

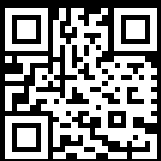
Manufacturing **PRODUCTION** Solutions

February/March 2025

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Thermal Imaging For Food And Beverage Manufacturing

 **FLIR**



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Thermal Imaging for Food and Beverage Manufacturing

Ensure consistent quality, safety, and operational efficiency with cutting-edge thermal imaging technology tailored to your business needs. Whether you're monitoring temperature-sensitive products or ensuring safe food handling practices, thermal imaging offers a quick, non-invasive solution.

Instantly spot temperature inconsistencies in cooking and storage and transportation - ensuring food safety compliance every step of the way. Detect cold spots or overheating to minimize product loss, reduce waste and maintain product quality.

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know more
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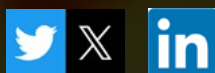
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Incorporated
09-02-2005



Thermal Imaging Cameras In The Food Industry

In the food industry, it's essential to carefully control the temperature of perishable goods throughout production, transportation, storage, and sales. Repeated warnings about illnesses due to tainted and improperly cooked foods highlight the need for tighter process control. Because this almost always involves a human factor, food processors need tools that automate crucial operations in a way that helps minimize human error while holding down costs.

Thermal imaging cameras are such a tool. Using FLIR thermal imaging cameras, you can make automated non-contact temperature measurements in many food processing applications. Analog video outputs can be viewed on video monitors, and digital temperature data, including MPEG4 video outputs, can be routed to a computer via Ethernet.

How It Works

The main elements doing non-contact temperature measurements in the food processing industry are a thermal imaging camera and associated software. They act as "smart" non-contact sensors to perform 100% inspections, measuring the temperature of equipment, refrigerated products, and cooked foods as they exit the cooking process.

Thermal imaging cameras are easy to use, small, and can be positioned almost anywhere as needed. They can also be used to inspect package sealing, and improve efficiency in other food processing operations.

FLIR thermal imaging cameras have firmware and communication interfaces that enable their use in automated process control. Third-party software makes it easy to incorporate these tools into automated machine vision systems without the need for extensive custom-written control code.

The use of thermal imaging cameras in food processing is growing for applications such as:

- Oven baked goods
- Microwave cooked meats
- Microwave drying of parboiled rice and other grains
- Inspecting ovens for proper temperature
- Proper filling of frozen meal package compartments
- Checking integrity of cellophane seals over microwave meals
- Inspecting box flap glue of overwrap cartons
- Monitoring refrigerator and freezer compartments

Thermography for Quality Assistance And Product Safety

Thermal imaging is first and foremost a quality assurance (QA) tool.

Controlling the quality and safety of cooked meat products is an excellent use of this technology. A permanently mounted thermal imaging camera can record the temperature of, for example, chicken tenders as they exit a continuous conveyor oven.

The objective is to make sure they are done enough but not over-cooked and dried out. Reduced moisture content also represents yield loss on a weight basis. Thermal imaging cameras can also be used for inspection on microwave precooking lines. Besides improving product quality and safety, overall throughput can be increased. An additional benefit is reduced energy costs.

Equipment Monitoring

In addition to cooked food inspections, thermal imaging cameras can monitor conveyor ovens. They can even be part of a feedback loop to help control oven temperature.

Another use of thermal imaging cameras for conveyor ovens is monitoring temperature uniformity across the width of the conveyor oven cooking belt. If a heating element inside an electric oven fails, or you get uneven heating across an air impingement oven, one side of the product stream may be cooler. This can be quickly discovered with thermal imaging cameras.

Quality inspections of this sort are much more difficult with conventional contact type temperature sensors. Thus, thermal imaging cameras can help correct variability and improve quality before a lot of product is scrapped.

Packaging Inspections

Software is available that allows thermal imaging cameras to locate objects and patterns in the images. One application for pattern matching is in the production of frozen meals. Thermal machine vision can use pattern recognition software to check for proper filling of food tray compartments.

A related application is automated 100% inspection of the heat-sealed cellophane cover over finished microwave meals. A thermal imaging camera can see heat radiating from the lip of the container where the cellophane heat-seal is formed.

