

FROM TRASH TO TREASURE



FACTSHEET

Year founded:	2022
Location:	Tübingen, Germany
Founders:	Max-Frederick Gerken, Lars Wolff
Technology:	Artificial Intelligence, Computer Vision, Machine Learning, Multispektrale Sensorik
Business model:	Product-as-a-Service
Employees:	20+

About optocycle



Optocycle has a clear vision: a world in which materials are fully identified and understood.

As a leading innovator in material analysis for the recycling and raw materials industry, Optocycle develops optical sensor technology and advanced machine learning to precisely identify and evaluate complex material streams. In this way, Optocycle lays the groundwork for informed decision-making and transparency in the handling of primary and secondary raw materials.

Founded in 2022 and based in Tübingen, this multi-award-winning company is playing a key role in driving the transformation toward data-driven, resource-efficient materials management.

The problem

The construction industry is responsible for the largest flow of materials worldwide, but faces major challenges

Lack of transparency: The composition of mineral construction waste is estimated manually through visual inspection. This process is slow, subjective, and prone to error. There is no reliable data foundation.

Waste of resources: Valuable materials such as concrete or bricks end up in downcycling (e.g., in road construction) or in landfills due to inadequate sorting, instead of being reused as high-quality secondary raw materials. Furthermore, space in landfills is already scarce and will become a massive problem in the coming years.

Economic inefficiency: A lack of data leads to billing disputes, inefficient transport routes, and suboptimal utilization of recycling facilities. In practice, this uncertainty often manifests as risk premiums, machine downtime, and economic disadvantages.

Environmental impact: The constant production of new building materials, particularly cement, is extremely energy- and CO₂-intensive. The potential of the circular economy remains untapped. Furthermore, unnecessary transport routes also burden the environment.

Our solution

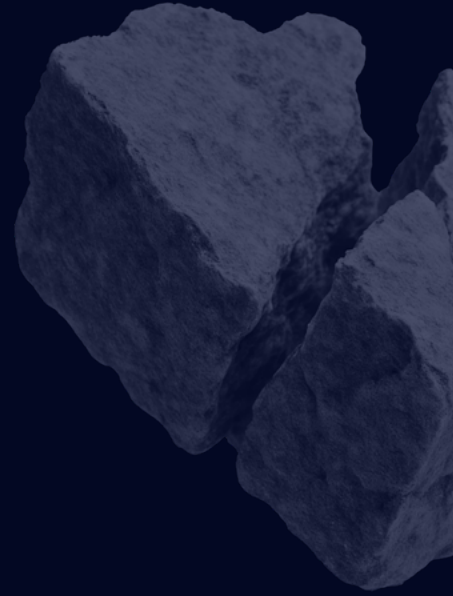


Transparency Through AI

With its proprietary 3-stage technology, Optocycle has developed a solution that tackles these problems at their root:

Here's how it works: A robust camera system scans mineral construction waste at key points—for example, directly on the construction site or at recycling and sorting facilities at vehicle scales, unloading points, or on conveyor belts. The artificial intelligence we've developed analyzes the image data in real time and classifies the material types (e.g., concrete, brick), their quantities, particle sizes, and attributes, while detecting contaminants in a matter of seconds. The data is made available to our customers in real time on a clear dashboard.

Optocycle's **"Single Source of Truth"** thus replaces subjective estimates with an objective database accessible to all parties. Negotiations are replaced by facts, which not only reduces costs but also minimizes friction losses caused by discussions and contractual disputes. We create a single, indisputable truth for the material flow.



Record



Our camera captures the material directly at the point of operation, on the truck, the unloading point, or on the conveyor belt.

Analyze



The data is analyzed in real time on-site via edge computing using our latest AI model.

Deploy



Customers receive a precise, objective, and clear analysis on our Material Intelligence platform.



Improved efficiency

Automated and digitized processes, as well as optimized sorting.



Transparency

Comprehensive documentation for record-keeping and material planning.



Cost reduction

Fewer sorting errors, fair billing, and conflict prevention.



Sustainability

Increasing the recycling rate and reducing the carbon footprint.

Competitive advantage

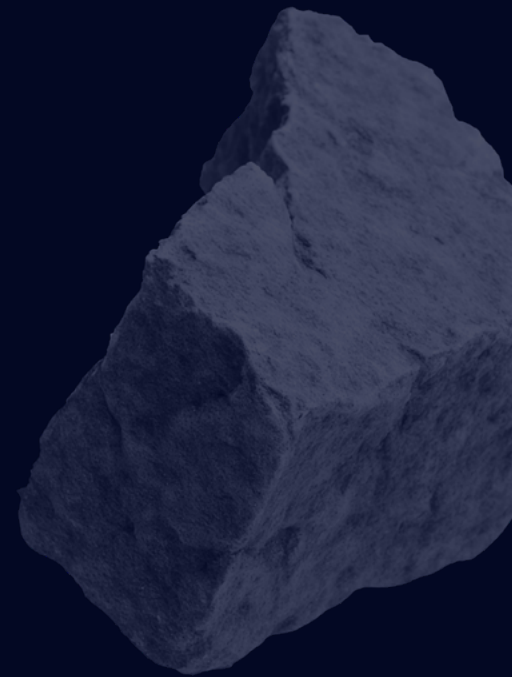


Smarter & Earlier: We analyze with superhuman precision right at the start of the process, while others only sort at the end.

Accessible to All: Our flexibly integrable PaaS model makes deep tech accessible even to mid-sized companies without high investment costs.

Holistic Data: We provide comprehensive material data for strategic planning and accounting, not just a simple sorting decision.

End-to-End Value Chain: We keep all expertise in-house—from the sophisticated camera to the algorithm, all developments are entirely our own.



The Founders

Max-Frederick Gerken, Co-Founder & CEO

Max-Frederick Gerken is the CEO and strategic leader of Optocycle. He is responsible for business development and drives the mission to make the construction industry circular. As a recognized expert and visionary in the field of AI for sustainable processes, he was named to Forbes magazine's "30 Under 30" list in 2024. Gerken holds a degree in business administration from the University of Tübingen.



Lars Wolff, Co-Founder & CTO

As Chief Technology Officer, Lars Wolff is the mastermind behind Optocycle technology. He oversees product development, from optical sensors and machine learning algorithms to the customer dashboard. Prior to this, Wolff gained experience at a U.S. tech startup and in electrical engineering. The current founders met while studying computer science at the University of Tübingen.

Awards



Optocycle's innovative approach has been recognized by numerous juries and institutions.

Here is an overview: ~~Here is an overview:~~

VR Innovationaward 2024

Innovation BW 2024

BW KI-Champions 2024

Groundbreakers Award 2024

Schwarzer Löwe 2024

Max-Frederick Gerken named
in Forbes' 30 Under 30 List 2024

Awarded the title of "BUSINESS
INNOVATOR" by the German
Innovation Institute 2025

Award for "Best AI-Powered
Circular Economy Platform 2025"
at The SaaS-ie Awards 2025

WECONOMY CHAMPION 2025/26



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