We see more.

Poultry Industry:

Improving Animal Welfare.

Inspection, and Classification.

CLK GMBH
AUTOMATION. SIMPLE. FLEXIBLE.

CLK, based in Altenberge, Germany, has been your go-to source 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 expertise in the evaluation of non-standardised products is unparalleled. Our applications range from quality control to the handling of natural products such as meat, cheese or vegetables.

Whether it's a custom solution or a series production, we set new standards by finding innovative automation solutions for complex problems.

,,

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 robotics.

Small batch production
Development of cost-effective production for customer-specific small batches.

Special solutions
Your go-to partner for unique requirements.

With decades of experience in food production, we provide innovative and reliable solutions tailored to the unique challenges of this industry.

Contact us today to discover how we can elevate your operations.

YOUR QUALITY IS OUR VISION.

Find out more about our services and areas of application here

www.clkgmbh.de

IMAGE PROCESSING AND ROBOTICS:
EXCELLENCE REDEFINED

Our Quality Control Systems

For over a decade, CLK's animal welfare quality control systems have been trusted by leading companies in the poultry industry. Our cutting-edge, camera-based systems make quality inspections straightforward and production processes more efficient.

With advanced digital image processing, our systems can identify changes in footpads and joints, injuries, capture damages, and diseases in chickens and other poultry species. Additionally, they detect breast blisters in turkeys and footpad and paddle changes in ducks and turkeys.

Whether it's broiler chickens, laying hens, turkeys, or ducks, our products ensure comprehensive quality control of slaughtered poultry. Moreover, overall product quality can be assessed and enhanced.

We see more.

The best possible quality in your operation.

Automatic Evaluation & Traceability

CLK's innovative products are transforming the poultry industry by advancing animal health, welfare, and food quality.

Our systems provide automatic evaluations of poultry, delivering objective data to accurately assess quality and welfare.

Additionally, our systems enhance product traceability with digital records. The digital records include information on the recording time, the determined quality grade, the size of the defect, the associated flock number, and the production line.

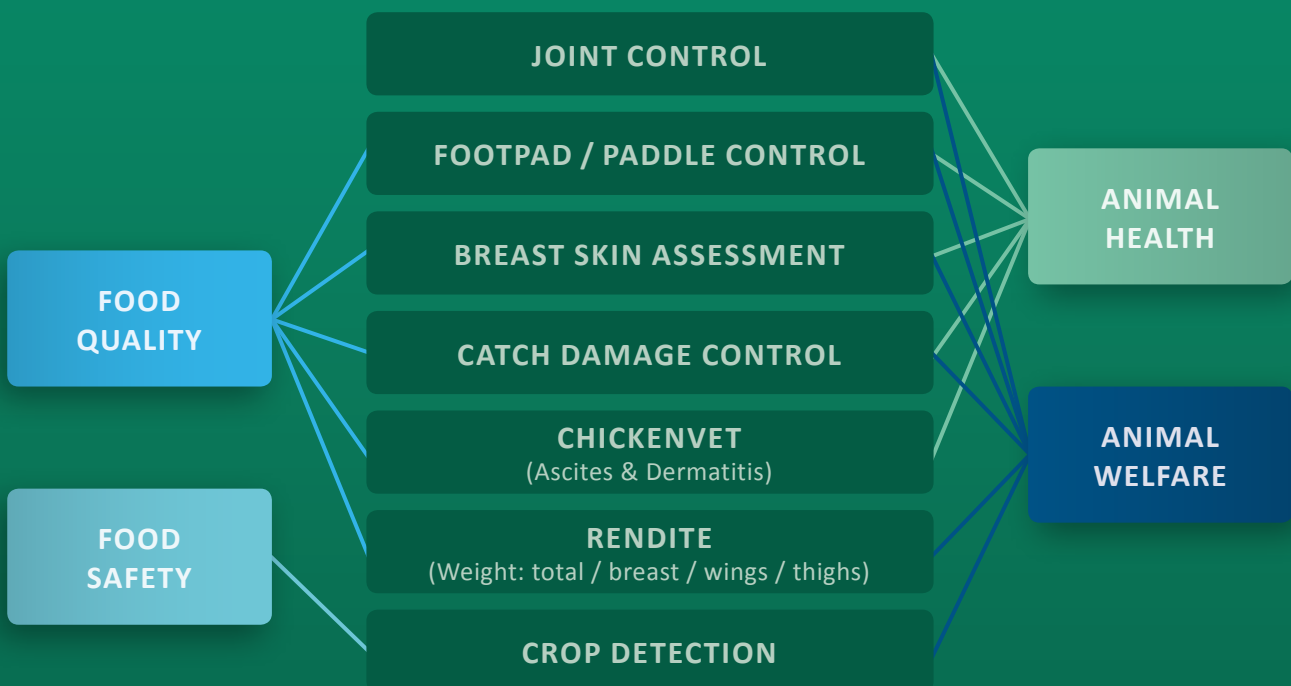# Innovative Solutions for Demanding Environments

