oliveex
IoT. Simplified

IoT-Enabled
Quality Control

Digitalising Food and Beverage Industry using AI

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The Problem

“Analog” Production Processes

Industrial machines **don’t communicate with each other.**

Manual workflows lead to:

→ Increased **working hours & costs**

→ **Being reactive** instead of proactive

→ Poor **data exploitation.** Poor **optimization**

→ Reporting/logging **based on spreadsheets**

→ Poor knowledge about **efficiency & productivity**

Need for **process digitalization**.

Problem

The current ways

Inefficient Production Workflows

01. Existing Setups

- PLC-based sensors providing monitoring only on-site.
- Accurate and reliable but not IOT & AI ready.
- Absence of real-time error reporting.
- Short or no data retention.

02. Lack of automation

- Large amount of data produced but not used.
- Alerting mechanisms require human presence.
- Inefficient reporting. Mostly handwritten reports.
- “Manual” traceability. Lack of automated workflows.

03. Lack of data exploitation

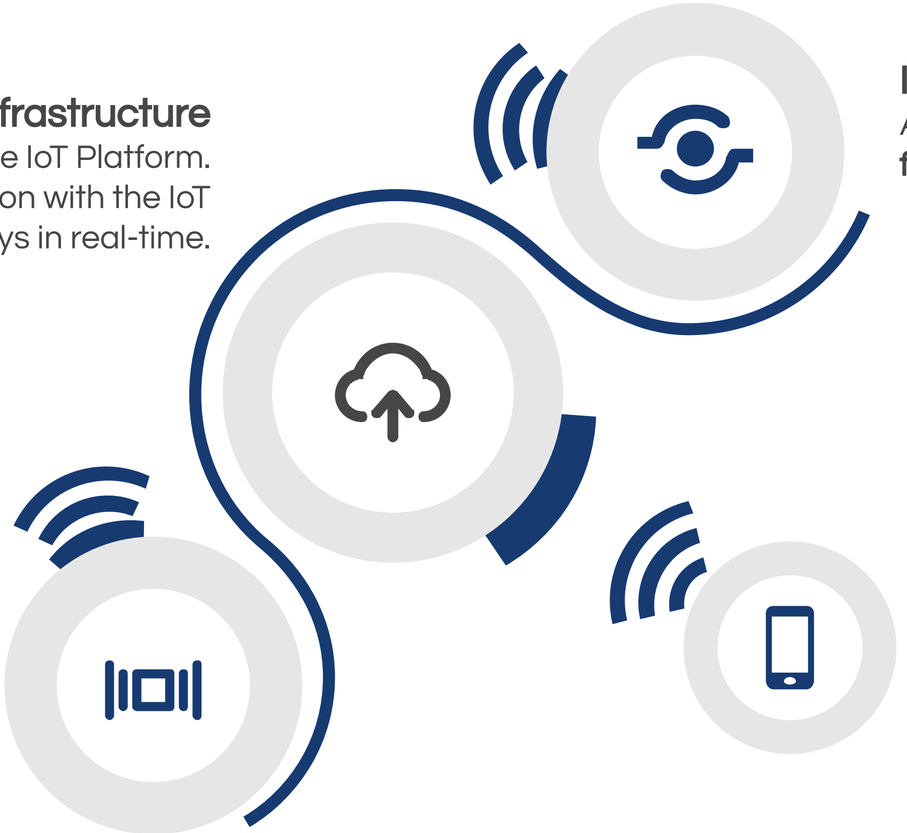
- Production performance and efficiency are difficult to be monitored.
- Equipment maintenance isn’t proactive.
- Raw data cannot be analyzed to provide insights.

Solution

All-in-one IoT Platform

Cloud Infrastructure

Hosts every functionality of the IoT Platform. Bi-directional communication with the IoT sensors and the gateways in real-time.