The temperature along the entire perimeter of the package can be checked by using the thermal image with machine vision software. This type of program matches the geometric pattern in the image and its temperatures against the temperatures in a pattern stored in a computer memory. An added function in such a system could be laser marking of a poorly sealed package so it can be removed at the inspection

station.

An issue affecting product safety indirectly is the integrity of cartons that overwrap and protect food containers. One of the most cost-effective ways of sealing overwrap cartons is to use heated glue spots on the carton flaps. In the past, the integrity of the spot gluing was determined by periodically doing destructive testing on several samples. This was time-consuming and costly.

Because the glue is heated, a thermal imaging camera can “see” through the cardboard to check the pattern and size of the applied glue spots. The camera can be set up to look at predefined areas of the flaps where glue should be applied, and verify spot sizes and their temperatures.

The digital data collected is used for a pass/fail decision on each box, so bad boxes can be immediately removed from the production line. The data is automatically logged into the QA system for trend analysis, so a warning can be generated if an excessive number of boxes begin to fail.

Yet another application for thermal imaging cameras is monitoring container filling operations. Although this is seldom a product safety issue, it does affect yield and compliance with regulations. Different areas on the bottle can be defined and used to trigger an alarm and remove bottles that are over- or under-filled. Thermal imaging cameras are a better alternative to visible light cameras when a bottle or jar is made of dark colored glass or plastic.

Automating measurements

Application software currently available for thermal imaging cameras includes a wide variety of functions that support automated food processing applications. This software complements and works in conjunction with firmware built into thermal imaging cameras. The imaging tools and libraries in these packages are hardware- and language-independent, making it easy for food processing engineers to quickly implement thermal monitoring and control systems.

Thermal imaging cameras themselves provide the user with different

operating modes that support correct temperature measurements under various conditions. Two functions commonly found in these cameras are a spotmeter and area measurements.

The spotmeter finds the temperature at a particular point. The area function isolates a selected area of an object or scene and usually provides the maximum, minimum, and average temperatures inside that area. The temperature measurement range typically is selectable by the user. As an adjunct to the temperature range selection, most cameras allow a user to set up a color scale or gray scale to optimize the camera image.

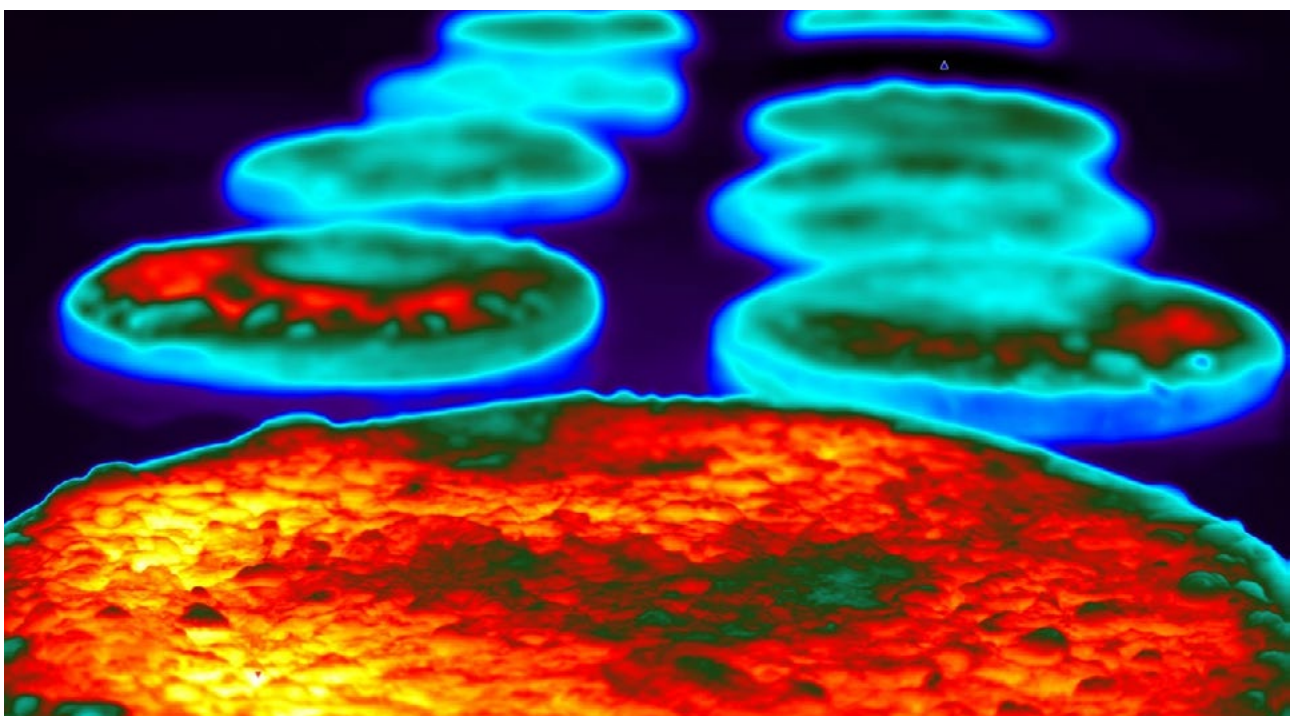
In conveyor oven applications, the area function is typically used because pieces of cooked product are often randomly located on the conveyor. The camera can be programmed to find and measure the minimum and maximum temperatures within the defined area. If one of those setpoint temperatures were to fall outside the user-defined limits, an application program running on a PC or PLC would instantly trigger an alarm, alerting the operator to check the thermal image on a video monitor or PC to find and remove the bad product, and/or adjust the cooking temperature.