Our products offer efficient analysis through seamless database connectivity. Designed for harsh environments, our robust capture units with protected lighting ensure durability.

The autonomous inspection and warning system monitors conditions such as camera lens contamination, camera and trigger failures, and changes in lighting due to dirt or aging.

With the ability to classify various quality grades, our products adapt to your specific requirements, ensuring optimized and reliable poultry evaluation in any production setting.

CLK-systems for monitoring animal health, animal welfare, food quality & food safety

FOOD QUALITY

FOOD SAFETY

JOINT CONTROL

FOOTPAD / PADDLE CONTROL

BREAST SKIN ASSESSMENT

CATCH DAMAGE CONTROL

CHICKENVET
(Ascites & Dermatitis)

RENDITE
(Weight: total / breast / wings / thighs)

CROP DETECTION

ANIMAL HEALTH

ANIMAL WELFARE

THE FUTURE OF THE POULTRY INDUSTRY:
OPTIMIZING YOUR SLAUGHTER OPERATIONS

Next-Generation poultry production

4 Enhancement of food safety

3 Assessment and improvement of animal welfare

5 Customer trust and satisfaction

2 Ensure compliance with quality standards

6 Creation of competitive advantage

1 Enhancement of final product quality

7 compelling reasons for our products

7 Cost savings: Improved control of incoming goods and process management

Capturing animal welfare, enhancing image

In an era where quality, animal welfare, and corporate image hold unprecedented significance, our products significantly enhance your company's positive presence.

CLK's advanced quality control systems optimize the documentation and storage of captured quality data, ensuring efficient and rapid traceability of your products through digital records.

Our systems play a pivotal role in improving transparency within your operations by capturing essential data, including quality metrics, flock details, and production line specifics, all of which can be stored for extended periods, such as 300 days.

By meeting key consumer expectations for transparency, quality, animal welfare, and sustainability, CLK systems promote the sustainable enhancement of your corporate image.

