Digital Transformation

Read this three-part eBook to discover how to get started with your digital transformation journey!

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Step-by-Step Guide to Getting Started With Digital Transformation

Manufacturers are on a digital transformation journey toward the smart factory. Smart manufacturing is a flexible system that can self-optimise performance across a network, self-adapt to and learn from new conditions in real time, and autonomously run production processes.

SEE STEPS TO START WITH DIGITAL TRANSFORMATION

INTRODUCTION

The smart factory represents a leap forward from more traditional automation to a fully connected and flexible system—one that can use a constant stream of data from connected operations and production systems to learn and adapt to new demands.

To fully realise the digital supply network, however, manufacturers likely need to unlock several capabilities: horizontal integration through the myriad of operational systems that power the organisation; vertical integration through connected manufacturing systems; and end-to-end, holistic integration through the entire value chain.

SICK has a Consulting and Digital Solutions team as a dedicated technical team that collaborates with customers in their digital transformation journey. Solutions include smart sensor applications that bridge the gap between the shop floor and the data floor. There are numerous benefits to implementing digital transformation solutions. We've listed a few below that our customers have seen with SICK solutions.

ADDRESSING LABOR GAPS

Since labor is an important cost driver in most industries, improving labor productivity can drive significant value. This value can be captured via levers that reduce waiting time (e.g., completion of previous process step in manufacturing, delayed delivery of a good in manufacturing, or a prototype in R&D) or increase the speed of workers' operations by reducing the strain or complexity of their tasks. Human-robot collaboration allows humans and machines to work near each other without risking injury of the workers.

INVENTORY CHALLENGES

Too much inventory ties up capital, leading to high capital costs. Reducing excessive supply in stock can lower these. Digital transformation levers target the various drivers of excess inventory, such as inaccurate stock numbers that increase sludge, unreliable demand planning necessitating safety stock, or overproduction. Intelligent camera technologies capture the actual fill level of a supply box whether it is stored on the shelf or has been moved to the production line.

IMPROVED QUALITY

Improving quality is a value driver since scrap and products requiring rework often leads to extra costs (for machine time, material, and labor). These quality inefficiencies are caused by unstable processes in manufacturing, deficient packaging in the supply chain or distribution, and unskilled installation. Statistical process controll (SPC), advanced process control (APC), and digital performance management can create value.

SUPPLY/DEMAND MATCH

Only a perfect understanding of the customer demand - regarding both the quantity and the product features customers are willing to pay for maximises the value captured from the market. Therefore, optimising the match of supply to the actual demand with digital transformation solutions can seize value potential.

IMPROVING RESOURCES AND PROCESSES

Improving a process in terms of material consumption, speed, or yield drives value – in the first case via decreased material costs and via increased revenues through more output in the second and third cases.

REDUCING TIME TO MARKET

Reaching the market with a new product earlier creates additional value through increased revenues and potential early-mover advantages. Therefore, every digital transformation solution that speeds up the development process such as concurrent engineering or rapid experimentation/prototyping (e.g., through 3D printing) will help drive this value.

DECREASE SERVICE COSTS

Since the costs of operation are driven by service costs (e.g., maintenance, repair) and machine downtimes (e.g., due to unexpected incidents), offering solutions to decrease these to the customer can open further value potential.

BETTER ASSET UTILIZATION

In asset-heavy manufacturing businesses (such as those in the automotive industry), asset utilisation is a big value driver. Therefore, remote monitoring and predictive maintenance will play an important role in capturing value. Both are levers to improve asset utilisation by decreasing unscheduled downtime.

Five Steps to Digital Transformation

So you're ready to tackle a digitial transformatin project in your facility, but what's the best way to start? In just five steps, we can help you reliably increase your productivity by unlocking your data via digital transformation. Here's how we do it.

START AT STEP 1 TO DIGITAL TRANSFORMATION

1: INFRASTRUCTURE & OPERATIONAL ASSESSMENT

First, we start with an assessment of your operations and existing infrastructure. This helps determine the steps to move forward with creating a solution and concept that best meets the needs of your company. This starts with discussing the business strategy. Where is the company headed? Is top-line growth the priority? Is there a focus on increased capacity to meet demand? Is the business focused on reducing costs to remain competitive in a market with tightening margins? And what about manufacturing flexibility? How is the company addressing new market pressures, such as the ability to meet customisation demands? Understanding these strategic objectives is vital to ensure that subsequent discussions of how to achieve these goals stay focused on remaining competitive.

