

CARGILL PROTEIN CHINA MES/ERP INTEGRATION:

Real-Time Plant-Floor Data Drives
Continuous Improvement Efforts



CONTACT

CAT Squared

2035 Maple Ridge Circle

Conway, AR 72034

Ph 501.328.9178

TellMeMore@catsquared.com

Executive Summary

This case study highlights the value CAT Squared generated for Cargill Protein China (CPC) by implementing their full end-to-end manufacturing operations management (MOM) solution across a primary processing facility and a further processing facility.

By delivering on the value-driver KPIs (Key Performance Indicators) identified at the beginning of the project, CAT Squared's solution will save CPC in excess of \$1 million per year.

Post implementation, CPC has access to the data needed to support their continuous improvement programs including production excellence (stable operations and capacity improvement).



Background

CAT Squared completed their first pilot project for Cargill Latin America in 2015. As part of this project, Cargill implemented CAT Squared's solutions in a poultry plant in Nicaragua. The project resulted in a total ROI of less than four months. Based on this success, Cargill selected CAT Squared as their global solution for poultry primary and further processing. CAT Squared has successfully deployed in 22 plants with plans for further expansion.

This case study highlights the value CAT Squared generated for Cargill Protein China (CPC) by implementing a full end-to-end manufacturing operations management (MOM) solution across both a primary processing facility and a further processing facility.

This project was launched in April 2017 and completed in the first half of 2020, when much of the world was enduring various phases of COVID-19 quarantine. The project team overcame many challenges in the final stages of the implementation including tackling language barriers and overhauling the installation process to complete the project remotely during quarantine. Both teams (CAT Squared and CPC) displayed remarkable patience and ingenuity to deliver an on-time project under challenging circumstances. The results captured in this case study are a culmination of the project team's hard work and determination.

Problem Statement

CPC lacked visibility into their plants' processes because much of their data was

collected on paper and spreadsheets and manually keyed into their computer system. Additionally, the plants measured giveaway by sampling and could not determine the true value of their giveaway.

Value Delivered

To support their continuous improvement efforts, CPC sought a solution to deliver the following:

A manufacturing process solution that integrates information to the SAP ERP system

Reduced paper and data entry (in Excel and SAP)

Digitalization of manufacturing data

Access to real-time, plant-floor information and automatic reporting

Visibility of process-improvement data like giveaway reductions or productivity increases

Statistical process control (SPC) data and analysis to support continuous-improvement efforts in key areas:

- Production and energy efficiency improvement
- Quick response to equipment & process failure and quality control
- Yield increase and give-away reduction
- Product-mix optimization (PMO)



Cargill Protein China (CPC) Primary Processing CAT Squared go-live ceremony held in Chuzhou City in Anhui Province, April 2020.

Project Methodology

CAT Squared includes process mapping as part of the company’s scoping process, which is done in three parts: preparation, implementation, and go-live.

PREPARATION:

During the first phase, they teach the customer their methodology for MOM mapping (Manufacturing Operations Management), where the team develops a process map to have a visual understanding of processes occurring on the plant floor, what data is measured during those processes, and how that data flows across the customer’s network. This process helps the customer map their “current state.”

As part of the process mapping exercise, the team defines meaningful metrics using a value-driver matrix. This helps customers prioritize operational value drivers and develop measurable key performance indicators for data-driven decision-making.

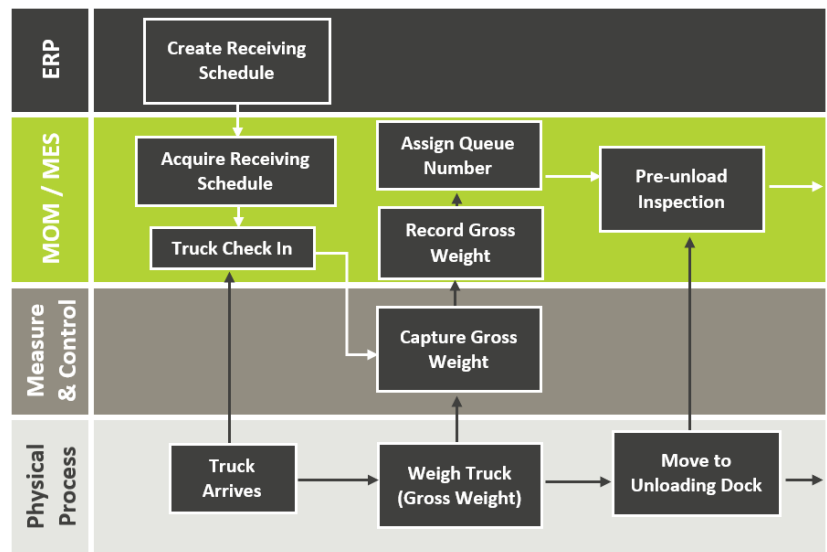
A key part of the process-mapping exercise is the gap analysis, where the team defines the “future state.” The objective is to determine exactly how the project will achieve the identified value drivers. This includes touring the facility, proposing software solutions, hardware, process engineering and improvements, procedural improvements, etc.

