conditions, reducing unnecessary drying and protecting operating margin.

HIGHER THROUGHPUT

A global food ingredients processor: 25% higher throughput within one year, producing more from the same production line.

FASTER ROI

A multi-site meat processor: ROI within three months by improving yield across multiple production lines and making better use of existing resources.

FROM PROCESS IMPROVEMENT TO BUSINESS GROWTH

These examples show how Real-Time Process Optimization translates process improvements into measurable business outcomes.

By closing the gap between average and optimal performance, manufacturers can recover hidden margin, increase production, and generate greater value from existing assets.

BRAINCUBE FOR FOOD & BEVERAGE

Braincube's Real-Time Process Optimization helps food and beverage manufacturers recover hidden margin by continuously adapting operating targets as production conditions change.

The result is greater yield, lower waste, improved energy efficiency, and higher profitability while maintaining product quality and compliance.

**BRAIN
CUBE**

Learn how Braincube helps food and beverage manufacturers reduce giveaway, improve yield, lower energy consumption, and recover hidden margin. Contact Braincube or your local partner to learn more.

