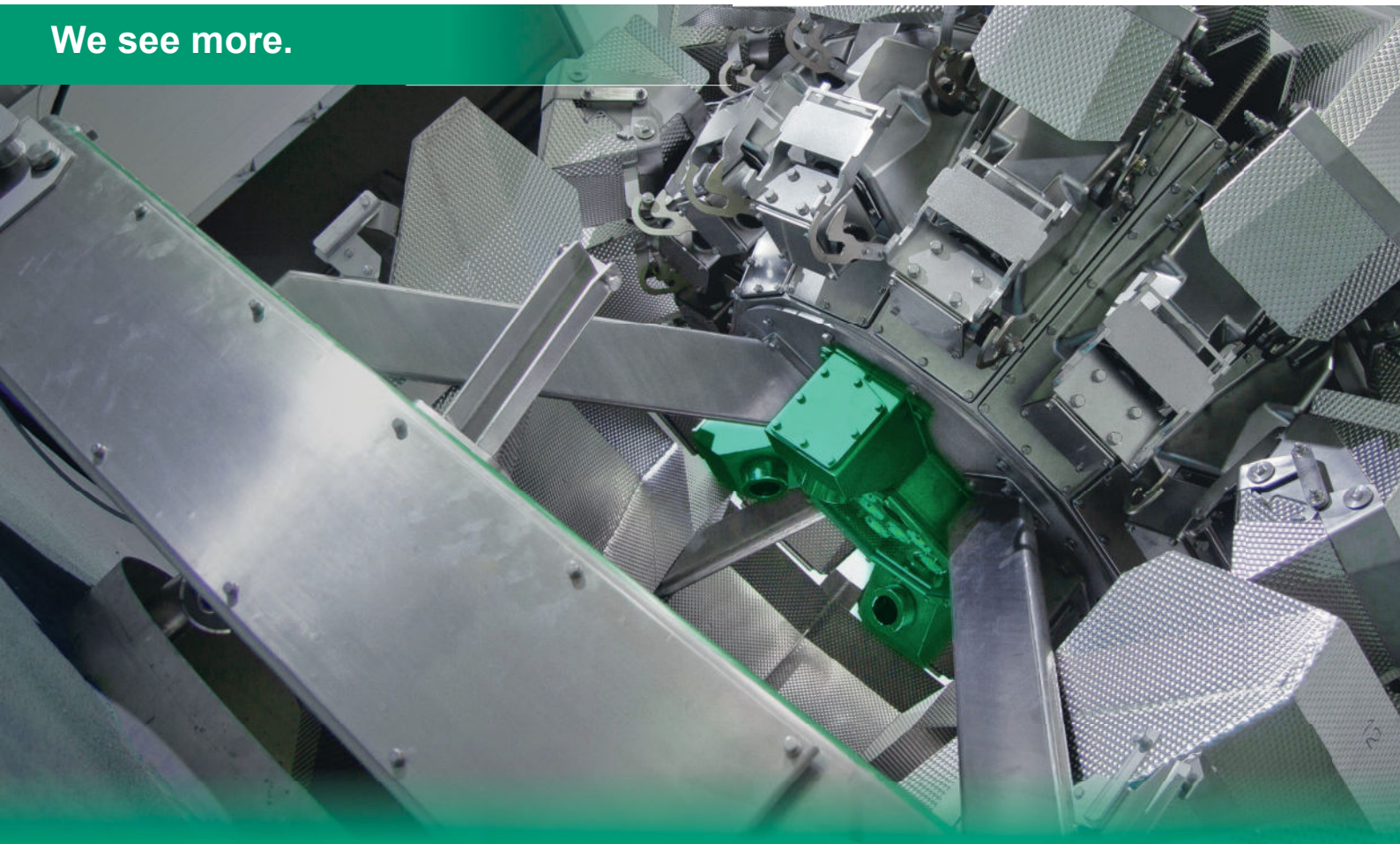
YOUR QUALITY IS OUR VISION.