IoT Sensors

Autonomous devices, **collecting raw measurements from the product 24/7.**

IoT Gateway

Communicates with the existing PLC setup and **transforms every attached component into a virtual IoT Device.**

Web-Based Application

User-friendly dashboard that enables **production monitoring, analytics, batches management,** and platform configuration.

Solution

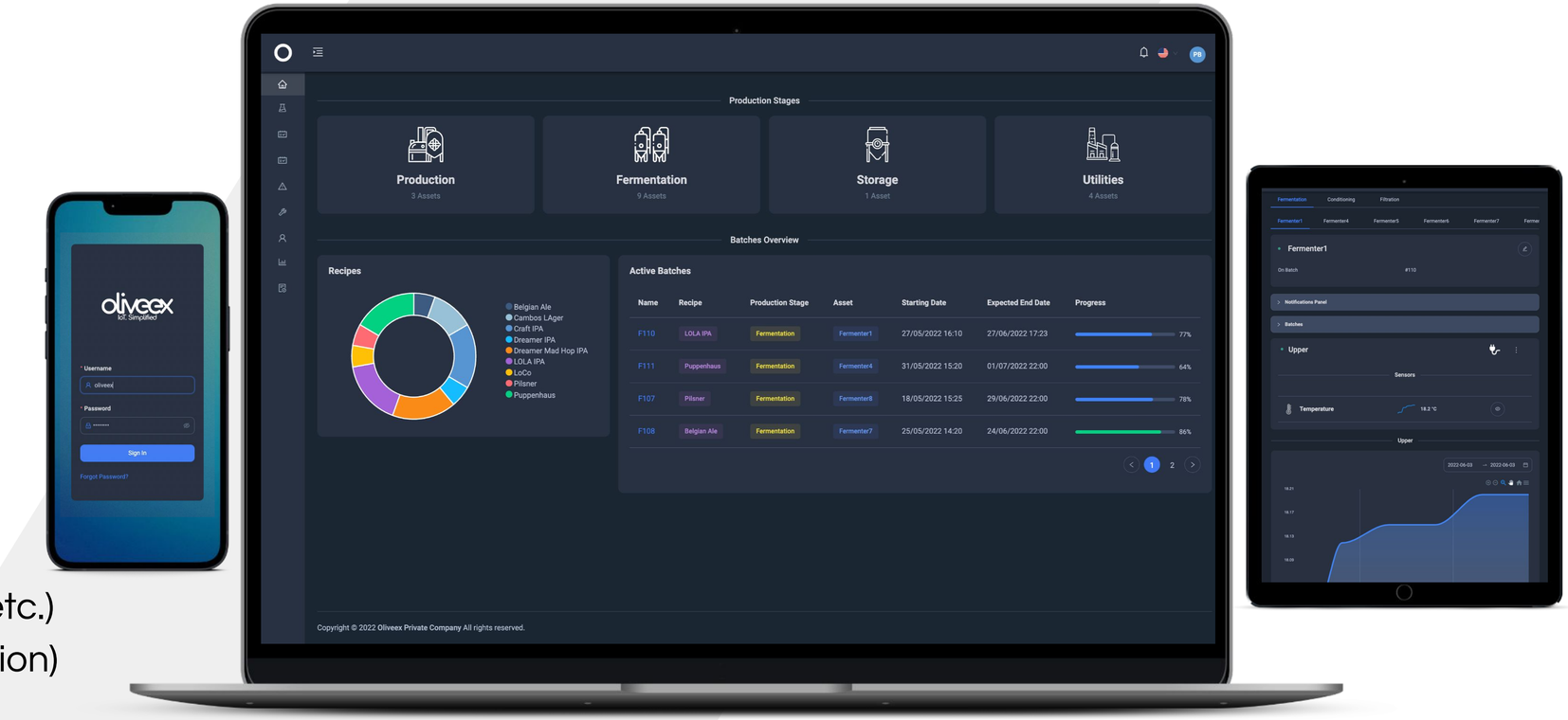
Web Platform

Fully-cloud based

- Highly Scalable
- End-to-End Encryption
- Enables real-time AI-Engine

