Product Inspection
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Reduce Giveaway, Improve Compliance

3 Automation Strategies for Better Fill Control

METTLER TOLEDO

Personal Introduction

Frank Borrmann
Market Manager for Checkweighing and Vision Inspection

Professional Experience: over 19 years of experience with METTLER TOLEDO, having progressed from Project Manager to Head of Project Management before moving into his current role.

Extensive background in sales, marketing and product inspection solutions with a strong focus on helping manufacturers improve quality, efficiency and compliance.

Recognized for developing and implementing successful market and business growth strategies across the product inspection industry.

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The Challenge

Compliance

Waste

Cost

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The Challenge

Overfill, underfill and its impact

3 Strategies:

- **Automation for Consistent Dairy Pack Weights**
- **Smart Fill Level Adjustment**
- **Regular Maintenance, Calibration, and Hygienic Readiness**

Save money by reducing manual effort in sampling, documentation and reporting

Example for Spot Check Test Sampling:

- Production line with 100 packages per minue
- 15 packages are sampled every hour
- In 60 minutes, 6000 packages go through the line
- 15 packages represent only 0.25% of throughput
  - Little statistical significance

Benefits of Automation

- 100% inspection reduces time required for manual sampling
- Automated documentation of batch, current hour or total statistics for audits
- Production statistics and graphics for easy decision-making
- When combined with a checkweigher, automated inspections support regulatory compliance

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Strategy 1 | Automation for Consistency

- **Reduces Manual Processes and Human Errors**
  Standardized processes minimize handling mistakes, labeling errors, and quality defects
- **Improves Food Safety**
  Less manual contact with product reduces contamination risks and supports compliance
- **Enhances Quality and Consistency**
  Accurate, repeatable operations deliver consistent product and packaging quality
- **Increases Productivity**
  Higher throughput, faster cycle times, and fewer unplanned stoppages
- **Lowers Costs and Waste**
  Reduced scrap, rework, product loss, and customer complaints
- **Enables Full Traceability**
  Automated data capture supports batch tracking and regulatory requirements.

Higher automation minimizes manual errors, improves quality and food safety, reduces waste and costs, and creates more efficient and competitive operation.

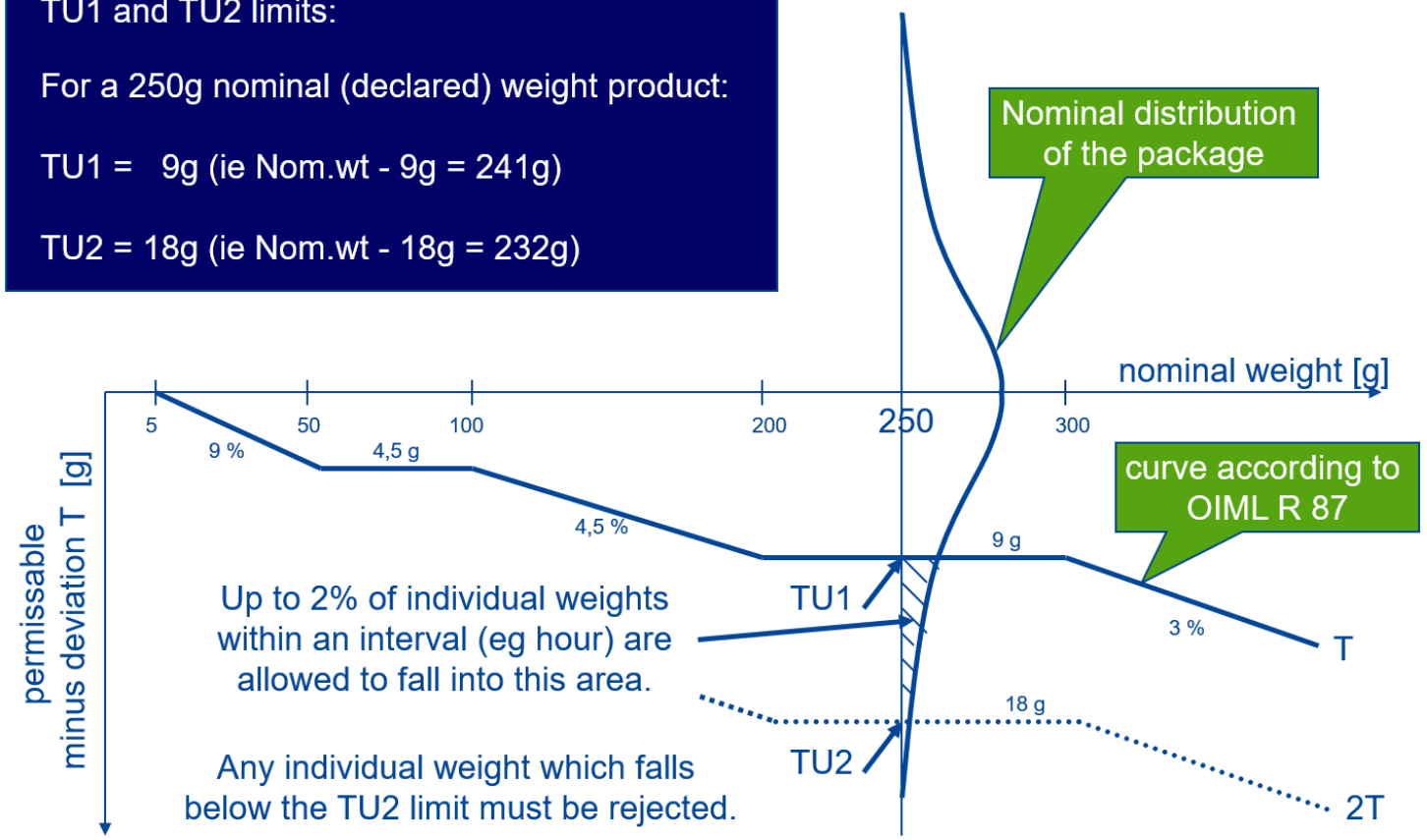
Reduce giveaway through the statistical control of TU1 and TU2 limits