Our monitoring systems simply do more

Even in the most demanding and harsh environments, our systems excel in reliability. Equipped with autonomous inspection and warning systems, they tackle challenges and intercept problems such as image blur, camera and trigger failures, transmission errors, and changes in environmental conditions.
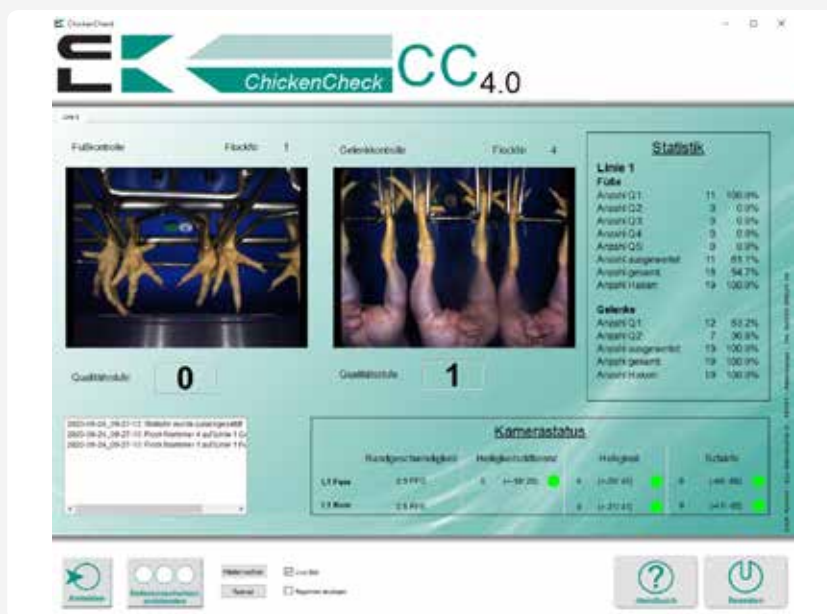
| image blur | camera and trigger failures | transmission errors | changes in environmental conditions |

User-Friendly Interface

The user interfaces of CLK quality control systems feature real-time visualization, providing a clear and easy-to-navigate experience.

Users can monitor image quality and camera position live, ensuring optimal performance at all times.

Documentation / Storage

Detailed assessment with database storage → recording time, quality grade, flock number, and production line → long-term storage
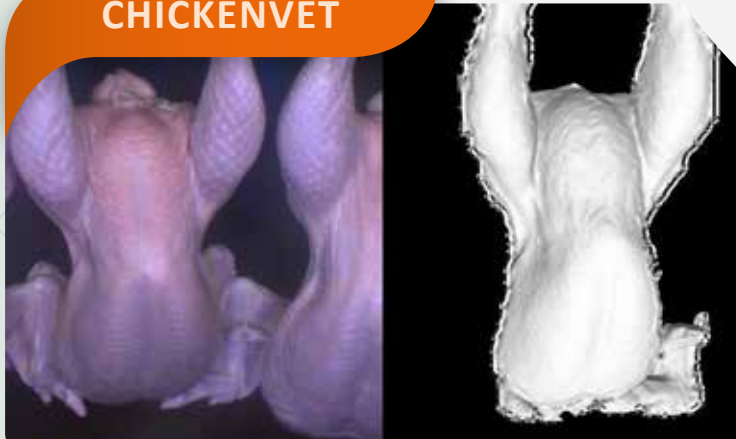
OUR QUALITY CONTROL SYSTEMS:
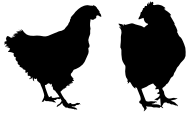## CHICKEN

