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CASE STUDY · MARLUC SYNOPSIS

Kellanova Pringles dough digital twin

IMPLEMENTED 2025–2026 · AGRICULTURE AND FOOD · POLAND · BAND C · CLAIMED ONLY

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At its Pringles factory in Kutno, Poland, Kellanova uses sensors, a machine learning model and a digital twin of the dough to recommend recipe changes to operators. Siemens and the company report 10% more capacity without new equipment.

ABOUT THIS SYNOPSIS

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Facts and figures are as reported by the sources listed below, which may be incomplete, self-reported or out of date. Check the original source before relying on any figure.

The impact band, proof marker and SEAM view are MarLuc's opinion. The organisation is not a MarLuc client and has not reviewed or endorsed this synopsis. Names and trademarks belong to their owners.

NOTICE WORDING LAST UPDATED 16 NOVEMBER 2026

AT A GLANCE

AI used: Machine learning model and digital twin that predict dough behaviour and recommend recipe changes to operators.

Implemented: 2025–2026. Grade: band C, Process change, Claimed only.

Headline result, as reported: 10% more line capacity, 13% less waste and 7% less energy, by Siemens' account; operators decide on each recommended change

1 · The case

The facts, as reported by the 3 sources listed at the end. Where a source is silent, the field says "Not reported".

Organisation

Kellanova (Pringles plant, Kutno), owned by Mars. Snack maker whose brands include Pringles, acquired by Mars in December 2025. The deployment is at the Pringles plant in Kutno, Poland. Canvas block: 4. Operations and process. Also 6. Data and technology, 5. People and skills.

Business challenge

The challenge. Potatoes, flour and other ingredients vary from one delivery to the next. More than 200 parameters can influence a Pringle, according to Kellanova senior engineering director Jan Laenen. Experienced doughmakers managed the variation by touch, sight and sampling, usually after it had started to affect production.

Who implemented it

Siemens (Software vendor): Developed the edge AI model, digital twin and energy management system with the plant.

Technology (SEAM pillar E)

SEAM types: T8 Predictive / ML models. Deployment: Mixture. Vendors and products: Siemens, Siemens Xcelerator.

Where it was built in: Sensors on the Kutno line feed an edge AI model and a digital twin of the dough; harder cases go to a cloud-based model with historical production data.

What changed

Before: recipe changes relied on operators' experience and reacted after variation affected the line. After: a model predicts dough behaviour and recommends recipe changes, and operators decide. Results, by Siemens' account: 10% more capacity without new hardware, 13% less waste and 7% less energy. [1] [2] [3]

What it cost

Between $4m and $5m, per The Wall Street Journal as relayed by Food Manufacture and Food Processing. How the investment split between sensors, software, cloud computing and integration is not disclosed, nor are running costs.

What it saved

By Siemens' account: line performance up 10% without buying new hardware, waste down 13% and energy use down 7%. A return of more than 40% on the investment, per The Wall Street Journal as relayed by Food Manufacture. [1] [2] [3]

Governance and control

Operators decide whether to apply each recommendation, per Food Manufacture. Food Manufacture notes that the figures were supplied by the companies and not independently assessed, and that baseline volumes and reject rates are not published. Accountable owner and model monitoring: Not reported.

S2 · Accountable owner · Not reported
Not reported.

A1 · Safe use · Not reported
Not reported.

A2 · Human in the loop · Evidenced
Operators decide whether to make the changes the model recommends, per Food Manufacture's reporting.

A3 · Monitoring and assurance · Not reported
Not reported. Food Manufacture notes the gains were not independently assessed. [1]

A4 · Vendor AI · Not reported
Not reported. Siemens supplied the AI model; terms and data handling are not described.

A5 · Agent controls · Not reported
No agents described.

A6 · Standards and regulation · Not reported
Not reported.

What worked, what did not, what is unproven

WORKED

– Capacity, waste and energy, by Siemens' account: 10% more capacity, 13% less waste and 7% less energy.

DID NOT

– Not reported

UNPROVEN

– The figures without published baselines or independent measurement, as Food Manufacture points out.

– Whether the model adapts to other plants, equipment, suppliers and climates.

– Whether the system lets the plant use a wider range of potato or grain varieties, which Food Manufacture says has not been shown at scale.

Timeline

Dec 2025 Mars completes its acquisition of Kellanova, after four years of development work on the system with Siemens [1]

Aug 2026 The Wall Street Journal reports the Kutno project; Food Processing relays the figures [2]

Sept 2026 Food Manufacture reports the system runs on one line, with Belgium next and the US planned for 2027 [1]

2 · Grade and SEAM assessment

MarLuc's opinion, made on the evidence above. How cases are graded: marluc.co.uk/case-studies/how-we-rate

Level of change and impact

Claimed: Not applicable. Grade: C, Process change. Proof: Claimed only. Level of change: Process change.

Process change (Level 2, band C). A production process is now run on model recommendations, with operators keeping the decision; reported on one line.

A production process redesigned around model recommendations: the dough recipe is adjusted from live data before variation causes losses. The gains are reported by the supplier and the company, and cover one line.

The SEAM view and lessons learnt

The model handles a problem people found hard to see in time: how natural variation in ingredients will affect the product. Operators keep the decision, which suits a food plant where a wrong change can affect quality or safety. For a larger manufacturer, the transferable lesson is to publish baselines with the gains, so the case for each further line rests on measured results.

1. Keep operators as the decision makers on model recommendations that change a recipe.
2. Record baselines for capacity, waste and energy before the system goes live.
3. Test the model on a second site before claiming it transfers.

Evidence

Score 1 of 4. Self-reported: figures from Siemens' customer reference and from the companies via The Wall Street Journal, relayed by trade press.

Evaluation method. Self-reported company figures: before and after comparison by Siemens; baselines not published.

Sources disagree. Food Processing describes the 10% gain as an improvement in the quality of Pringles produced; Siemens describes it as a 10% increase in capacity. Food Processing says the project took more than a year; Food Manufacture says Kellanova spent four years developing the system with Siemens.

Status. Ongoing: one line in Kutno, with Belgium expected next and the US planned for 2027, per Food Manufacture in September 2026.

3 · Original sources

Read these in full. To challenge a fact or a grade, use the contact form at marluc.co.uk or the link on https://marluc.co.uk/case-studies/kellanova-pringles-dough-digital-twin

[1] Food Manufacture: Can AI unlock your factory's hidden capacity? (September 2026)
https://www.foodmanufacture.co.uk/Article/2026/09/04/how-ai-is-increasing-capacity-at-the-pringles-factory/

[2] Food Processing: AI, digital twins help Kellanova make the perfect Pringle (August 2026)
https://www.foodprocessing.com/on-the-plant-floor/article/55396731/ai-digital-twins-help-kellanova-make-the-perfect-pringle

[3] Siemens: customer reference, Pringles stacks data to unlock innovation leaps
https://references.siemens.com/en/reference/kellanova?id=45209

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