TU1 and TU2 limits:

For a 250g nominal (declared) weight product:

TU1 = 9g (ie Nom.wt - 9g = 241g)

TU2 = 18g (ie Nom.wt - 18g = 232g)



Regulations for pre-packaged goods are different from country to country:

Worldwide several systems are in place:

- European regulations according to OIML R87
- American regulations according to NIST Handbook 133
- Australian regulations (old system based on average weight of last number of products)
- Brazilian regulations

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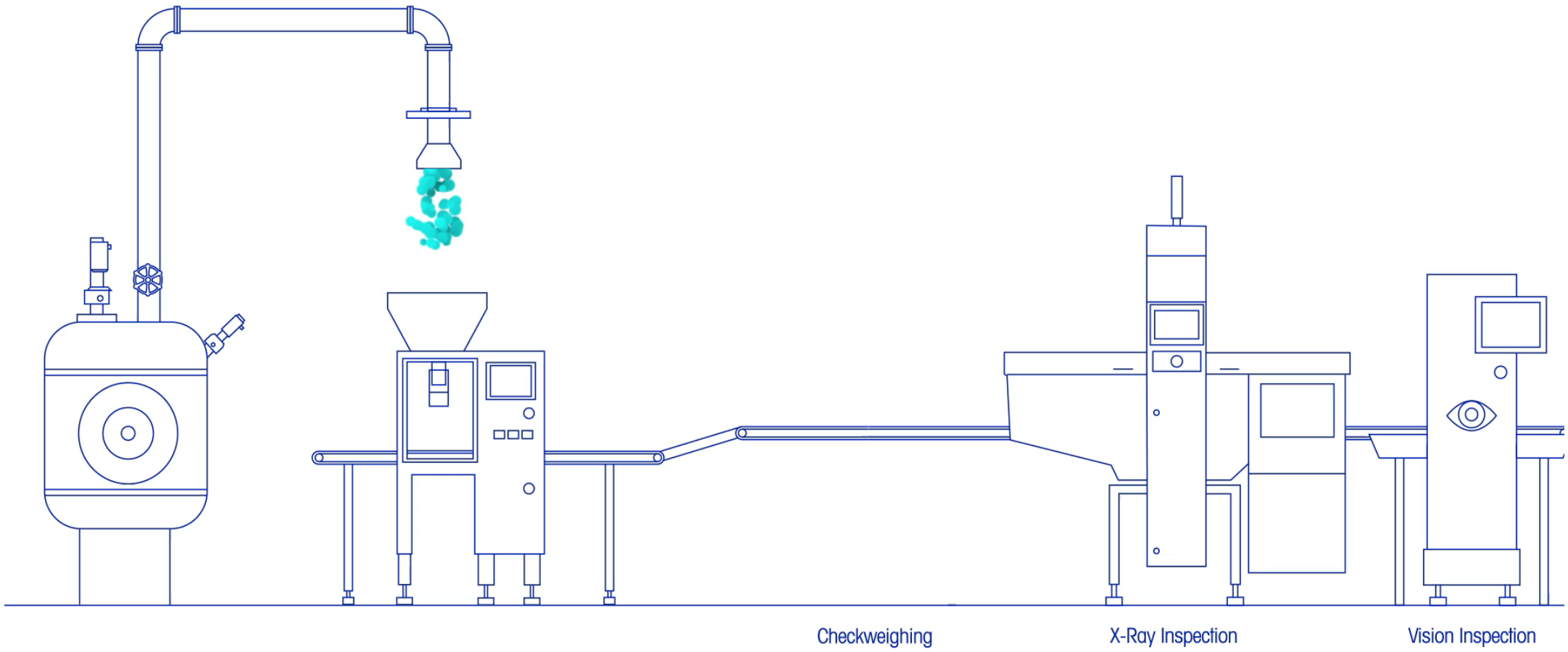
Strategy 2 | Smart Fill Level Adjustment