We see more.



MultiCheck

Automated foreign object detection in multihead weighers

www.clkgmbh.de

CLK GMBH
AUTOMATION. EASY. FLEXIBLE.

CLK, based in Altenberge, Germany, has been your contact for intelligent solutions in industrial image processing and flexible robotics since 1996.

We develop, produce and sell non-contact quality control and positioning systems for a wide range of applications, primarily in the food and packaging industries. Our experience in the evaluation of non-standardised products is unbeatable. Applications range from quality control to the handling of natural products such as meat, cheese or vegetables.

Be it a special or series solution, we set new standards by finding innovative automation solutions for complex problems.

Dr Carsten Cruse, Managing

> We help you to optimise your production processes and rule out error sources in advance, keeping the quality of your products in focus at all times." Dr Carsten Cruse, Managing Director of CLK GmbH

Industrial image processing

We detect more!

Robotics

Flexible and precise quality control robot.

Individual solutions

Automation made easy.

Special solutions

We are the right contact for individual requirements too.

Our many years of experience in the field of food production enable us to offer exciting and reliable solutions, in particular in this field with its specific challenges.

Contact us!

YOUR QUALITY IS OUR VISION.

Find out more about our services and application areas here

www.clkgmbh.de

CLK GMBH - IMAGE PROCESSING AND ROBOTICS AT THE HIGHEST LEVEL

MultiCheck

MultiCheck is an optical system based on artificial intelligence and image processing. It was specially developed for the inspection of products in multihead weighers. It can be easily integrated into new or existing installations and operates fully automatically with minimal operator input. In 2022, CLK was awarded the Seifriz Prize and the Münsterland Innovation Award for this patented innovation.

With the integrated automation solution, users benefit from the long-standing experience of CLK GmbH in Altenberge. CLK uses the combination of traditional image processing and robotics with artificial intelligence (AI) successfully in a wide range of fields, primarily in food and packaging production. The company's expertise includes the development, production and sale of non-contact quality control and positioning systems for a wide range of process tasks.

"Our development team has been working on high-quality solutions for the industry for more than 25 years. Our hobbyhorse, AI-assisted image processing, is a technology that has been tried and tested in practice for many years and covers a wide range of product applications." Dr Carsten Cruse, Managing Director of CLK GmbH

What are the benefits of product inspection?

