



# AI Transforming Product Development

Reduced costs, reduced CO2, reduced energy use, increased sales

## Executive Summary

Dorfner used the Citrine Platform to:

- Identify high performing ingredients that when used in the final product enable customers to reach their target performance.
- Increase revenue across the company by more than **30%**.
- Reduce energy and CO2 footprint.
- Shrink formulation development time by **84%**.
- Maintain quality and consistency of formulations using local raw materials in new regions.
- Get more business outside Europe.

## Customer

Gebrüder Dorfner GmbH & Co. is a 130 year-old family business in Germany's Mittelstand. Kaolin and Quartz deposits are mined to create innovative functional fillers for a wide range of applications. However, they are natural materials and their properties vary depending where they are mined. Kaolin deposits are passed through a complex series of processing and refining steps to create top-grade, consistent calcined kaolins for use in the paints and coatings industry.



## Objectives

On engaging Citrine, Dorfner's objectives were to reduce the time to create new formulations, find new uses for the raw materials they produce, and improve the sustainability of their products.

**Concern:** ROI, pricing, project costs

"What is it going to bring us?"

**Dorfner answer:** "It is not a typical investment project. You won't know what it brings you before you start. But if you don't start - you will never know."





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## Process

### Data

Dorfner had a wealth of historical data detailing processing parameters associated with a large variety of experiments, which they were able to leverage with the Citrine platform.

**Concern:** Quality and quantity of data

**"Is my dataset large enough?"**

**Dorfner answer:** "Start with the available data, fill the gaps and optimize afterwards."

### Modeling

Dorfner was able to model the functional properties, cost and energy use of different candidate materials, resulting from processing Kaolin in different ways. Key to this was enabling the AI to understand an use information on the complex sequence of refining and and calcinating steps.

### Change Management

The Citrine Platform is designed to be used by product experts with no data science background after minimal training. Supported by the Citrine Customer Success Team, the product experts got going on the platform quickly, and were able to see the benefit of using the platform. They enjoyed being able to uncover insights about their scientific domain.

**"AI felt very far away. [But] with Citrine you don't even need any programming skills."**

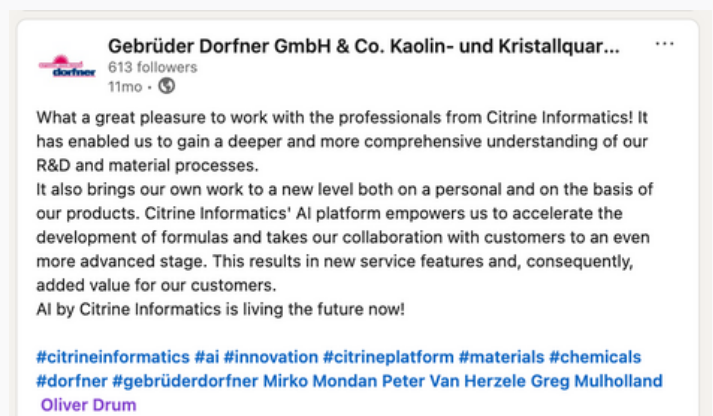
Florian, Application Engineer

**"We see how the people grow. We see in the lab technicians, they literally change the way how we work."**

Mirko Mondan, CEO

**"We understand our own laboratory more than before. It's fun to work in this way."**

Oliver, Application Engineering Leader





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## Results

### Production Optimization

#### *Reduced energy and CO2*

Production line settings were optimized to save energy, reduce carbon footprint, and increase efficiency.

#### *Improved resilience*

The team were able to optimize calciner parameters to maximize efficiency of operation with different fuel types.

**30% more revenue**

### Increased Productivity

#### *Time and cost savings*

By modeling hypothetical ingredients and their performance within final products, the team were able to do **“Virtual Testing”** of new products, reducing the number of experiments they needed to do, and shortening development cycles.

#### *Better customer responsiveness*

The Dorfner team were able to respond quicker to their customer’s requests and be more knowledgable partners.

### Product Optimization

#### *Differentiated product*

The Dorfner team developed a new **DORKAFILL®** filler, tailormade for a specific end product.

#### *Consistent quality*

The team were able to adapt production settings according to where the Kaolin was mined, adapting to the natural variability in properties. This resulted in a higher quality, more consistent product.

### Higher revenues

#### *Doing more with less*

The new, higher quality product, could be used in lower amounts to have the same affect.

#### *More sales outside Europe*

Dorfner’s higher quality product enabled the required performance with less material. Excess capacity enabled Dorfner to enter new markets (outside of Europe) that were previously out of reach.



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Watch this [video](#) to hear from the researchers at Dorfner



[Read this article to hear from their CEO](#)