CATCH DAMAGE CONTROL

CROP DETECTION

CHICKENVET
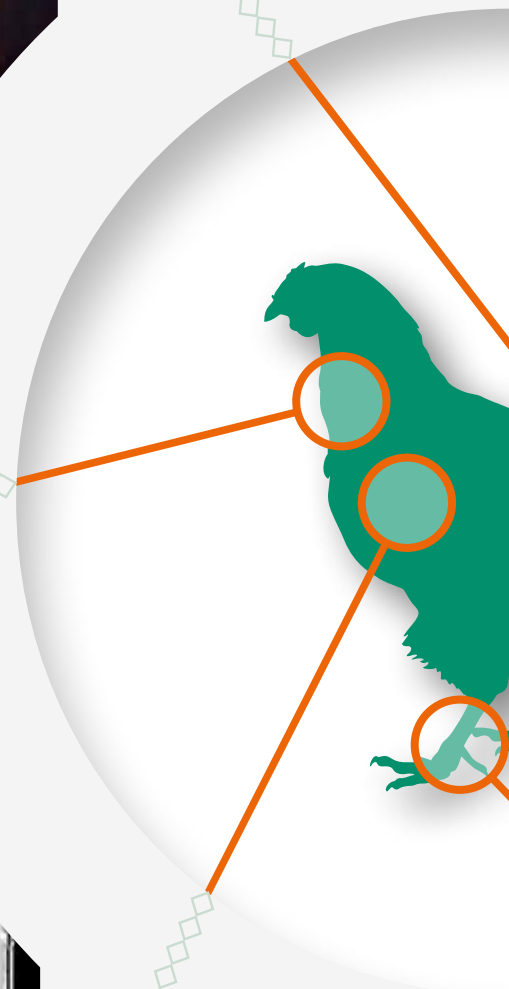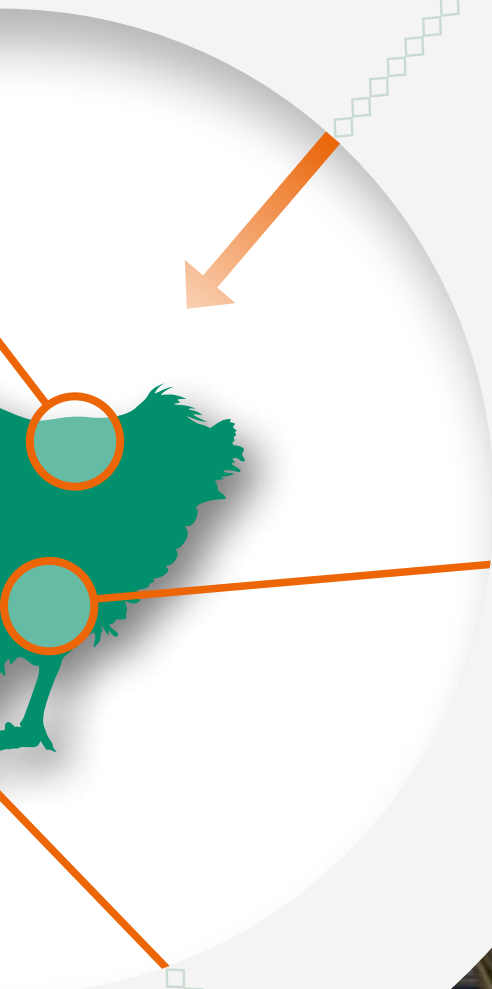
RENDITE SYSTEM

JOINT CONTROL

FOOTPAD CONTROL

OUR QUALITY CONTROL SYSTEMS:
TURKEYS AND DUCKS

BREAST SKIN ASSESSMENT

FOOTPAD CONTROL

TURKEYS
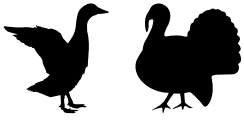
PADDLE CONTROL

DUCKS

IMPROVING ANIMAL WELFARE:
ASSESSMENT AND CLASSIFICATION

Footpad control: Chicken

Our quality control systems meticulously inspect and evaluate chicken footpads for lesions, ensuring unparalleled accuracy and reliability. The easy-to-implement camera system significantly enhances operational efficiency. With the CLK system, detecting footpad lesions is both safe and dependable. Additionally, inspected footpads are classified into precise grades based on the severity of lesions.

Our systems are trusted and utilized across many European countries, including Germany, the Netherlands, Austria, Switzerland, France, the United Kingdom, Italy, and Poland. Moreover, our quality classifications can be tailored to meet local requirements, ensuring compliance and consistency.

LEVEL 1

LEVEL 2

LEVEL 3

LEVEL 4

ChickenVet: Chicken

Control systems

The ChickenVet system assesses meat quality by detecting skin conditions such as severe dermatitis and ascites. This optimization can enhance production in your operation. The images below demonstrate the detection of ascites and severe dermatitis by the ChickenVet system:
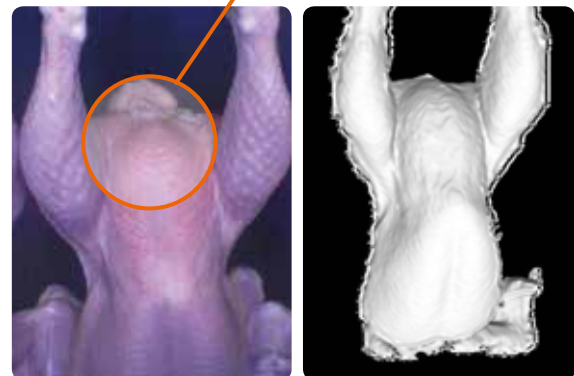
With the help of the system, animals can be classified into three classes:

1
Healthy

2
Sick

3
Undecida-ble

SEVERE DERMATITIS
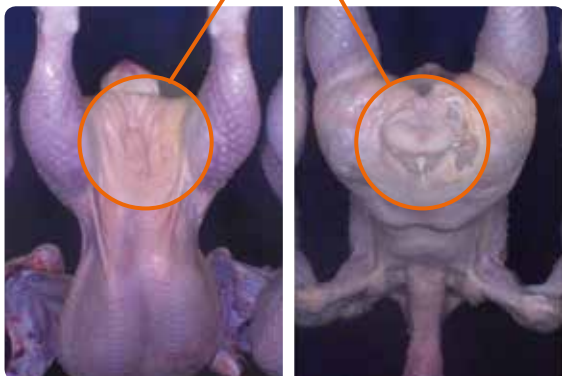
ASCITES

The 3D image information provides a detailed perspective and enables the detection of protrusions and other geometric features.

With the help of ChickenVet, the quality of food production is enhanced through the detection of skin changes, optimizing production in your operation.
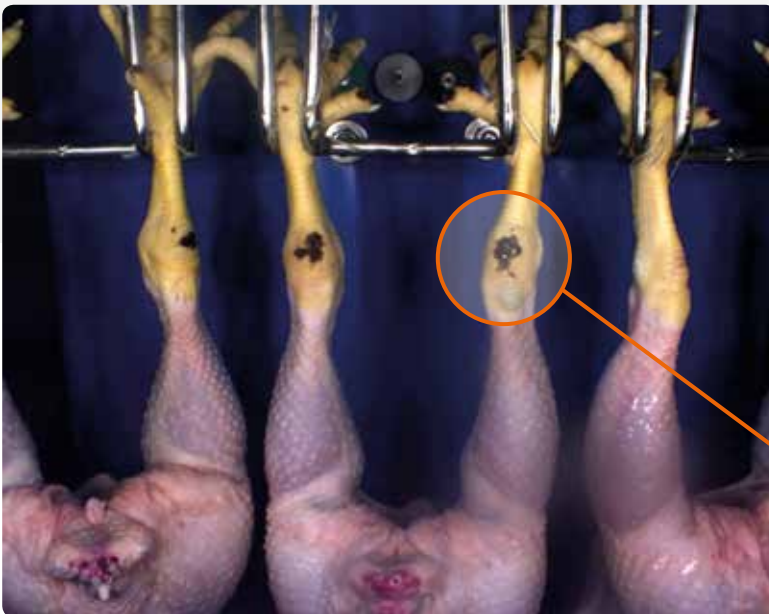
IMPROVING ANIMAL WELFARE:
ASSESSMENT AND CLASSIFICATION

Joint control: Chicken

Our advanced joint control system offers the capability to analyze knee joints of chickens for hock burns.

The precise classification is conducted into up to three levels. The joint control system enables capturing and improving animal health and welfare indicators.

HOCK BURNS

| Analysis of knee joints & detection of skin changes | Individual classification into up to three levels | Implementation possible on straight production lines as well as in a 180-degree curve |

Crop detection: Chicken

Control systems

The crop detection system utilizes a combination of color and 3D cameras to detect crops. By examining broiler chickens for the possible presence of crops, verifiable evaluations including image documentation can be generated for the grower.

Furthermore, early detection of full crops helps prevent contamination in production.