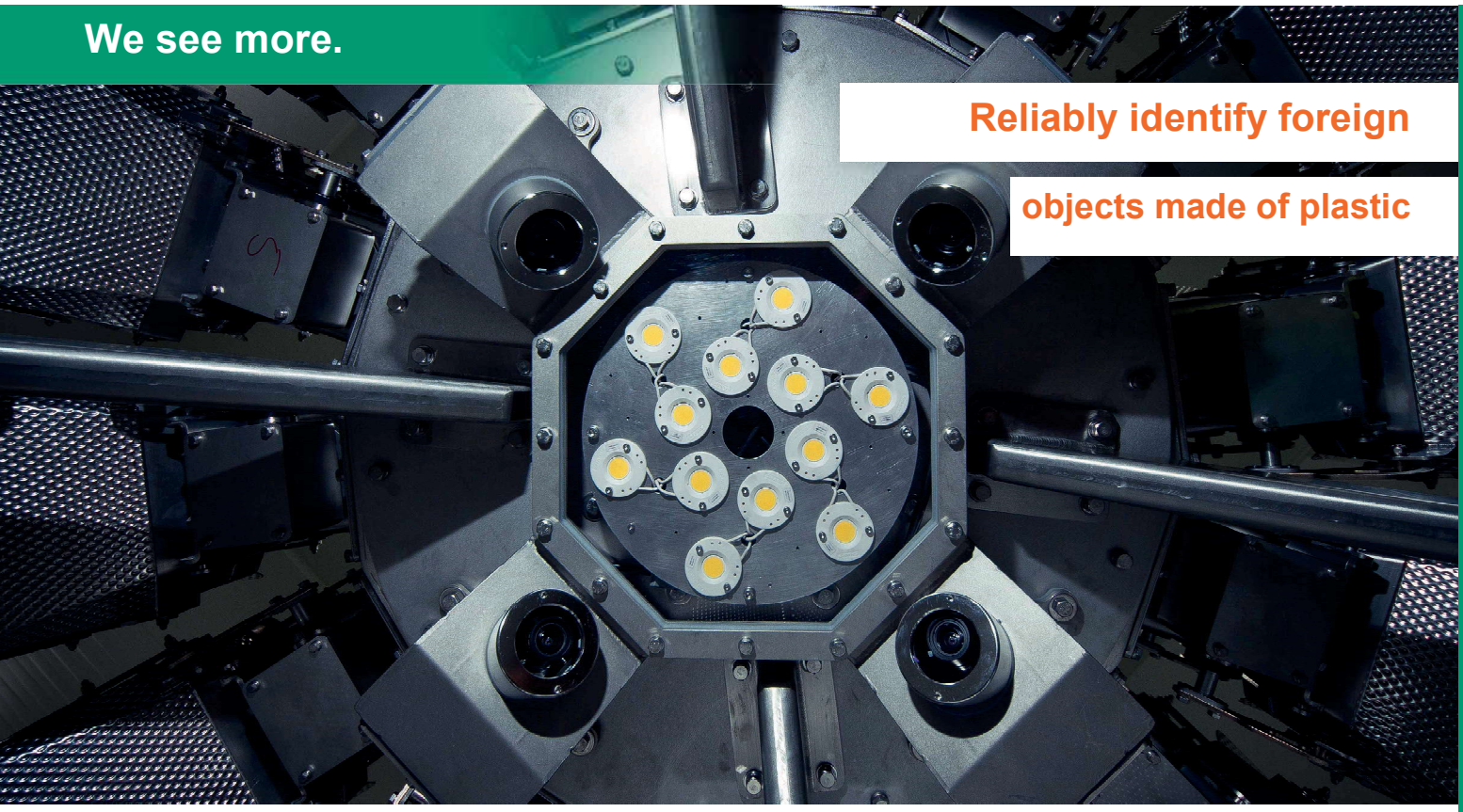
Foreign objects are still one of the main reasons for product recalls. Ensuring that food is safe and free of foreign objects is therefore one of the most demanding tasks in quality control.

At the same time, production in the food industry is increasingly taking place with a high degree of automation, so manual visual inspections are reaching their limits. Plastic splitters in particular, such as those from packaging waste, are difficult or impossible to detect.

If these get into the products, this may pose a health hazard for consumers and potentially damage the image of the company, in addition to the work involved in tracing batches.

Foreign object detection systems, mostly integrated at the end of the production and packaging lines, are an integral part of a HACCP concept and a prerequisite for successful certification according to IFS or BRC.

We see more.



Reliably identify foreign objects made of plastic

Uncompromising safety, directly in the multihead weigher

Reliable foreign object protection must be ensured, even in demanding high-speed applications in multihead weighers. This is where CLK comes in with MultiCheck. The system combines the advantages of trained error detection with the advantages of automation technology and is integrated directly into the multihead weigher.

It makes no difference whether confectionery, cereals, vegetables, frozen food or fresh products such as cheese or meat are weighed and then packed. Thanks to the latest camera technology in combination with AI-assisted image processing, MultiCheck identifies foreign objects so they can be eliminated. This means that up to 99% fewer foreign objects enter the supply chain, even on lines with high volumes.

YOUR QUALITY IS OUR VISION.