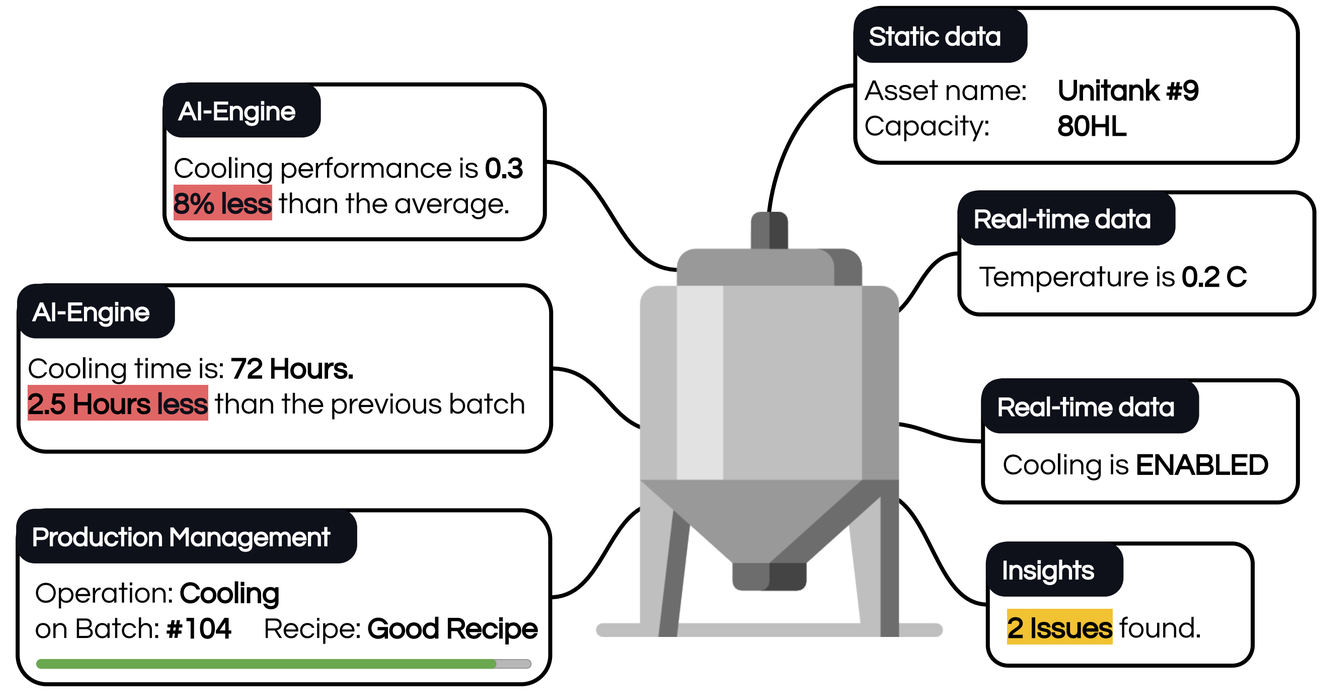
Web-Based Application

- Accessible from any device
- Real-time & Remote Monitoring
- Digital Traceability Features
- Data analytics (productivity, maintenance etc.)
- Real-time Notifications (w/ Anomaly Detection)



Value Proposition

From IoT Data to Insights



Case Study

Dairy Industry

Collaboration with a company operating in the field of manufacturing of:

- ➔ livestock equipment,
- ➔ milk transportation
- ➔ cooling tanks,
- ➔ cooling systems for livestock units..