IMPLEMENTATION:

This is the final testing stage before go-live. This consists of full end-to-end (string) testing including integrations, performance testing, and user-acceptance testing with the super users.

GO-LIVE:

CAT Squared typically provides full onsite support during all shifts for the duration of the go-live phase. **(NOTE: Due to COVID-19, on-site support was not possible for the CPC go-live. The team overcame several challenges, described in more detail below in the section titled *Overcoming COVID-19 Challenges*.)** Once the system is running and processes are stabilized, the project team reviews the data to ensure all pieces are in place and functioning correctly. This stage can reveal configuration issues and provides time to build business intelligence and reporting from the data in order to demonstrate value from the system.



EXAMPLE PROCESS MAP: In the example above, the bottom layer represents the physical process occurring in the plant’s receiving area. The second layer identifies hardware used to take a measurement or control a process. In this case, the truck drives over a scale to capture the gross weight. The third layer represents the data layer illustrating how data is recorded and transmitted. In this example, CAT Squared MES pulls the receiving schedule from the ERP to check in the truck, receive the captured weight, and assign a queue number for pre-unload inspection. The data collected from the inspection would be communicated back to the ERP system in the next step of the process.

Having this clear understanding of what data is being gathered and how it flows across the enterprise helps manufacturers identify operational value drivers and develop measurable KPIs for data-driven decision-making.

CPC Value Drivers & KPIs

The CAT Squared value-drivers exercise revealed several opportunities to deliver quantifiable business results as a part of this project. Below are some examples:

- **Yield Improvements | Giveaway Reduction:** After the installation, 100% of real giveaway is now collected by the CAT Squared system, versus CPC's previous sampling process. In the primary processing facility, improvements were achieved through reduction in giveaway. In further processing, the team observed reduction in B-grade quality products.
- **Improved data accuracy:** Prior to installation, most production data was captured on paper and taken to a data entry team. Now, data is viewed in real time as production is executed. In further processing, about 50 paper records were replaced by dashboard reports.
- **Increased production efficiency and quick response to quality-control issues:** KPIs are displayed in real-time on the plant floor, significantly improving response time as well as enhancing quality control and production efficiency.
- **Improved process visibility through real-time dashboard reporting:** CAT Squared's Chinese-speaking resources worked with local process experts to develop reports displayed in the employees' native language.

- **Improved traceability of ingredients and dry goods:** The time to trace ingredients used in production now meet customers' requirements as CPC can report all movements made in the plant.

Overcoming COVID-19 Challenges

"Due to the COVID -19 pandemic, we had to remotely implement the last phase of the primary processing plant and the last two lines at the further processing plant," said Anthony Zhang, CPC project manager. "The time-zone differences and language barriers were the biggest challenges for our teams. There was concern these issues would delay the project. However, we worked very closely with Barbaros Ulker, the project lead from CAT Squared. Together, we made a very detailed daily work plan and held project update meetings at the beginning and end of each workday."

"To overcome the challenges of COVID-19, the business project team, IT and CAT Squared worked as one team," said Jesús Membreño, poultry group MES lead at Cargill. "The teams supporting the project remotely from locations around the world changed their work schedules to adjust to the Chinese time zones. We increased the formal communication cadence while working remotely to make sure each step taken was understood and fulfilled CPC's business requirements. We took special care to address language barriers between the teams. English was not the native language of the business project leader who is Chinese or the project manager who is from Turkey. Several business members with key roles did not speak fluent English. During meetings, we were all respectful to have time for translations when needed."



CAT Squared's Damian Clegg showing how to configure group defects in CAT Squared's FSQM (Food Safety Quality Management) system.

Results

By achieving the value drivers identified in the process mapping exercise, CPC expects savings will exceed \$1 million per year.

The team's momentum allowed CPC to roll out the two remaining FP lines in an aggressive timeline, which was an important goal to coincide with their ERP deployment. The lines were completed 100% via remote support due to COVID restrictions.

Post implementation, CPC has access to the data needed to support their continuous improvement programs including production excellence (stable operations and capacity improvement).



Cargill Protein China (CPC) CAT Squared go-live recognition held in Chuzhou City in Anhui Province, April 2020.

Keywords: Continuous improvement, poultry primary processing solutions, poultry further processing solutions, manufacturing operations management, business key value drivers, smart factory solutions, Industry 4.0, ERP integration, enterprise interoperability, statistical process control data analytics, key performance indicators



CPC FP and CAT Squared project teams.



Both teams held a celebratory dinner at the end of a project phase.



CAT Squared's Lyle Helton and Damian Clegg helping some of the local school kids raise money for their school.