THE LATEST GENERATION IN FOREIGN OBJECT INSPECTION, ALSO FOR PLASTICS

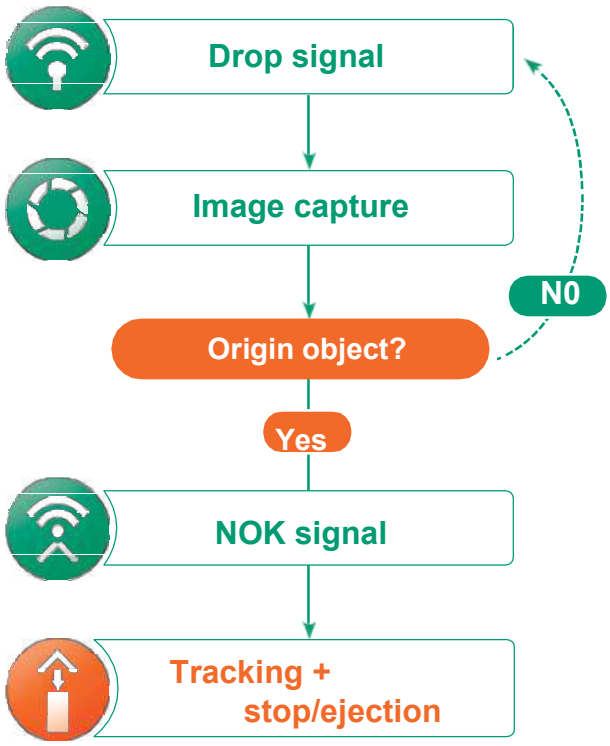
Automated foreign object detection

MultiCheck detects a wide range of foreign objects from a size of 2 mm x 2 mm, in particular parts made of hard and soft plastics. The system checks for defined colours (blue and red) with its algorithms: as long as the foreign object is a different colour to the product and background, it is reliably detected. Our MultiCheck complements common foreign object systems such as X-ray and metal detectors by detecting plastic to maximise the quality of your production.

360 degree all-round view

MultiCheck receives a signal from the multihead weigher that the weighing pans are opening. This triggers the start of the image capture sequence. Four high-resolution cameras and a powerful LED lighting unit are used to ensure an all-round view when products fall into the multihead weigher.

One image sequence of the product is recorded per drop. In addition, multi-recording of each drop ensures that foreign objects that are concealed within the material flow are also detected.



Your

- **Fully automated inspection** MultiCheck takes over HACCP-compliant foreign object detection, standardised according to defined evaluation criteria and independent of a human inspector.
- **Extra confidence in safety** MultiCheck reliably detects foreign objects based on colour and regardless of density or material, including particles of hard and soft plastics.
- **Real-time inspection of all products** MultiCheck inspects the product flow in free fall, largely eliminating concealments.
- **Early elimination of foreign objects** The foreign object check as the last step before packaging achieves a higher level of safety, as no more foreign objects get into the product afterwards.
- **Easy-to-integrate technology** MultiCheck can be integrated into most common multihead weighers and is fully functional with minimal operator input.
- **Documentation of the test processes** All detected foreign objects are stored in an external database and can be viewed on the software as images and statistics. Integration into customer systems is possible.

Detection in real time

If the system identifies a foreign object made of plastic or other materials based on its colour, it sends a signal that can be used either for rejection or to stop the system, depending on the customer's requirements. The system's patented technology is based on image processing software that communicates in real time with the machine control unit. This is how MultiCheck ensures the immediate removal of foreign objects from the production line. A picture of the foreign object found is also displayed on the operator terminal. Foreign object statistics are available on the system.

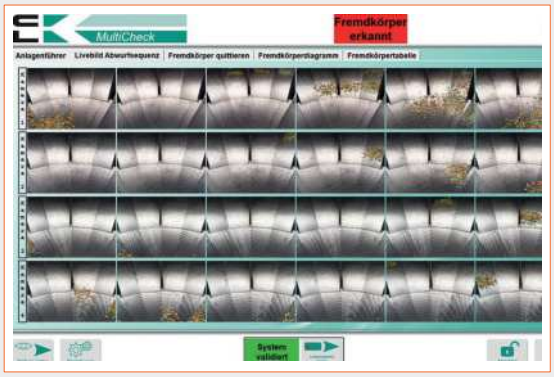
You can find more information here

POWERFUL IMAGE PROCESSING SOFTWARE

Everything in view during the quality check

Foreign object detection must be reliable at the high cycle rates that prevail in advanced food manufacturing. The Ai-assisted image processing in MultiCheck guarantees this. It does not tire and always evaluates in the same way.