Operations monitored:

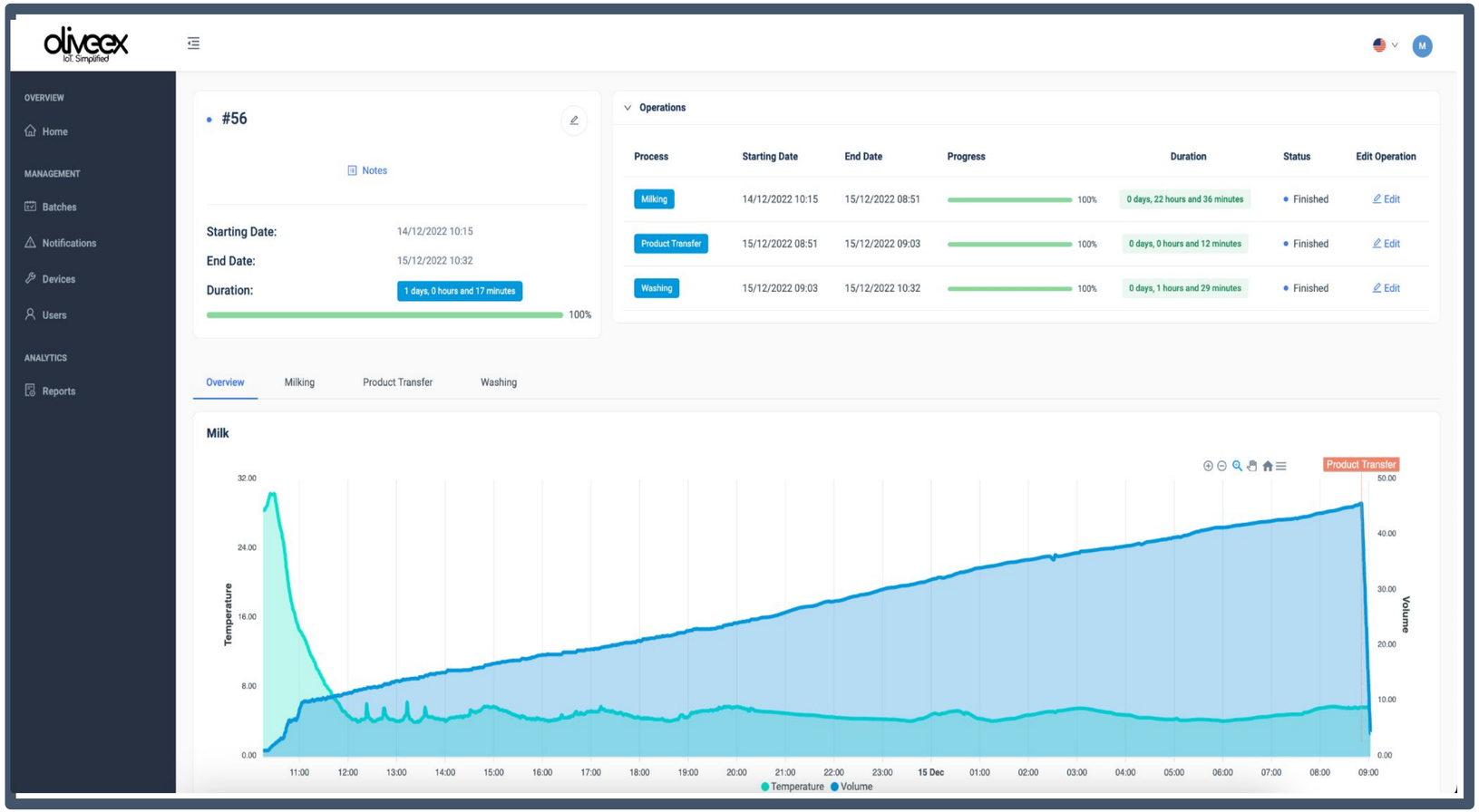
- ➔ Milking
- ➔ Product Transfer
- ➔ CIP

Test Case

Milk Cooling

AI applications:

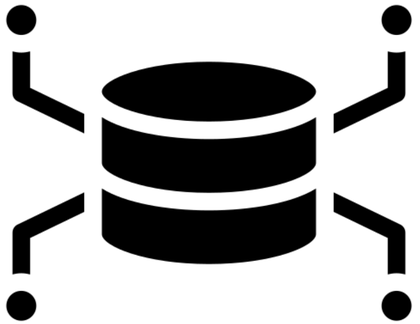
- ➔ automated process logging,
- ➔ CIP
- ➔ comparison between same processes,
- ➔ equipment evaluation..