In the case of local monitoring, an IR camera’s digital I/O can be used to directly trigger an alarm device without additional software. However, food processing often benefits from higher level analytics that are available in third-party software that runs on a PC.

These out-of-the-box solutions do not require the writing of application source code. By adhering to commonly used machine vision interface standards such as GigE Vision® and GenICam,™ a wide range of functionality is supported by this software.

A simplified block diagram of conveyor monitoring is shown. One thermal imaging camera is adequate for many applications, or a thermal imaging camera may be combined with a visible light camera to record other target object attributes, such as color.

www.flir.co.uk



Setting New Standards in the Machining of Long and Heavy Workpieces – Nagel Vertical Honing Machines VL 15 and VL 30

Nagel introduces the high-performance vertical honing machines VL 15 and VL 30, designed specifically for machining long steel tubes, piston rods, and other heavy workpieces with standard lengths of up to 3,800 mm and diameters of up to 350 mm. Custom stroke lengths are also available upon thorough evaluation. These machines establish new benchmarks in precision and machining efficiency.

The Nagel VL series combines user-friendly operation, powerful drives, and a stable, robust design. Installed over a working trench, the machines enable workpieces to be accessed both above and below floor level. This ensures ground-level accessibility to the working areas, enhancing workshop flexibility.

With the VL 15 and VL 30, high material removal rates can be achieved in short cycle times while maintaining tight dimensional tolerances and geometrically precise bore shapes.

These machines also deliver exceptional surface finishes, even on workpieces with rough pre-machining, meeting the stringent quality demands of various industries.

The VL series is also suitable for external machining, where the workpiece is mounted on the honing spindle, which performs both vertical and radial honing movements. This significantly extends the lifespan of sleeves and sealing elements, as the machining marks are oriented axially.

Equipped with an advanced automatic measurement system, the machines

achieve shut-off accuracy of 0.01 mm, even when machining long tubes with material allowances of up to 1.0 mm. This ensures consistently high manufacturing quality while minimizing operator effort.

Nagel honing machines are indispensable for companies prioritizing top precision and efficiency. The compact design of the VL series saves valuable floor space while delivering the stability required for machining large and heavy workpieces.

They are the perfect solution for industries relying on cutting-edge technology in heavy machining.

With the VL 15 and VL 30 vertical honing machines, Nagel offers a forward-thinking solution that not only enhances production quality but also reduces production costs—a clear competitive advantage in an increasingly demanding market.

www.nagel.com



Speedor Storm, The High-Speed Door Ready For Large External Openings

Hart Door System's wind-resistant, high-speed, industrial rolling door, Speedor Storm, is ready for business be it a factory, warehouse, storage facility or any kind of plant operation that has one or more large external openings which must be opened frequently for people and traffic.

With wind resistance available up to 'wind class 5', as defined by DIN EN 12424, in the closed position this high-speed door is ready for openings to a maximum 8 metres width or height subject to 48 square metres.

The ability to withstand substantial wind pressure means major entrances open/close automatically so avoiding a less than optimal working environment and the escape of heated air.