How it works:



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Strategy 2 | Smart Fill Level Adjustment

Example Calculation: Giveaway

- 1 g overfilling per product
- 1 g = $0.01
- Throughput = 100 pieces per minute
- 14 production hours per day

Giveaway

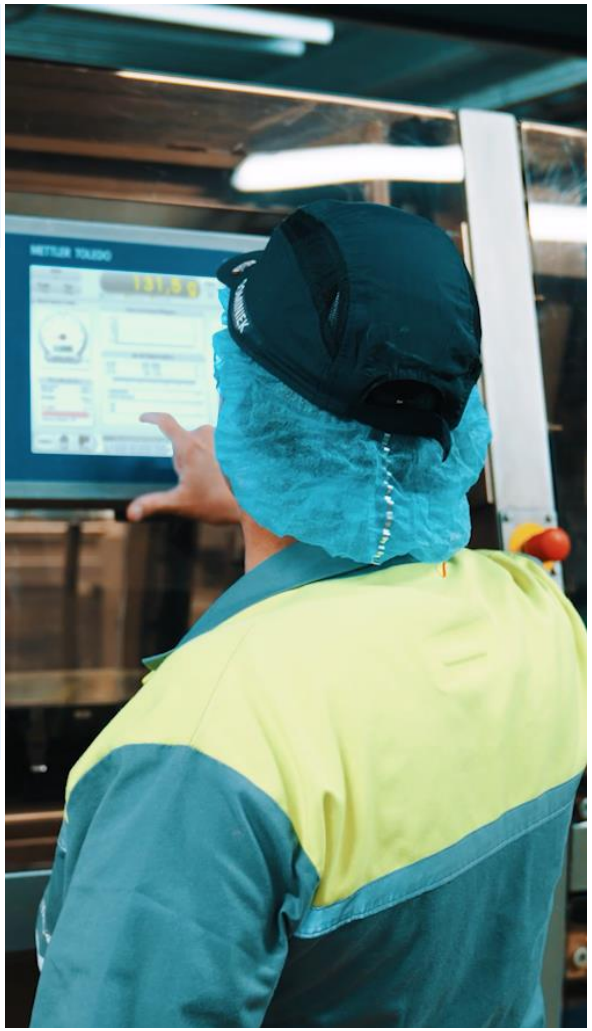
- per minute = 100 x 1 g = 100 g
- per hour = 6000 g
- per day = 84 kg

PER DAY
$840

PER 5-DAY-WEEK
$4,200

PER MONTH
~$17,000

PER YEAR
~$204,000



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Waste reduction with smart checkweighers at Greenyard, Belgium

CASE STUDY. Reduction of Waste with Smart Checkweighers | CaseStudy

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Strategy 3 | Maintenance, Verification and Calibration

The factory of the future – reliable operations and high productivity

- Are your processes truly ready for automation?
- Should process improvement come before automation?
- What are the risks of automating unstable processes and unreliable equipment?

