
AVEVAWORLD
PARIS

Elevating Operational Excellence at Bayer:

Learn how Bayer increased capacity and efficiency with Industrial Analytics

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Bayer at a glance

3 divisions

// Crop Science
// Pharmaceuticals
// Consumer Health

Represented by **354 consolidated companies** in **83 countries**

99.7k employees worldwide in 2023*

€5.4bn investment in R&D in 2023

€47.6bn sales in FY2023

Tackling two of the most pressing challenges of our time: **health & nutrition**

Diverse, international focus with cross-border and cross-division **people development**

* As of December 31, 2023; employees in full-time equivalents

Uncover hidden potential to initiate process improvements directly on site

Situation in Crop Science 2020

- Many sites / plants have data historians
- Large amount of data available
- Most sites / plants use data descriptively only
- Strong pull from some sites to engage in data analytics

Benefits & business impact

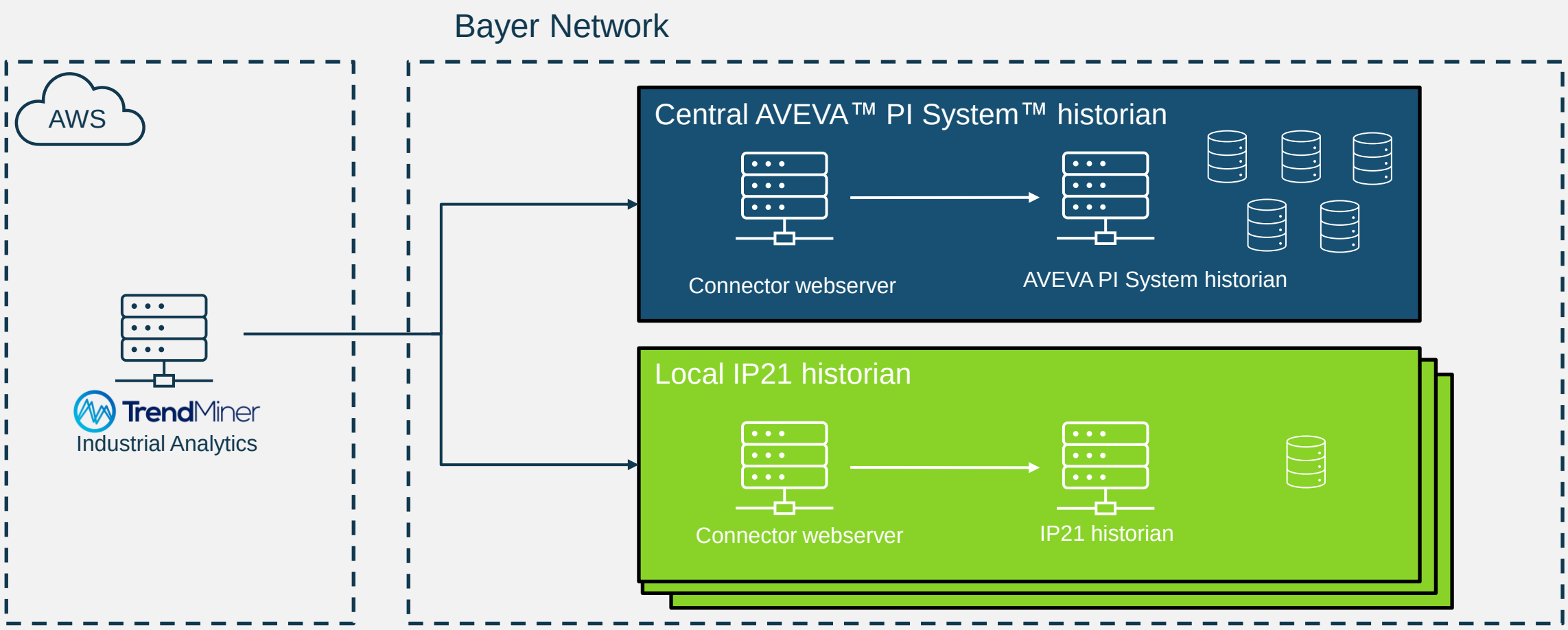
- Increase process understanding
- Support data driven decision making
- Value through data driven process optimization
- Create tangible process improvements like:

COGS ↓ Yield ↑ Quality ↑ Cycle time ↓

→ Based on a market research, Crop Science decided to implement TrendMiner on top of the existing AVEVA™ PI System™

Connecting the dots: data infrastructure from site to cloud

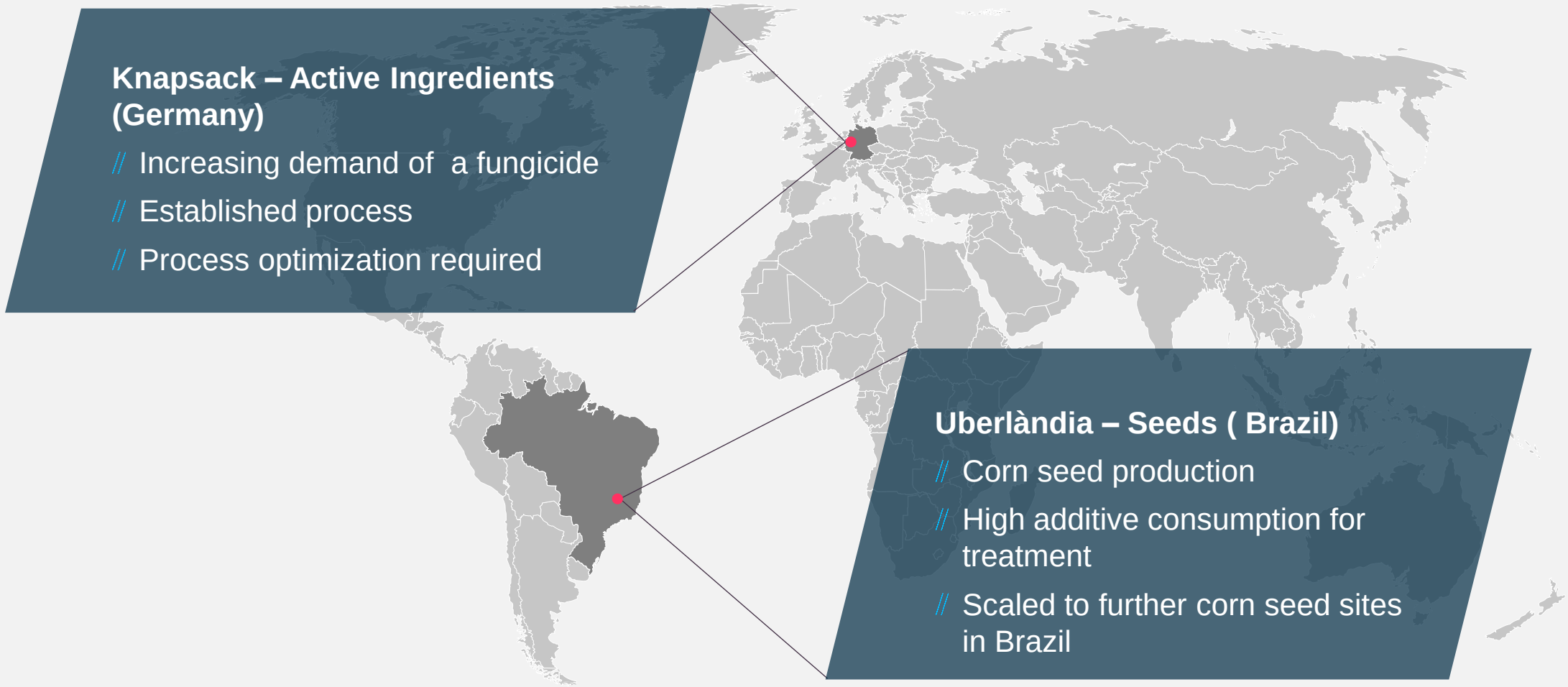
Scalable data infrastructure ensures fast roll-out



Successful global roll-out of TrendMiner confirmed by multiple use cases realizing process optimizations and cost reduction

High-value generating use cases were achieved across all regions, encompassing both active ingredient and seed production.