A neural network examines the neck area for swellings and assigns a score value for classification into the following levels:

1
Okay
(OK)

2
Crop
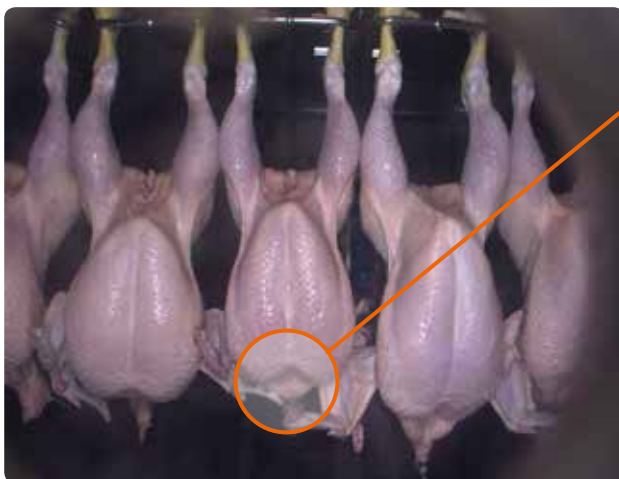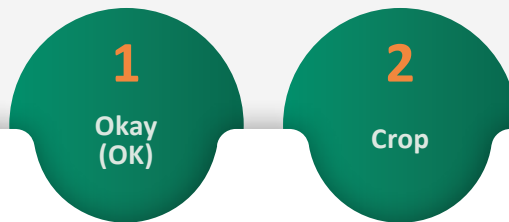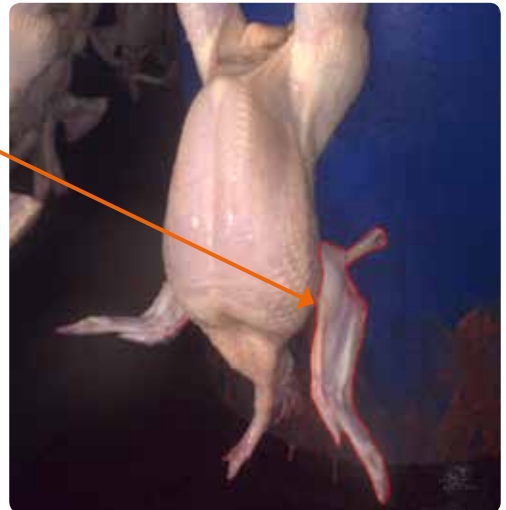

**OKAY
(NO CROP)**

CROP

IMPROVING ANIMAL WELFARE:
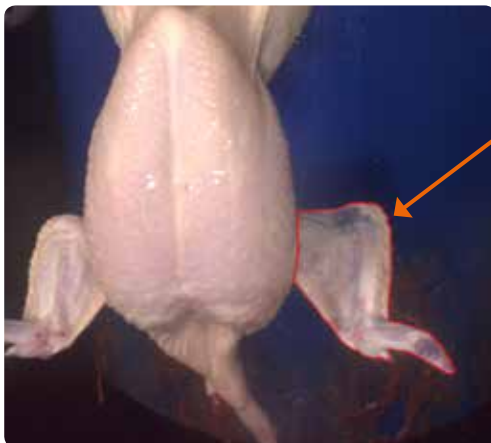## ASSESSMENT AND CLASSIFICATION

Catch damage control: Chicken

Our innovative system for analyzing capture damage in the poultry industry specializes in wing analysis. Our system detects hematomas and broken wings, providing the capability to assess and classify poultry individually.
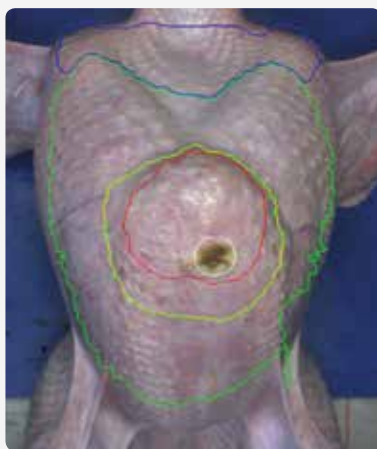
BROKEN WINGS

Diameter: 47mm

HEMATOMAS

Breast skin assessment: Turkey

The breast skin evaluation system uses innovative technology to assess the breast skin of turkeys. Bumps and skin changes are identified through precise 3D volume measurement. The turkey breast can be classified into up to 5 different levels.