2: SOLUTION CONCEPT

Once you have an assessment completed, the next step is to create a solution concept. To achieve these previously identified business goals, it is a must to identify digitalisation projects that align with the business objectives. Examples include reducing risk and addressing compliance requirements, which align with operational projects that address track-and-trace solutions. To do this, secure connectivity of automation systems and the strategic movement of data are critical.

SICK's Consulting and Digital Solutions team works with you to determine the best approach to solve your business challenges. And then it is put into action with a design.

3: SOLUTION DESIGN

There are a few different directions a digital solution can be implemented:

- **Sensor-up (Edge-to-Cloud):** bringing data from the sensor systems up to the data floor on servers and cloud platforms providing added value based on data points.

- **Data-down (Cloud-to-Edge):** analysing and optimising business processes jointly with the customer to create added value using sensor data.

- **Combination of both:** Both a sensor-up and a data-down option can be implemented, resulting in a comprehensive solution that accounts for how your business operates and highlighting key improvements.

4: INSTALLATION AND COMMISIONING

One example of an Industry 4.0 enterprise offering is the implementation of a data concentrator methodology into a pre-existing controls platform to connect current machines and push non-process-related data seamlessly upstream to the cloud or an enterprise resource planning system. The reliable data pushed upstream might include machine status, part count, or data from temperature and pressure values.

This all feeds into dashboards and key performance indicators, providing transparency and, ultimately, predictive maintenance measures that optimise processes and increase throughputs.

5: VERIFICATION AND VALIDATION

Lastly, SICK is your partner from beginning to end on your digital transformation projects. We can provide timely and comprehensive services to ensure everything remains running in top condition. As a global provider of digital solutions, SICK takes a holistic approach to working with our customers to find creative solutions to their problems. This is supported by a multi-disciplinary team that spans the expertise required for a digital transformation including all key enabling technologies.

Our methodology includes a repeatable, scalable engineering process that focuses on data gathering and reporting to our customers in multiple steps to achieve the granularity required to unlock greater production efficiencies.

"At Thomas Warburton, we manufacture business value by offering Industry 4.0 solutions for our customers' C-Part Inventory Management. We continually improve and optimise our internal process as well our customers' value chain. Industry Partners like SICK Sensors support us to develop digital transformation solutions through a consultative and agile approach."
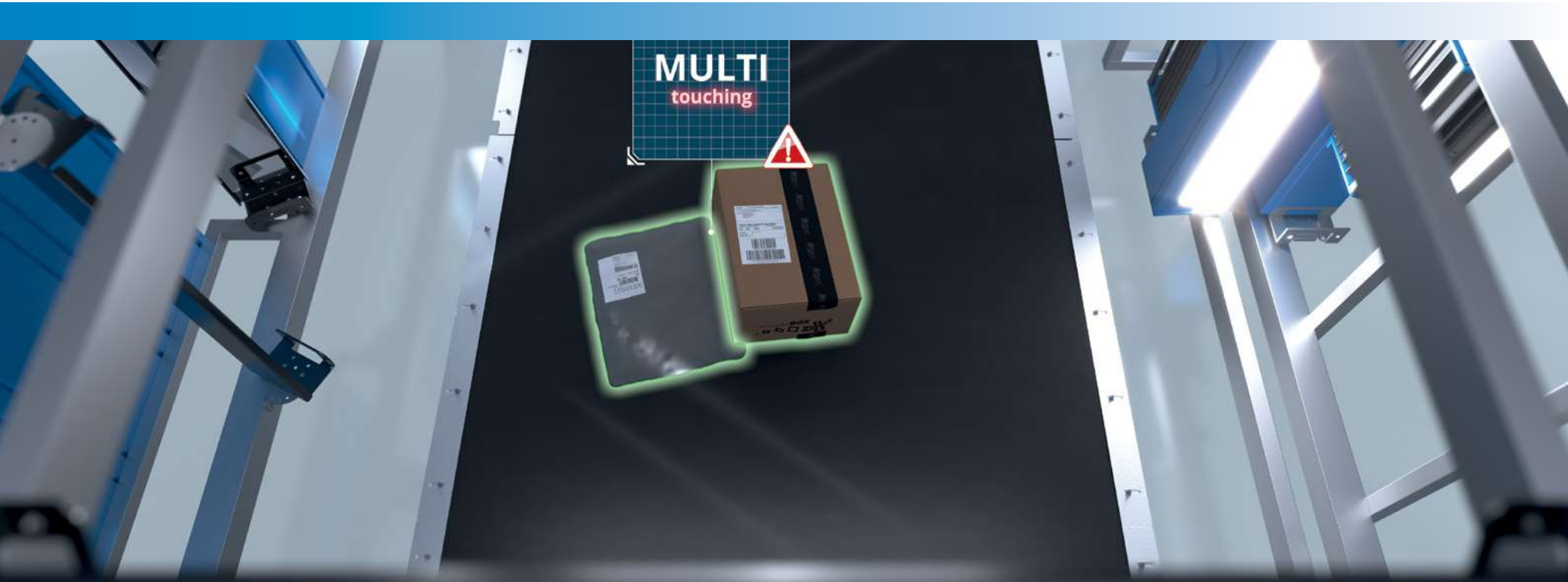
Marilena Romano
Managing Director at Thomas Warburton