Example of two recent use cases that were fully implemented



Optimizing a continuous distillation

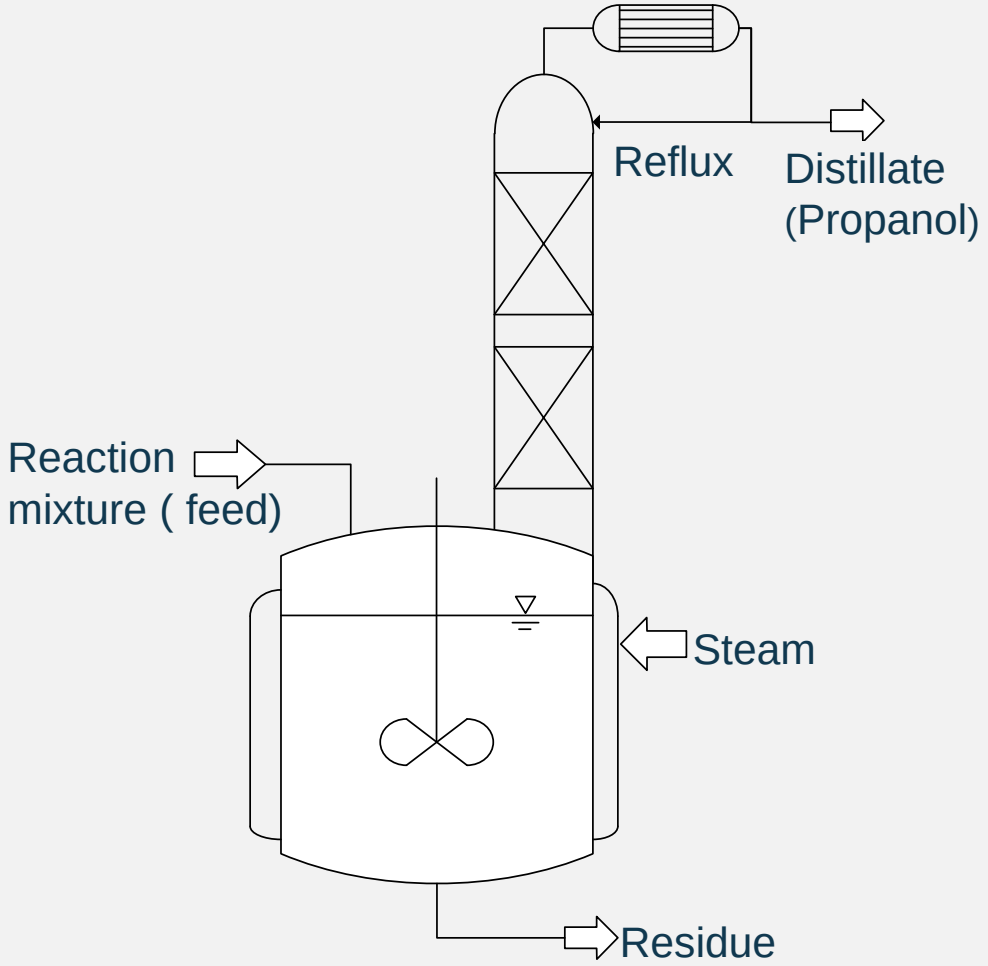
Example No. 1: Process optimization in Knapsack (Germany)

Starting conditions

- // Batch distillation with Propanol
- // Cycle time correlated to distillation
- // Reflux ratio to control quality of distillated propanol

Challenge

- // Reduce steam consumption
- // Minimize cycle time to increase output



Analyzing 2000+ batches to enhance efficiency and identify root causes

Analysis Phase

// Analysis of > 2000 batches (good & mediocre)