AI Engine

Historical Data

Data Warehouse that stores all data from the ETL process into tables created to serve the Machine / Deep Learning models prerequisites.



AI Engine

Classification / Prediction Models

Classification models:

1. Process Identification using a Random Forest Classifier (RFC)
2. Error Value Detection using a RFC

Prediction Model:

1. Multivariate - Multi output real time temperature forecasting model.
2. Implemented with Tensorflow.
3. Uses LSTM along with Dense layers.
4. Predicts 3 temperature values in the future using 5 temperature values in the past.

Data Analytics

Product Scope

01. Automated Reporting/Logging

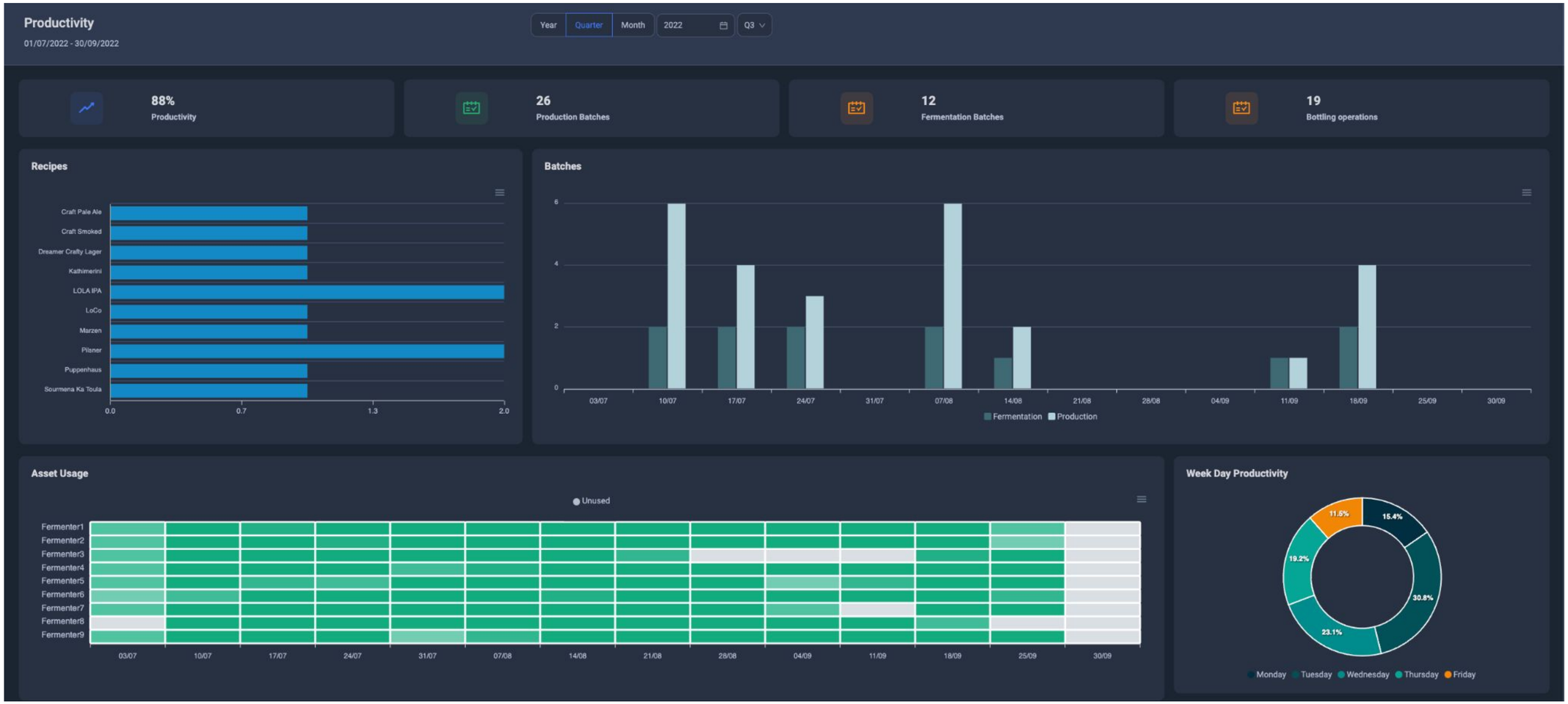
02. Data Fusion for later comparison

03. Equipment evaluation

Data Analytics

Product Scope (2)

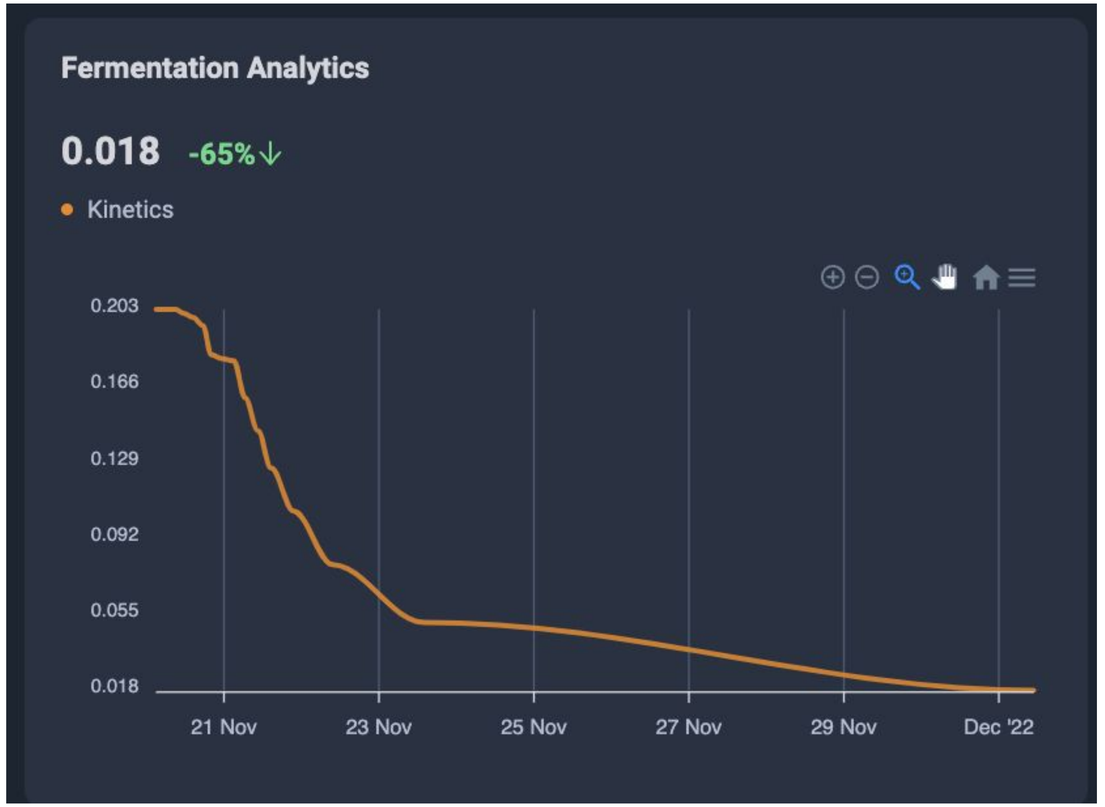
Productivity



Product Scope (3)

Fermentation Analysis

- Fermentation Kinetics: Identification of the kinetics of the fermentation process using temperature values.