MultiCheck automates optical quality inspection as a complete turnkey solution that requires little interaction during normal operation. When starting the test, the operator selects the current format on the software. If found, a picture of the foreign object is displayed and it must be acknowledged.

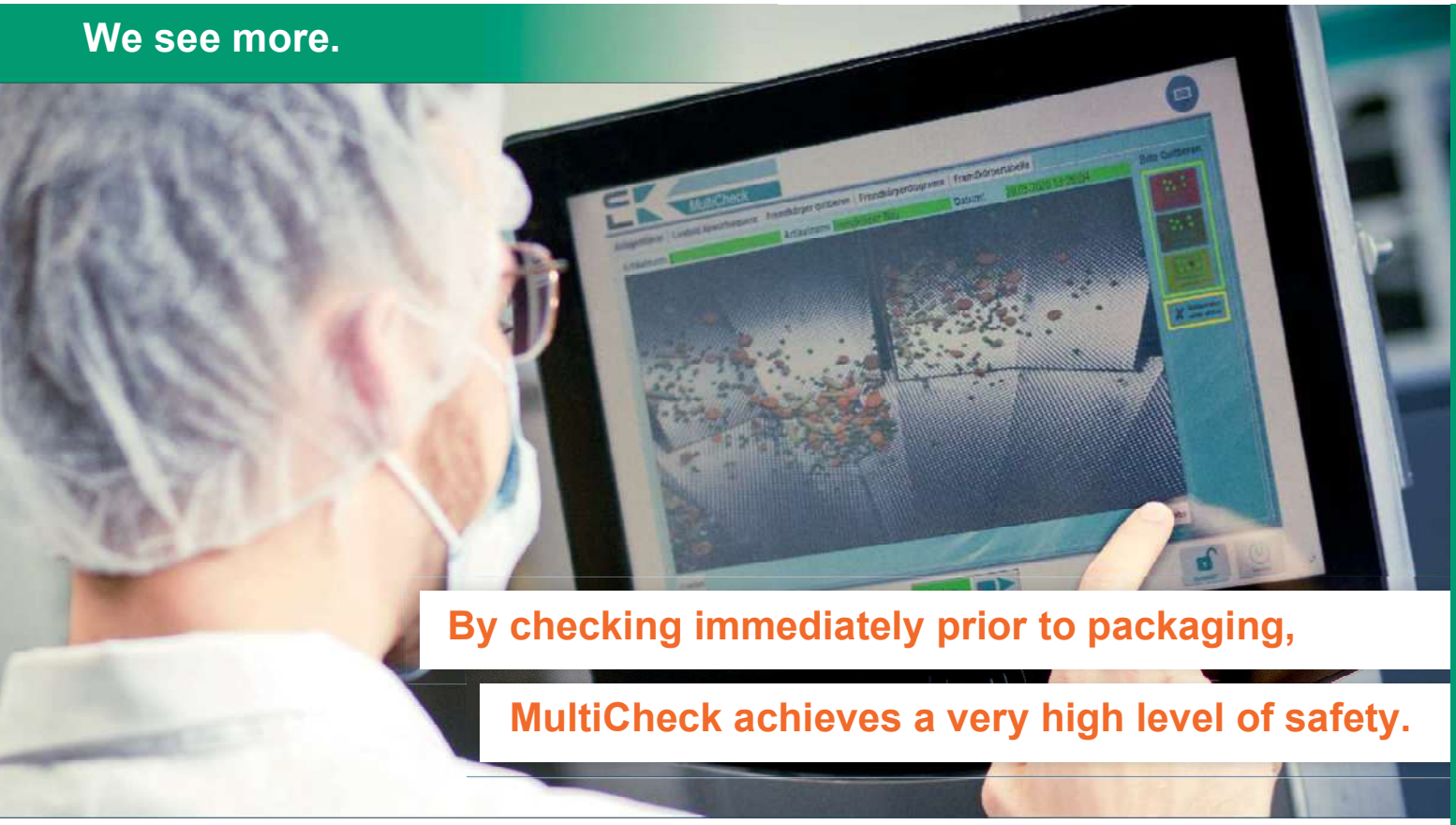


Scope of functions

- ✓ Selection of the current format via user input. Automation via OPC-UA is possible.
- ✓ Display of detected foreign objects with an acknowledgement function when found.
- Adjustable runtime statistics by camera.
- ✓ Display of the system status.
- ✓ Error patterns can be saved on the system or in the network.
- ✓ Minimal effort in the event of incidents, as the system provides support in the form of automatic validation reminders, maintenance notices and clear error messages.
- ✓ System protection through various password-protected levels for operation and administration.

AUTOMATION. EASY. FLEXIBLE.

We see more.



By checking immediately prior to packaging,

MultiCheck achieves a very high level of safety.

Complete traceability

The result of each optical inspection with subsequent evaluation via the software is stored in an internal database and enables statistical long-term evaluation for the objective assessment of long-term quality assurance measures. In addition, statistics on foreign objects found can be exported daily.

This helps to continually improve the quality of production. The images of the detected foreign objects are stored locally for a defined period of time and can also be stored on a server.

EASY INTEGRATION
INTO YOUR PROCESS CHAIN

Detection according to the highest hygiene standards

MultiCheck can be integrated seamlessly with little effort and offers optimum efficiency for all food applications. The compact and space-saving camera system is placed directly inside the multihead weigher. MultiCheck therefore provides an optimal view of the falling products without coming into contact with them.

The environments in the food industry are characterised by a multitude of hygiene requirements. In particular, acids, alkalis and high-pressure cleaners are used.