Speedor Storm is designed specifically to help with several areas of business notably:

- Productivity – because entering and leaving a building can be done rapidly.
- Creating a better environment in which to work because of the high-speed operation, even on large doors means there are no unnecessary open periods.
- Delivering maintenance of temperature and environment by door preventing penetration by wind born debris.
- By saving on the substantial cost of heating – important as the cost of energy shows little sign of improving.
- Low cost of ownership because this is a robust design and construction
- Made in the UK at Hart's Newcastle factory from where its teams of engineers are available throughout the UK for installation of Speedor Storms and reliable servicing and maintenance thereafter.
- The benefits of Speedor Storms come from its unique guide system in combination with other carefully designed features.

Speedor Storm's strength and wind resistance comes from its multi-layer PVC and textile, both long-lasting and tear-resistant and its inbuilt horizontal curtain braces and no external cumbersome and noisy external wind bars.

There is a colour choice as well as 'a with or without vision panel' which combine to deliver a good appearance, operational effectiveness and a performance product.

Speedor Storm is in particular demand from waste processing plants and renewable energy facilities such as Anaerobic Digestion (AD) plants

that produce energy from waste. The ability to limit the escape of odour and noise and prevent pests entering is highly valued by such companies. Speedor Storms have also proved to be a great asset for ports, notably for grain tipping bays.

Safety features are of course paramount, and here they include a state of the art safety light curtain, anti-fall protection and sensors to activate the door. There is a range of operating methods that include hands free, floor loops, radar, photo beam, radio operation, movement sensors, handheld or vehicle-mounted radio transmitters, or simple push button and pull cords.

The automatic operation can be set to include or exclude pedestrians as desired. If warning lights or klaxons are required, these can be incorporated in a complete door system and control panel which are designed for any conceivable need including integration into a Building Management System if necessary. This is delivered via its unique guide system in combination with other carefully designed features.

Little wonder Speedor Storms are so highly regarded.

www.hartdoors.com





Are You Facing Challenges with Your CapEx Projects? Discover Solutions with Concept Projects Group

Established in 2018, Concept Projects Group has built a strong reputation for delivering high-quality engineering and construction projects. Founded by Co-Managing Directors Andy Barker and Steve Tunstall, the company operates out of Wirral, Merseyside, a key manufacturing hub in the UK. With an annual output valued at £29.5 billion, the North West plays a crucial role in driving the UK's industrial economy.

Specialising in CapEx project management, Concept Projects Group partners with leading clients across industries such as food and beverages, pharmaceuticals, homecare, and chemicals. Their engineering and construction services cover feasibility studies, process optimisation, automation, robotics integration, industrial and commercial fit-outs, CDM consultancy and more.

The Challenges of Managing Manufacturing CapEx Projects

Capital Expenditure (CapEx) projects involve significant investments in physical assets such as equipment, facilities, and technology, all designed to deliver long-term value. Unlike Operating Expenditure (OpEx), which covers the daily costs of running a business—such as wages, utilities, and maintenance—CapEx focuses on driving growth and business expansion.

While CapEx projects are critical for improving productivity and enabling innovation, they also present unique challenges. Once a CapEx budget is approved, companies often face tough decisions about what to prioritise. Many businesses may struggle to manage the design, planning, and execution phases of projects due to limited internal resources and expertise.

Are you facing similar challenges? Concept Projects Group specialises



in overcoming these obstacles. Whether acting as an extension of your team or providing a full turnkey solution, their tailored approach ensures every project delivers long-term value.

Case Study: High-Speed Packaging Line for a Global FMCG Company

A recent project highlights Concept Projects Group's ability to deliver complex solutions for manufacturing CapEx projects. A global FMCG client sought to expand their manufacturing capacity by designing and installing a new packaging line that would double their volume output—all while minimising operational downtime.

Concept Projects Group managed every aspect of the project, from initial design through to installation, commissioning, and handover. Key activities included; designing the system to optimise for speed and efficiency, enhancing digitalisation to improve line-to-area interfaces, procuring state-of-the-art equipment, and removing the existing line to install a fully automated, high-speed replacement.



The project was delivered on time, within budget, and with zero lost-time accidents. The new high-speed packaging line resulted in a remarkable 100% increase in volume output.

