



Source: Cargill

Cargill's analysis 50% faster with Braincube's CrossRank AI

Faster data analysis enables Cargill to test and iterate production recipes without wasting valuable resources

Challenge

Cargill wanted to **spend less money** operating their oil boiler while maintaining steam output. Cargill's **internal analyses had yet to significantly impact the boiler's efficiency** because they couldn't identify the optimal set points to improve boiler efficiency without decreasing steam output.

Solution

Braincube **built a digital twin** of the boiler data. This enabled Cargill to **uncover crucial operating parameters**. Cargill **significantly saved** in boiler operating expenses and **increased weekly recipe production by 400%** after using Braincube for only one year.



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Boiler inefficiencies result in loss of time, money, and resources

Cargill wanted to operate their oil boiler more efficiently. The company only used 30% of the oil boiler's full capacity to produce steam for its operations. Running the machine more efficiently would enable Cargill to spend less money but generate the same amount of steam.

"Our primary goal was to understand the most efficient way we could operate the boiler within the correct capacity," Herber Souza, Refinery Process Engineer at Cargill, said. "There was a huge opportunity to improve steam production because it is a very expensive part of our operations."

Cargill tried taking on internal projects to improve efficiencies. Unfortunately, the parameters they identified internally didn't drastically impact the boiler's efficiency. Cargill's high volume of boiler data made it difficult to understand which parameters would improve efficiency.

BY THE NUMBERS

**100
screens**

used by Cargill machine operators before Braincube. Now, important parameters are pushed directly to operators using Braincube Live.

**400%
increase**

in Cargill product recipe production per week.

**50%
faster**

data analysis using Braincube than Cargill's previous processes.

Understanding the most important operational parameters would empower Cargill employees to make real-time decisions. Providing employees with this autonomy was key to saving the company money, valuable resources, and energy every time they used the boiler.



"There is magic in using Braincube."

— Suelen Granado, Chemical Engineer at Cargill

Braincube's CrossRank Analysis app uncovers opportunities

Cargill worked with their Braincube team to construct a digital twin of their manufacturing process. This product-based digital twin included thousands of parameters from Cargill's production data. This allows the Cargill team to virtually tweak their parameters and recipes to see expected outcomes without wasting valuable resources, time, or money.

Using Braincube's Advanced Analysis App, powered by CrossRank AI, the Cargill team uncovered important operating parameters that they hadn't considered in their initial analyses. Their analysis in Braincube found that the boiler's stability was inconsistent. This made it difficult to optimize the correct conditions for sustainable boiler use.

Braincube's prescriptive operating conditions isolated the vital parameters for the boiler's optimal operating conditions. These new realizations enabled Cargill to adjust their recipes

★ Unexpected Wins

- ✓ Establishing **standard operating procedures** is easier and more consistent using Braincube
- ✓ Machine **operators are strong advocates** for Braincube
- ✓ Using Braincube, Cargill's teams found **key operating parameters** that they missed during their internal assessment

and understand the expected outcomes without wasting resources.

The team sent out recipe recommendations that machine operators executed. These small changes dramatically improved the boiler's output efficiency.

Outcome: financial gains and improved efficiency

Cargill's boiler operating cost savings were significant in their first year using Braincube to optimize their production process.

By equipping citizen data scientists with easy to use AI, Cargill's process experts accurately identified the correct operating conditions to stabilize steam output. Putting Braincube's insights in front of Cargill's analysts enabled them to find faster solutions to their problems.

"There is magic in using Braincube," Suelen Granado, a Chemical Engineer for Cargill, said. "This level of impact on our production flow is transformational."

Implementation on the factory floor and operator buy-in

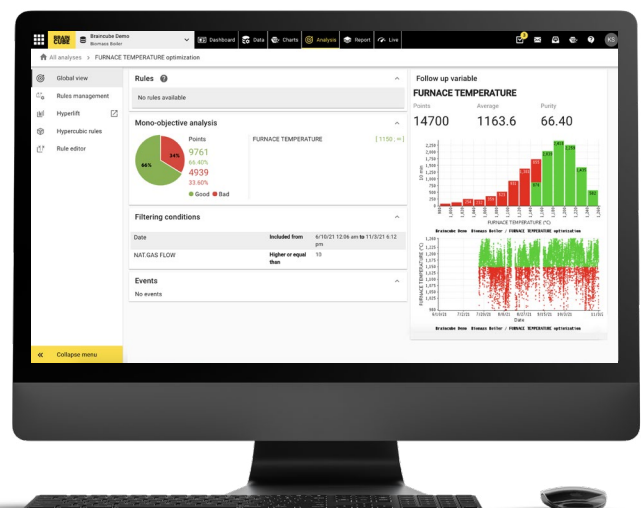
Talented operators are an important element of autonomous factories. Operators on the plant floor are in control of implementing the right changes at the right time, ensuring that production recipes are carried out correctly.