Highly Accurate Track and Trace Solution to Reduce Shipping and Picking Errors

Learn how a supplier its increased throughput by over 300% with an automated picking solution and audit system to gain better access to process and sensor datastart?

It is estimated that around 5% of total shipping costs are lost to shipping and picking errors every year. For businesses with tight margins, this can have a huge impact on the bottom line.

One of the most common errors is sending the incorrect items or the incorrect number of items. These errors most often occur during the picking stage. It could be as simple as two items look very similar, so the wrong item is picked. Another common error is sending items to the incorrect delivery address, which is often the result of simply misreading the documentation.

Many shipping and picking errors can be resolved by automating picking processes and implementing automated audit systems to ensure everything in an order is correct before it is sent out. A global manufacturing supply company was looking for a way to automate these processes to ensure correct quantities of its products are shipped to the correct retail store.

THE CHALLENGE

This supplier was having issues with stock being delivered to incorrect retail stores or delivering incorrect quantities. Prior to involving SICK, this process was manual with no automation, which led to many errors and added costs to resolve issues from these errors. The retailer that was receiving incorrect orders recommended that the supplier contact SICK for a solution as the retailer had successfully been using SICK's scanning tunnels in their own operations.
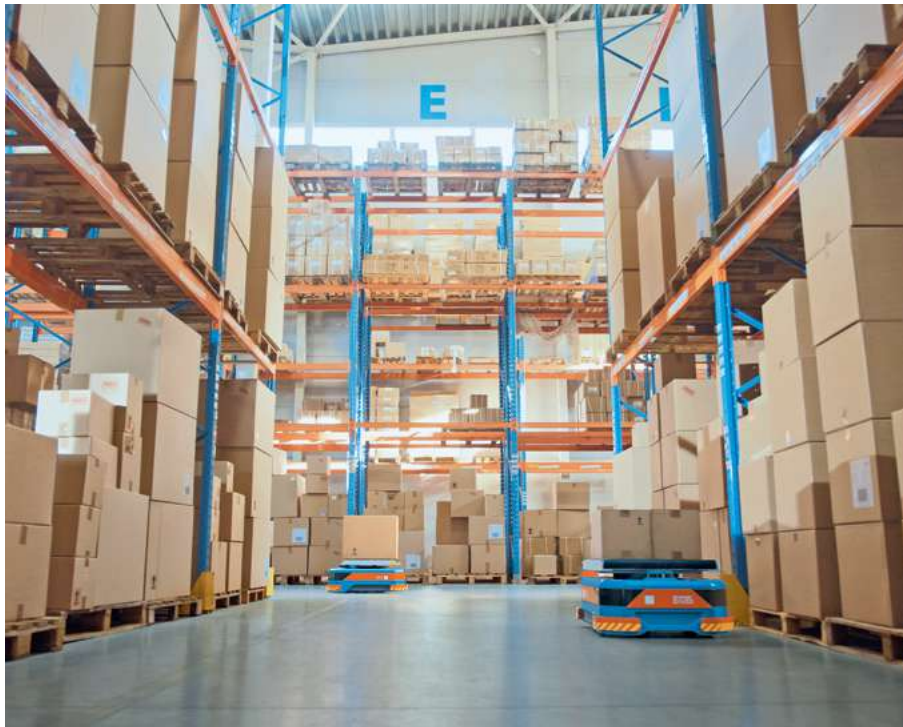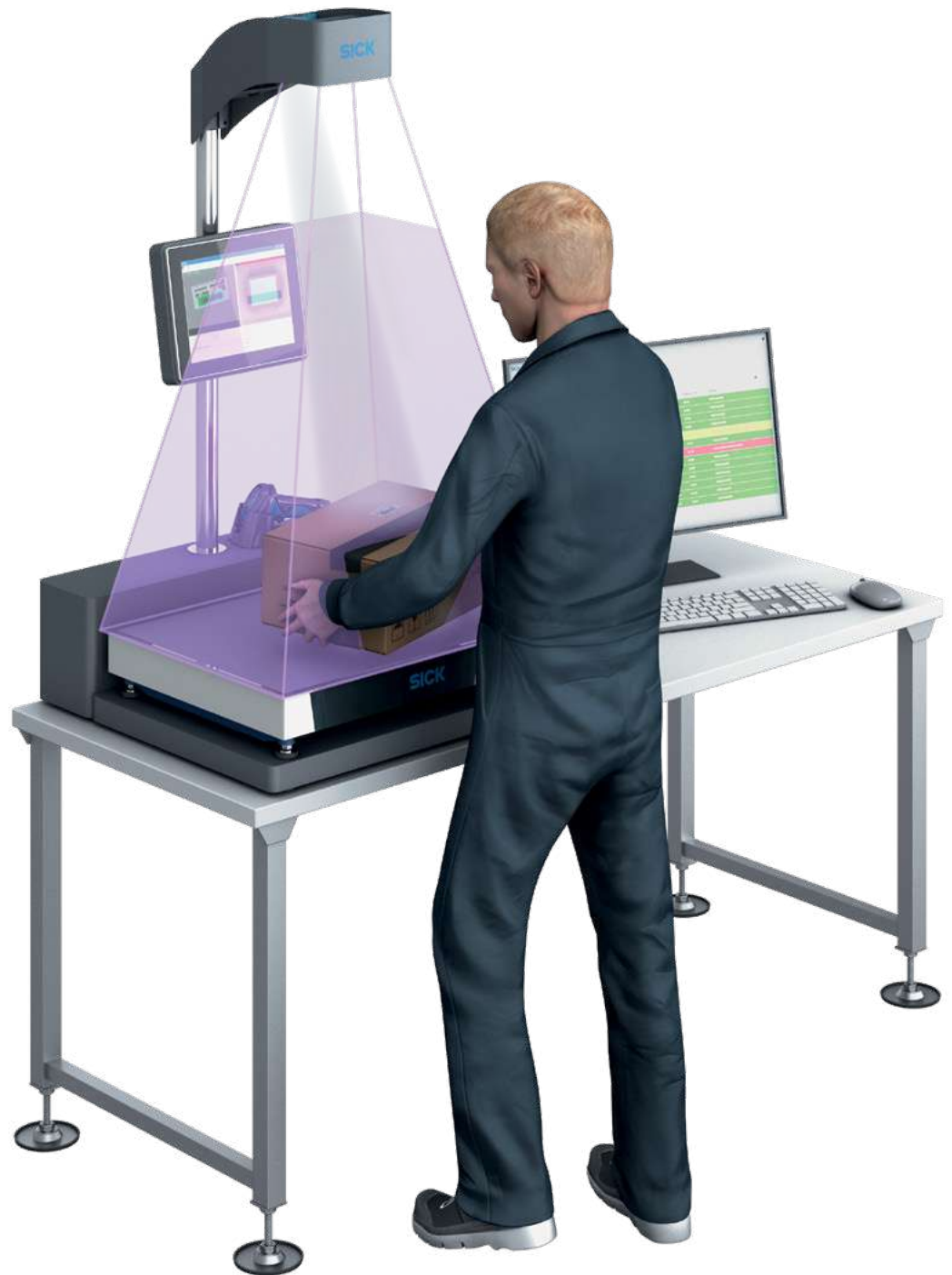
THE SOLUTION