A camera system including lighting must be able to withstand these conditions. For this purpose, CLK has developed robust housing that can withstand the most adverse conditions.

- Housing of the camera system made of stainless steel (V4A) with a protection class similar to IP69.
- Compact control cabinet with IP69 protection class for high-performance computers and electrics.
- The system is individually adapted to the multihead weigher.
- Hygienic cable routing is possible.
- Scratch-resistant acrylic or Makrolon panes in front of the cameras for a long-lasting view and easy maintenance.
- Use at temperatures of -18°C to +30°C is possible. Intelligent flash control ensures undisturbed working even in the immediate vicinity.

Let's shape the future together!

Customer satisfaction is our top priority. Our highly qualified development team is always on hand for customers. By using flexible hardware and software, we can adapt our systems optimally to your requirements.

Our competences range from turnkey automation solutions with fully integrated components to special or series solutions and detailed feasibility studies.

Technical data

Feature	Specification
Detectable foreign object size	2 x 2 mm ²
Maximum number of cycles	100 drops per minute
Operating temperature	-18°C to +30°C
Relative humidity	Max. 95%
Housing materials	V4A stainless steel, acrylic glass, FDA-compliant silicone seals
System size	Variably adaptable to almost any multihead weigher
Lighting unit	Individually replaceable LED modules
Flash frequency	> 70 Hz (irritation-free for humans)
Protection class	Camera unit: Similar to IP69 Control cabinet & terminal: IP69
User input	Touch screen or remote connection
Operating system	Windows 10
Data transmission	10 GB FO
Connection options	OPC UA, digital I/O (drop signal, results output, fault messages)
Power supply	230 VAC / 50 Hz
Typical rated power	Max. 500 W

LET'S SHAPE THE FUTURE
TOGETHER!

MultiCheck

QUALITY IS OUR ISSUE.
DON'T LET IT BE YOURS.

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