Automation does not solve problems – it automates them

The journey starts with operational excellence – not with technology

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Before automating, challenge your current operations

Challenge

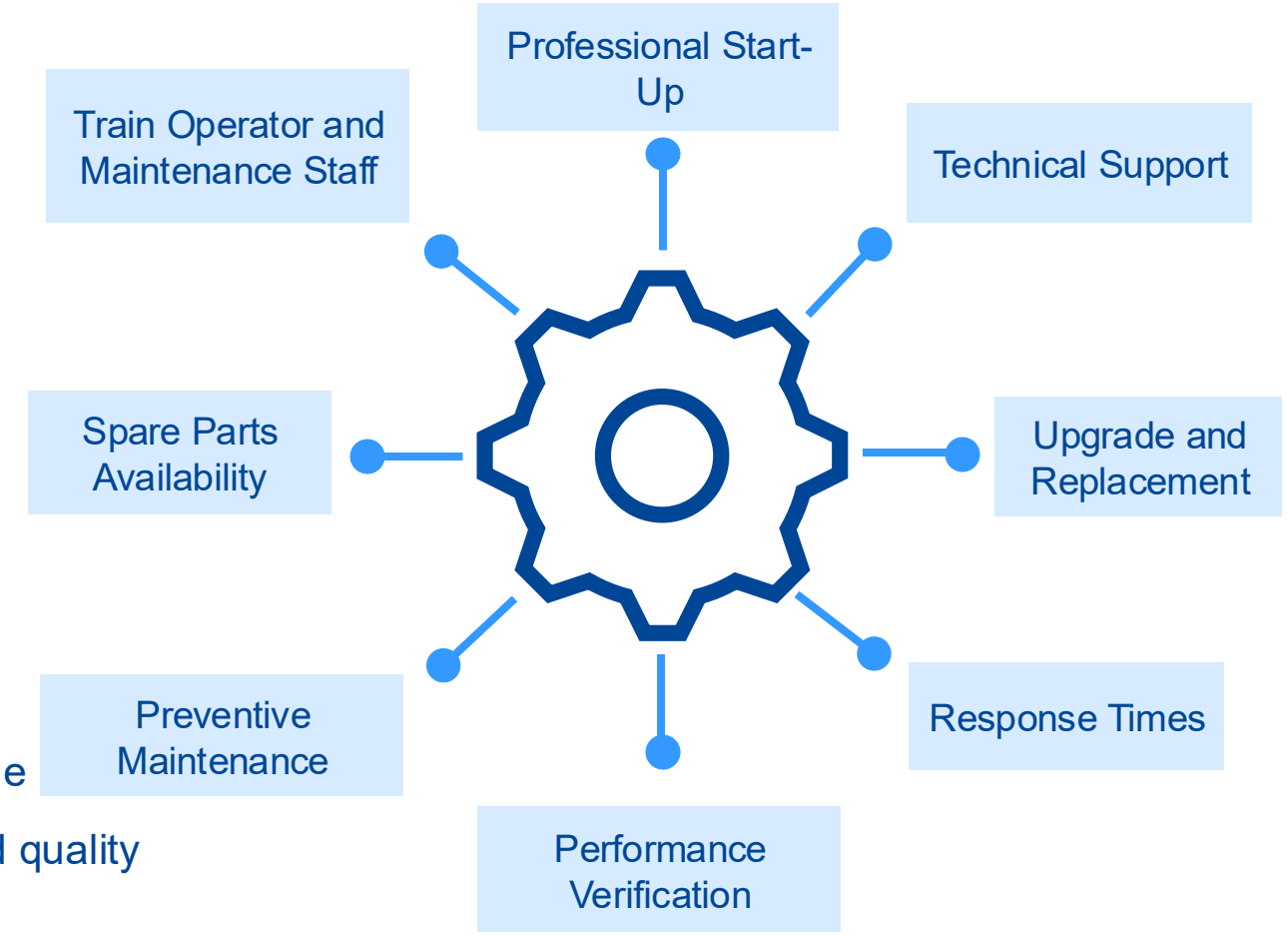
- Productivity losses due to production downtime / machinery breakdown
- Inaccurate filling processes
- Availability of service and spare parts

Solution

- Training for operators and maintenance teams
- Service contracts
- Spare part stocking strategy

Outcome

- Reduction of production loss due to unexpected downtime
- Well-maintained machinery produces higher quantity and quality
- Happier employees



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Trade compliance starts with accurate weight control

- Pre-packaged goods regulations require accurate weighing within defined tolerances
- Compliance verifies products contain the declared net weight
- Only highly accurate checkweighers performing within specific limits support compliance with Net Content Control regulations and secure consumer trust

The **International Organization of Legal Metrology (OIML)** has created the OIML Certification System (OIML-CS) within which international consistency of measurement and testing can be demonstrated