// Statistical data analytics to understand correlation and various states

Observations

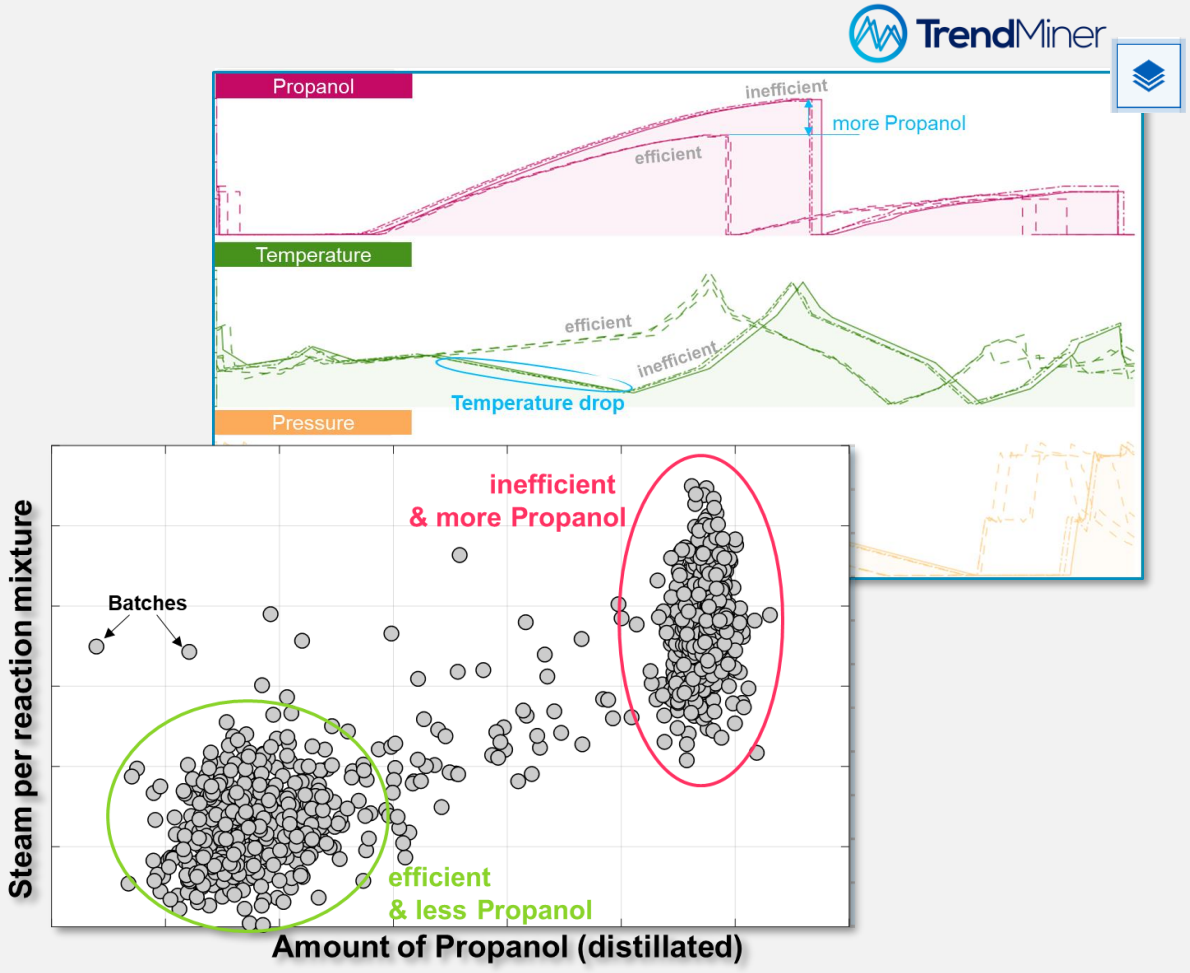
// Process varies significantly between different batches