> Analysis of breast skin

> 3D volume measurement

> Classification in up to 5 levels

Footpad control: Turkey & Paddle control: Duck

> Analysis of footpads and paddles for black discolorations

> The system detects twisted, double, and tilted feet and paddles, excluding them from the assessment

> Individual classification into up to 5 levels

CONTACTLESS AND AUTOMATIC:
OUR RENDITE SYSTEM

Rendite system

CLK's Rendite system is designed to maximize poultry processing efficiency. This touchless and automated system precisely determines the weight of breast fillets, drumsticks, wings, and overall slaughter weight, regardless of breed or gender.

At the core of the Rendite system are two cutting-edge 3D cameras that simultaneously capture poultry from the front and back. These cameras generate two 3D images, which are then combined into a single, comprehensive 3D model.
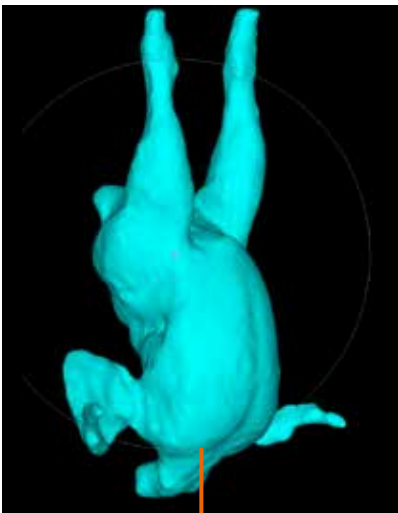
Weight determination

| › Breast fillet | › Drumstick | › Wing | › Overall slaughter weight |

SIDE VIEW

BACK VIEW

FRONT VIEW

Maximization of
poultry processing efficiency

Capture by two 3D cameras

Front & back	3D model of poultry

Storage in database

Recordings can be used for further analysis	Daily report for each batch

User-friendly analysis software

Statistics for the current batch: average weight, number of measured & unmeasured animals

MORE THAN JUST POULTRY CONTROL:
EXPANDING HORIZONS, CONTINUALLY IMPROVING

QS-Quality Seal? CLK Systems Assist!

The QS seal from QS Qualität und Sicherheit GmbH in Bonn *(www.q-s.de)* is essential for meat products today. For successful certification, especially for larger production sizes, a camera-based inspection system is crucial. CLK systems provide the ideal solution to meet these stringent requirements. Our advanced systems automatically and efficiently detect footpad and paddle changes, as well as breast skin alterations in turkey toms. The captured data can be easily stored or transmitted to the central poultry findings database.

Essential Data for QS Certification:

› Footpad and paddle changes	› Breast skin changes in turkey toms

Source reference: „QS Leitfaden Befunddaten in der Geflügelwirtschaft 2024", page 3