A track and trace end-to-end solution called the Pallet Audit System was installed to improve these processes. Using SICK's ICR camera tunnel system, packages can be validated against the manifest to ensure the correct quantity is shipped and sent to the correct location. The ICR tunnel produces high-resolution image quality for highly accurate read rates for identification applications on sorting processes. It can help to increase throughput to more than 18,000 objects per hour at conveyor speeds of up to four meters per second. The excellent image quality from the integrated cameras also enables it to be used in OCR, video coding, and vision applications.
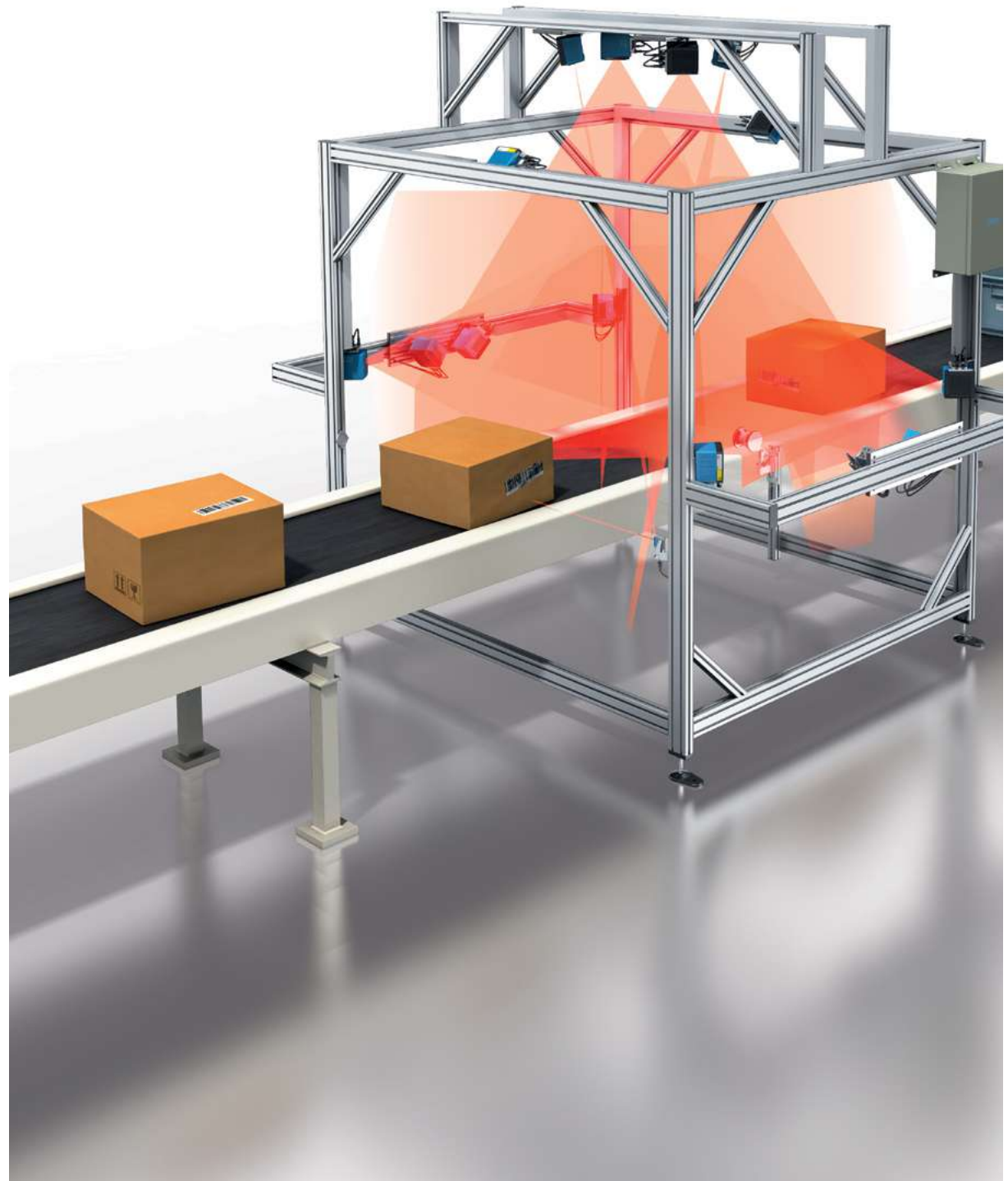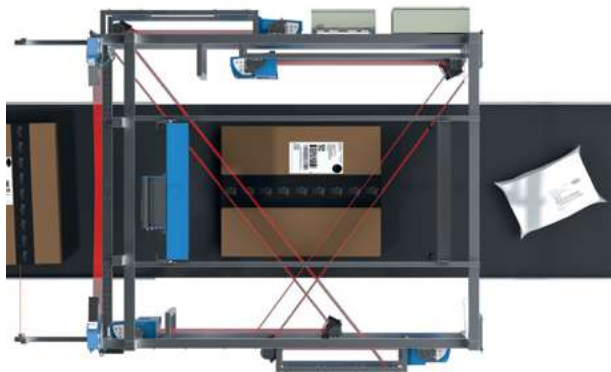
The process starts when the manifest data is received on the local server, the operator scans an LPN using a handheld scanner, the API populates the pallet results on its display using SICK's SIM2000. The SIM2000 is a sensor integration machine that uses IO-Link technology to enable innovative sensor integration and data transparency. It is a low-cost combination of edge gateway functions and sensor data processing to gain greater access to data from sensors to improve processes.