// Two distinct states identified

Possible root causes

// Amount of propanol in reaction mixture too high

// Incorrect measurement of distillate



Modifying process control to optimize steam quantity

Process Optimization

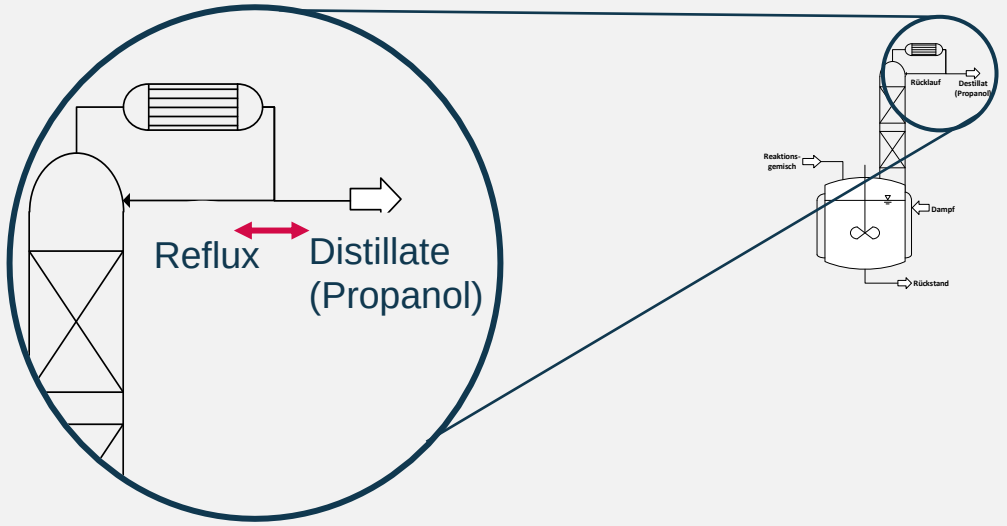
- Independent process control
  - decoupling the process control from the measurement of distillate
- Reflux regulation based on steam quantity

Monitoring

- Definition of Golden Batch
- Set up dashboards to monitor at a glance
- Set up monitors to for alerts in case of deviations

Improvements

- Capacity increase by **36 %**
- Energy efficiency increase by **26 %**



Monitoring additive consumption in corn seed production

Example No. 2: Uberlândia (Brazil)

Corn Seed Production

- Corn seeds are coated with an additive to ensure adhesion of subsequent treatment with actives (e.g. fouling, color, insecticide)
- Little monitoring on operational level
- High additive consumption led to supply shortage, high costs and unnecessary product discard

Approach

- Comparison of 100+ batches
- Calculation of polymer dosage (Tag-Builder)
- Dashboards to monitor on operational level

Transferring success to other sites

Implementation

// Project started in Uberlândia

// Scaled to all corn sites in Brazil within three weeks

Improvement

// Significant reduction of additive resulting in cost reduction and more robust supply chain

// Better process understanding on operational level

// Enhanced seeds coating

// Waste reduction towards sustainability goals

Bad treatment

Good treatment

Continue to provide our production workers with the right tools to augment domain knowledge with data driven decision making

High adoption rate ensures discovery of further optimization use cases

Next Steps

// Integrating additional data sources for a comprehensive 360° view of operations.

// Enhancing skills through advanced training to expedite data-driven decision making.