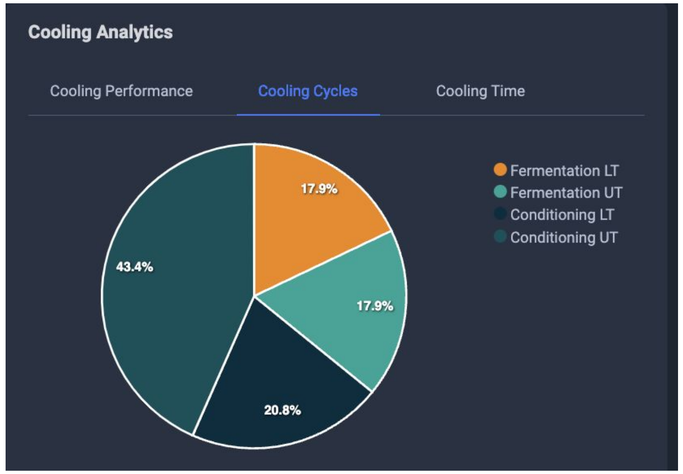


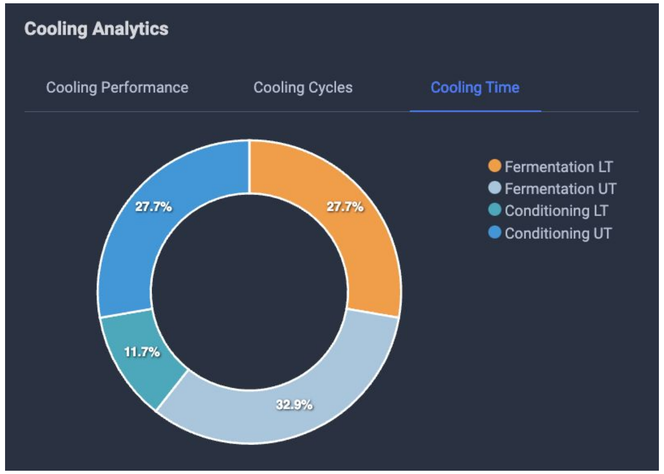
Data Analytics

Product Scope (4)

Cooling Analytics

- Cooling Performance indicator is defined as the difference in temperature values per hour.
- Sum of the cooling cycles during each process
- Total cooling time during each process





The people behind Oliveex

Dimitris Garagounis
Co-Founder & CEO

Electrical and Computer Engineer MSc.
Leading the **business & operations development.** Previous entrepreneurial experience. Supervising **the hardware and IoT architecture**. Six years of experience in hardware & electronics engineering, low-power systems, and IoT. LinkedIn

Konstantinos Akrivos
Co-Founder & CTO

Electrical and Computer Engineer MSc.
Project management, and supervision of **the software stack architecture.** Four years of experience as a product manager. Previous experience in IoT, system-level software, back-end, & cloud services. LinkedIn

Thanasis Gkritzios
Cloud/DevOps Lead

Electrical and Computer Engineer MSc.
Back-End Engineer and technically **responsible for deployment and maintenance** of the cloud-based platform. Three years of experience in back-end software, APIs, Containers, Linux OS, and Cloud services & security. LinkedIn

Christos Voulgaris
Application Lead

Electrical and Computer Engineer MSc.
Full Stack Web Developer and technically **responsible for web application design & development.** Three years of experience in full-stack web development, data engineering, databases data handling and visualization. LinkedIn

Mixalis Chatzieleftheriadis
Head of Sales & Marketing

Sales manager in charge of the sales expansion and marketing plan. **20+ years of experience as sales executive in relevant businesses** with **wide food industries network**. Sales Manager at leading fermentation tanks constructor company. LinkedIn

Eleni Koutsoni
Data Engineer

Electrical and Computer Engineer MSc.
Data scientist/Data Engineer and **technically responsible for data analytics and optimization** using machine learning and deep learning. Two years of experience in AI & data science. LinkedIn

Contact information

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Thank you!

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