The operator then loads packages onto the conveyor through the camera tunnel system to validate that the correct SKUs and number of packages are going onto the pallet when compared against the manifest in the system. Once it is verified as accurate, the pallet is then complete and ready to ship to the store.

THE BENEFIT

As a result of installing this system, the customer converted to a reliable and automated process with a repeatable solution for this ongoing problem. The customer was able to increase throughput in operations by over 300%. The customer used to audit around 12 pallets per day, and the system SICK installed increased their throughput to over 50 pallets per day. Due to the success of this system, the customer is looking to implement a complete sortation system from SICK in the future.
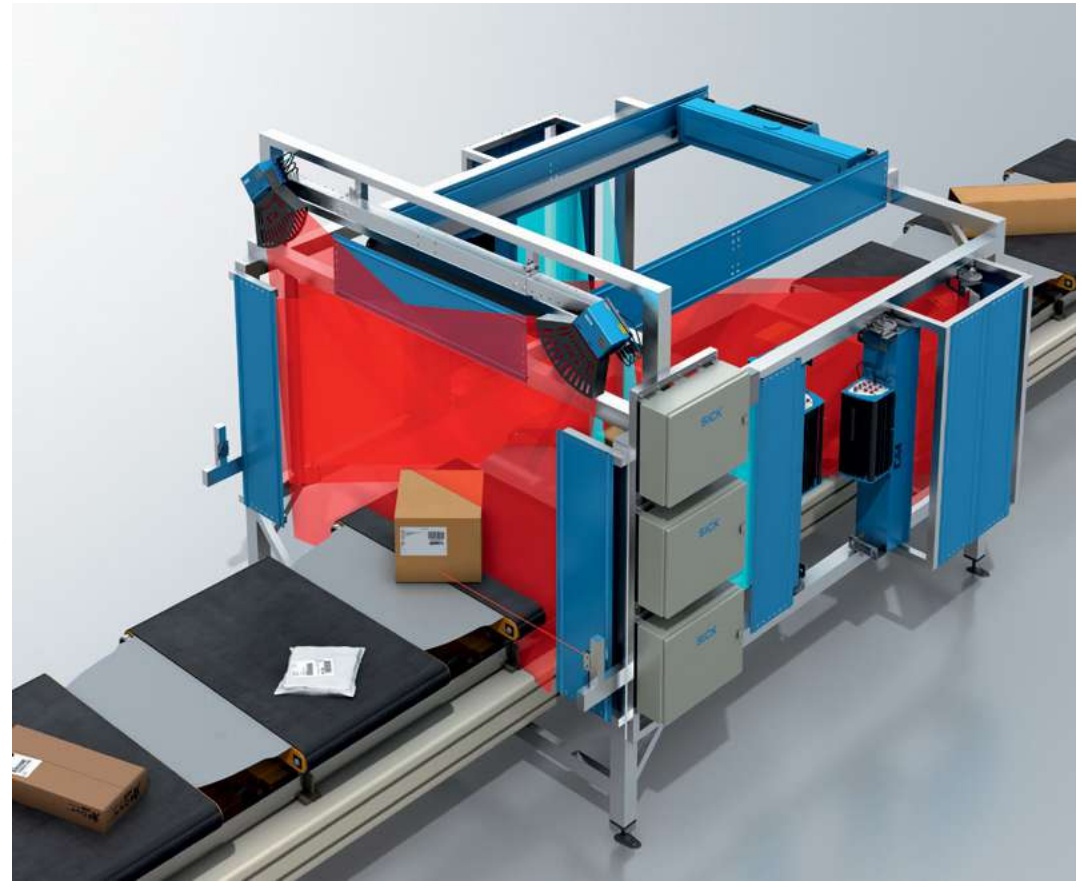
Ready to digitally transform your facility?

Need information to get started with digital transformation?

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SICK
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