CHEMICALS | GERMANY, BRAZIL

Bayer maximizes production efficiency without capital investment

Challenge

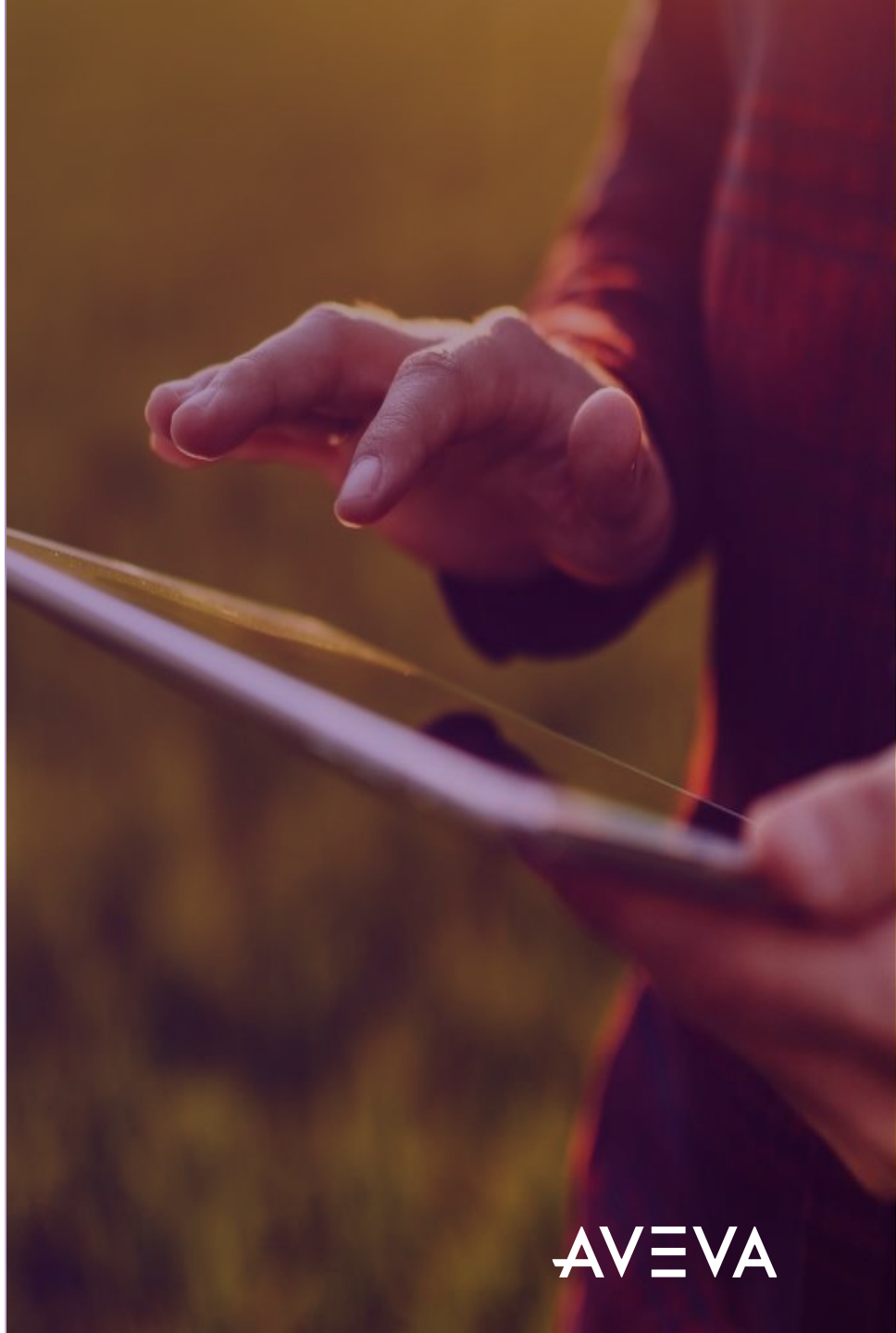
- Demand exceeding production, increase needed while remaining compliant
- Globally located and remote sites
- Production data often used in a descriptive manner

Solution

- Global data management with AVEVA™ PI System™, combined with TrendMiner industrial analytics to drive data driven decision-making for everyone in operations.

Results

- **Unlocking better process understanding at operational level and driving data driven decision-making**
- **Increased production capacity by 36% and improved energy efficiency by 26% (Germany)**
- **Substantial decrease in additives leading to an enhanced seeds coating and more reliable supply chain (Brazil)**



Thank you!

Contact:
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Please remember to…

Navigate to this session in the mobile app to complete the survey.

Thank you!