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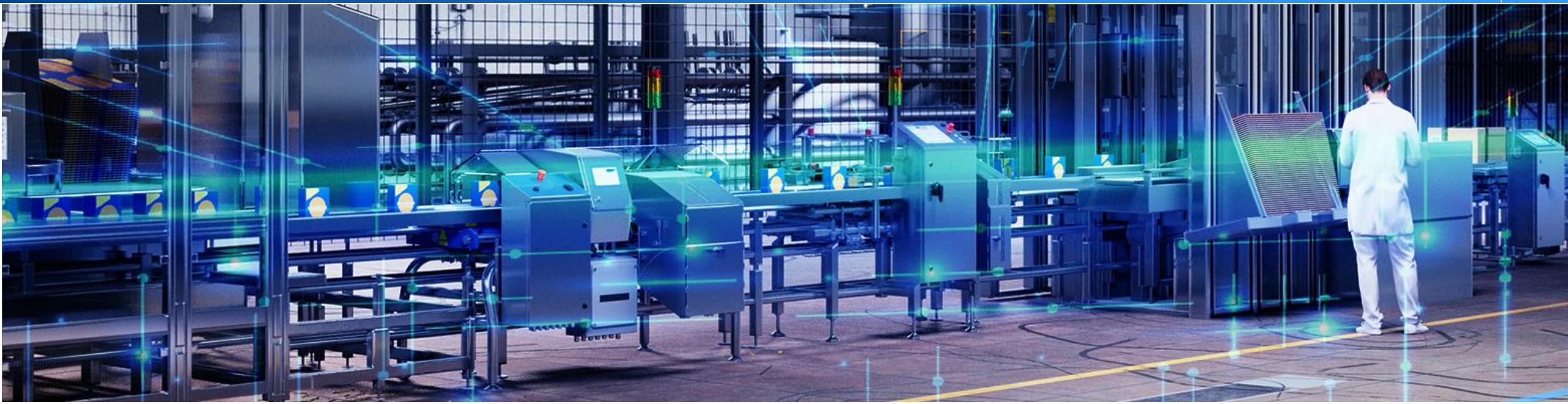
Strategy 3 | Maintenance, Verification and Calibration



Imagine a filling and packaging factory where / How maintenance, verification and calibration supports automation and operational excellence

- Production runs with minimal human intervention
- Machines operate reliably at high performance
- Processes are stable and predictable
- Product losses, overfilling and unplanned downtime are minimized
- Operators focus on value – adding activities rather than routine interventions

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Next Steps

Checklist to evaluate your automation potential

- Are there areas where you could automate more?
- Where are you experiencing waste?
- Do you have analysis and data on your production?
- Do you have equipment or machines that support the implementation of automated fill volume control?

Think big – start small!

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What's Next?

1

Automation

2

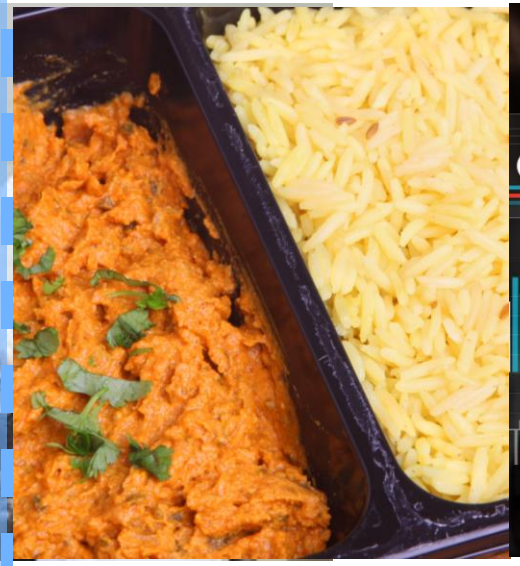
Smart Fill Level Adjustment

3

Maintenance, Verification and Calibration

4

Optimized Product Proportions



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Data-Driven Improvement

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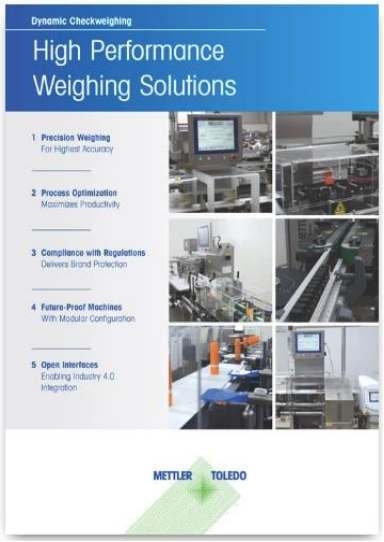
Any Questions?

If you want to learn more...



Scan the QR code to download the guides!

THANK YOU!