The Braincube team trained Cargill's machine operators on the Braincube Live platform. The Braincube team also explained how the live dashboard would help the operators perform their jobs better. Like most process changes, the initial training was met with some resistance.

But now, after using Braincube for a year, the operators are strong advocates for the platform.

"We usually have 100 screens to look at on the plant floor. The operators don't have time to look and find which parameter is incorrect," Souza said. "Braincube Live automatically brings them the main parameters they need to focus on."

The operators now understand that Braincube Live helps them perform their tasks better and with greater ease. To further assist the operators, the Cargill team installed monitors in the refinery and



at the boiler. The monitors provide operators with real-time machine data 24 hours a day.

"They all talk about how Braincube has helped them," Granado said. "It's a different scenario than when we first started the implementation."

Continuous improvement

Granado estimates that Braincube's data analysis is 50% faster than Cargill's previous data analysis processes. The Cargill team is now testing other production variables to determine if there are other processes they can improve and make more efficient.

With Braincube, the Cargill team can now produce 4-5 different product recipes per week instead of one per week. This enables Cargill to iterate on their processes, uncover new areas for improvement, and continue making impactful procedural changes.

"Before Braincube, all our recipe changes required us to run tests and ask operators to change things manually in order to see if the changes improved efficiency," Souza said. "Braincube's data

analysis allows us to see the best settings for each parameter without running production tests and wasting resources. We can make the recipe changes digitally and put them on a screen for machine operators to follow. It's a more consistent way to establish a standard operating procedure for each process."

Cargill plans company-wide 4.0 digital transformation

The Cargill team also uses Braincube's robust dashboards to track the production plant's KPIs and report results to upper management.

As Cargill moves forward, Braincube's use will continue to be a key factor in their transition to Industry 4.0. "Cargill's goal is to move towards digital transformation and introduce Industry 4.0 at a company-wide level," said Souza.

"Seeing this transformation with our oil boiler leads us to believe there is an opportunity to improve other numbers."

About Cargill

Cargill is an agricultural, financial, and industrial company that nourishes the world "in a safe, responsible, and sustainable way." With more than 160,000 employees in 70 different countries, Cargill operates at different levels of the global supply chain.



Thank you to the following Cargill employees:

Cezar Queiroz, Claudia Carvalho, Suelen Amanda Granado, Marcio Barbosa, and Heber Souza.



Why We're Different



A Single Hub to Access and Use Production Data

Operate at peak performance by leveraging your streaming data to take immediate action and your historical data to accelerate continuous improvement.

Our solutions are flexible. Whether you are looking for Edge, Cloud or a Hybrid offer, our software was designed by manufacturers for manufacturers with your ideal deployment: on prem or in a private or public cloud.



Continuous Structurization with Process Digital Twin

Find efficiency opportunities, cost savings, test changes without wasting resources or track your entire process using your Digital Twin from Braincube.

This dynamic replica lags all of your production variables and instantly identifies the most impactful variables in your process and prescribes how you can best leverage new optimizations with AI and Machine Learning.



Empower Your Employees with Autonomous Factories

Braincube continuously adapts to environment and process variability, giving you a continuous look into every step of your production process—so your team spends more time focused on improving operations, and less time wrangling data.

C-Suite, process engineers, operators and data scientists can use advanced apps that simplify data visualization, Big Data mining, complex third-party integrations and more.

About Braincube

Braincube is an IIoT platform suite with business and expert apps designed for industry. Founded by Laurent Laporte, Hélène Olphe-Galliard, and Sylvain Rubat du Mérac in 2007, Braincube has paved the way for artificial intelligence in the industrial world for more than a decade.

Braincube's platform and off-the-shelf apps empower manufacturers to find instant and long-term value from data streams and Big Data analytics. Its operating software provides immediate visibility into live conditions via Edge and provides a hub of analysis apps via Cloud to better optimize performance.

Combine Edge and Cloud to get the best results from your IIoT platform: adjust to real-time recommendations and improve future performance. Choose from a robust app store to help you achieve your context-specific goals whether you are striving for continuous improvement and higher productivity, cost-reduction via Machine Learning, asset monitoring and predictive maintenance strategies, or visualization with charts, tables, and dashboards.

Braincube provides a one-stop-shop to take control of your data and transform your operations.



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\$5.5 BILLION

Saved by Braincube users' production lines in the last 10 years

35,000+

Braincube users every day

250+

Manufacturing companies using Braincube in their factories

1,200+

Production lines running Braincube across 30 countries