Following this success, the client engaged Concept Projects Group for additional projects, including facility upgrades, fit-outs and CDM consultancy to enhance their production environment.

[Click here to explore more case studies](#)

Why Choose Concept Projects Group as Your CapEx Project Partner?

Manufacturing leaders face a unique set of challenges when implementing CapEx projects—from tight budgets and limited resources to demanding timelines. The latest Make UK 2025 flagship report highlights that 29% of manufacturers view technology, AI, and automation as critical drivers of growth, with nearly 50% planning to expand their product portfolios. These trends underline the growing importance of CapEx investments as manufacturers strive to increase output and introduce new capabilities.

Concept Projects Group excels at navigating these complexities. Their solutions align with business goals while ensuring strict compliance with health, safety, and sustainability standards. With a proven track record, including successful partnerships with leading brands such as Unilever, John West Foods, Ipsen, and Bepak, clients can trust Concept Projects Group to deliver results.

Are you ready to take your manufacturing operations to the next level?

Contact Concept Projects Group today to see how they can help.

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**SCAN TO DISCUSS
YOUR PROJECT**



Optimized Surfaces For High-Performance And Long-Lasting Components

The choice of the right machining process significantly impacts the quality and lifespan of technical components. In many industrial applications—ranging from automotive and aerospace to energy generation—precisely machined components are essential for minimizing friction and wear. Optimized surface characteristics can make components more compact, efficient, and durable.

The Impact of Machining on Friction and Wear

A comparison of turning, grinding, and superfinishing reveals significant differences in frictional properties, wear behavior, and surface topography.

Turning is a conventional cutting process with defined cutting edges, allowing for efficient material removal. However, it tends to leave a relatively rough surface structure. This can be problematic in sliding and rolling contacts, as the load-bearing surface area is often only around 40%.

Grinding significantly improves surface structure, increasing the load-bearing ratio to approximately 70%. However, the high temperatures generated in the grinding zone—where coolant is often ineffective—can induce tensile residual stresses in the surface. Additionally, the formation of a “soft skin” (temperature-induced material property alteration) may counteract the advantages of a better load-bearing surface, ultimately accelerating component wear.

Superfinishing addresses these challenges by combining high surface quality with minimal thermal stress. Operating at very low cutting speeds, this process raises the workpiece temperature by only a few degrees. The tools maintain continuous contact with the workpiece surface, creating an exact topography with a high load-bearing ratio through overlapping movements. Surfaces with a plateau structure offer particular advantages, forming oil retention pockets that enhance sliding and rolling friction properties.

Superfinishing: Precision Meets Cost-Effectiveness

Superfinishing offers numerous advantages but does not achieve the high material removal rates of hard turning or grinding. Consequently, it is primarily used as a finishing process. To maximize cost efficiency while ensuring outstanding component quality, parameters such as feed rates, dressing cycles, and tool change intervals can be optimized, and surface roughness can be adjusted. Additionally, superfinishing significantly reduces the geometric accuracy requirements of prior machining steps—a crucial advantage in production workflows. A standout feature of superfinishing is its robustness against fluctu-

ating input tolerances. This ensures consistent process reliability and top-tier surface quality. The results speak for themselves: reduced friction losses, lower heat generation during operation, and extended component lifetimes. This not only translates to reduced maintenance and lower operational costs but also enhances reliability—a critical factor in industries where downtime is costly.

Practical Applications: Energy and Medical Technology

The benefits of superfinishing are particularly evident in applications demanding maximum efficiency and durability. In energy generation, such as offshore wind farms, components must operate reliably for decades under extreme conditions. A prime example is large rolling bearing components, where superfinishing achieves roundness values of 1 µm and surface roughness below Ra < 0.2 µm. Such precision minimizes maintenance requirements and prevents costly downtime.

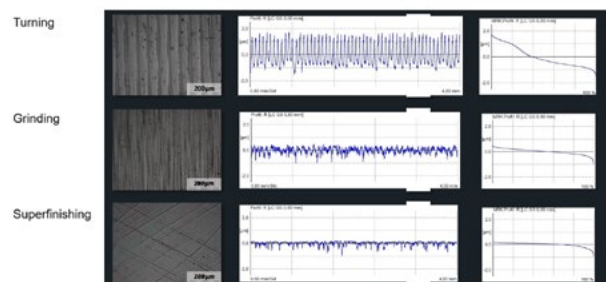
In medical technology, implants like artificial hip joints benefit from highly polished, finely machined surfaces. These reduce deposits, facilitate cleaning, and lower infection risks. For instance, roundness values of 0.5 µm are achieved, and surface structures become measurable only through advanced reflection systems.