Development & Collaboration

CLK systems undergo rigorous evaluation through various scientific projects and institutes, ensuring state-of-the-art performance and reliability.
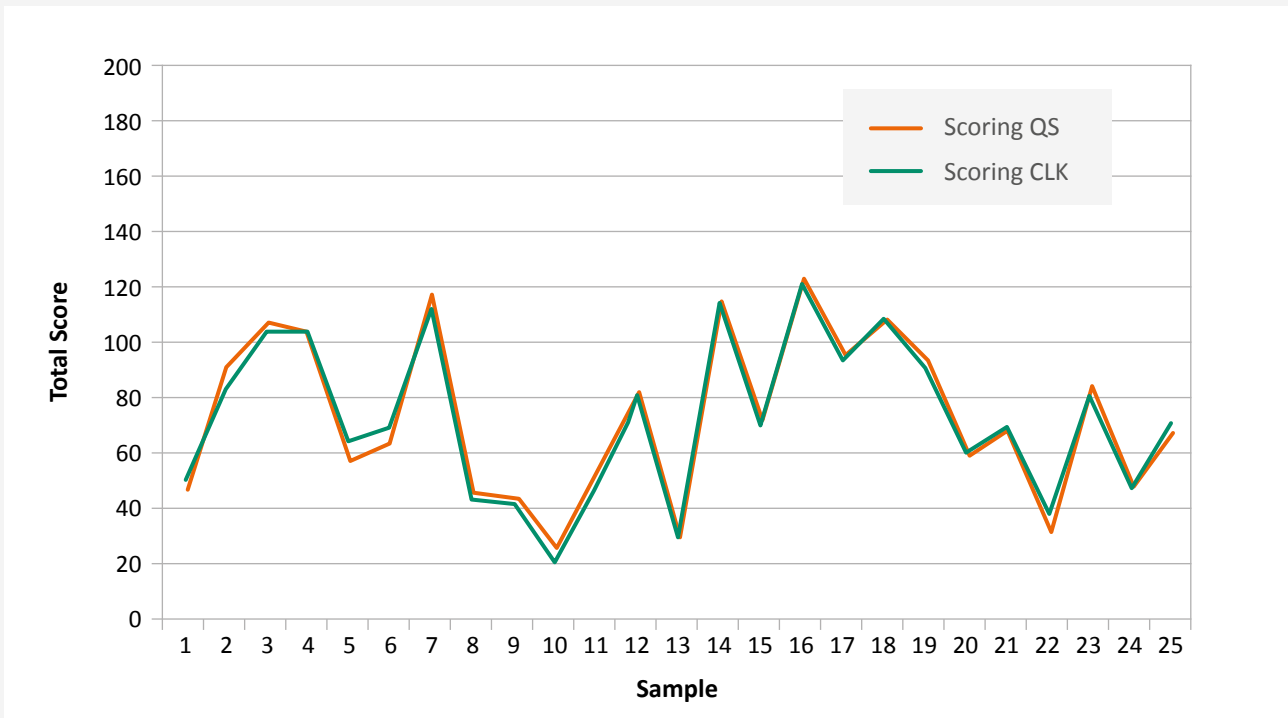
Key Collaborations:

QS Bonn	AutoWohl (BLME)	University Wageningen (NL)	aWish (EU)

Human Expert Precision, Automated by CLK Systems!

One graph? Two graphs? Barely distinguishable for footpad evaluation, and that's exactly right! Based on the distribution of quality levels, a score was calculated for each flock.

It turns out: At the flock level, CLK and QS expert are in very good agreement.

Flexible customization

Highly efficient analysis

Easy installation

Automatic daily reports

100 % control

OUR QUALITY CONTROL SYSTEMS:
ADVANTAGES FOR ANIMAL, CUSTOMER, AND BUSINESS

Unlock the Full Potential with CLK Systems

Health, Animal Welfare & Quality

+   **Objective Evaluation:** Gain objective data to accurately assess animal welfare, animal health, food safety, and food quality.

+   **Quality Assurance:** Ensure and enhance quality by evaluating poultry and classifying them into individual grades.

Process Optimization

+   **Efficiency Enhancement:** Automatic evaluations enable rapid and reliable quality assessments, eliminating human errors.

Traceability

+   **Digital Recording:** Capture essential information such as recording timestamps, determined quality levels, defect sizes, associated flock numbers, and production lines to facilitate seamless traceability.

Documentation

+   **Automated Reporting:** Generate daily evaluations and reports automatically, reducing your workload.

+   **Enhanced Transparency:** Store data digitally to facilitate collaboration and increase transparency.

Improving Animal Welfare Indicators

+   **Data Utilization:** Leverage data for a deeper understanding of animal health and welfare, leading to improved welfare indicators.

We control the quality

of your poultry.

YOUR QUALITY IS OUR VISION.