Striking the Right Balance Between Technology and Cost Efficiency

“The selection of optimal superfinishing parameters, tool types, and processing solutions depends on the preceding machining process and the specific application requirements. Our goal is to work closely with customers to find the ideal balance between technical feasibility and economic efficiency,” explains Christian Feuchter, Project Manager & Technical Sales. To achieve this, modern machines, precise measuring instruments, and experienced specialists are at their disposal.

Thanks to superfinishing technology, friction losses are minimized, heat generation is reduced, and component lifetimes are significantly extended. In industries where maximum precision is essential, this process provides a decisive competitive advantage.

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Sealed For Sustainability: Solutions Powering Green Tech Innovations

A reliable, safe and sustainable machine built by Ceetak Heat Sealing for global technology giant, Johnson Matthey, was the result of collaboration and a shared passion for sustainable engineering expertise.

Pioneering technology innovator

Johnson Matthey was founded in 1817 and has seen technological advances and challenges for over 200 years. Today, one of these biggest challenges is the fight against climate change. The company's mission is to innovate and improve the way they operate with the highest safety standards for their people, and protection of the planet.

The technology brief

As a world leader in sustainable technology solutions, Johnson Matthey approached Ceetak with a simple brief; upgrade our existing machine, make it more user friendly, and increase efficiency.

The existing machine was a 100% manually operated vacuum sealer for heavy and high value products contained in a robust laminate material bag. The machine had little flexibility for different shapes and sizes. With increased production, and multiple sizes and weights of products due to an expanding customer base, versatility was a key requirement for the new machine.

Johnson Matthey also briefed Ceetak that operator ease and efficiency for handling and loading was a priority, and they were tasked to design a machine that one person could manage (a reduction from the existing two operators).

Customer vision supported by technology, design and evolution

The vision was a machine whereby an operator placed the product on a conveyor, to be passed through for bagging, vacuuming and sealing. The bagged product would then travel through the conveyor ready for loading onto a pallet ready for shipping.

To improve operator ease and health and safety further, Ceetak proposed the addition of electric hoists to lift and move the bagged product both on and off the conveyor. This meant no heavy lifting of very valuable product and protected the operator. The arms were adjustable according to the product size and shape and the conveyor system accelerated the process, further increasing productivity.

The technology

The Ceetak team identified the ImPulse Heat (IPH) sealing system would be most suitable for this project. The IPH sealing bars create leak-proof seals both around, and over variations in material thickness – ideal for the laminate material used by Johnson Matthey. The sealing bars compress and adapt to the contours of the material, ensuring a reliable seal—even in challenging conditions, such as when creases form during the vacuuming process.

Its precise temperature control, with rapid heat up and cool down capabilities, means IPH is suitable for many materials including polyethylene, and biodegradable and compostable films. The result is a user-friendly and adaptable sealing unit with a vital role to ensure the bag has perfect seal integrity and its contents free of contamination.

Ceetak's design, manufacture, and testing process

Ceetak's experienced in-house team offer a full bespoke consultancy service incorporating design, materials, technology, and equipment build.

Before projects are signed off, the customer is invited to take part in a 'FAT' – Factory Acceptance Trial. Richard Piper, Mechanical Engineering Lead from Johnson Matthey, attended the FAT on this project.

After approval, the machine was transported to Johnson Matthey and Richard commented on the machine, "We have been delighted to work with Ceetak on this project. The machine is installed for production and has improved operator output and efficiency. It is extremely well received with the team because it is safer and easier to use than our old machine."

Ceetak supplies heat-sealing technologies for the sealing and cutting of all thermoplastic materials, foil laminates and other biomaterials including plastics, card, and paper. They produce both modular heat-sealing components to be retrofitted onto existing customer machinery or alternatively, a complete design and build service of bespoke machinery.

Discover how Ceetak Heat Sealing can transform your operations by visiting www.heatsealing.ceetak.com or contacting us at

hsenquiries@ceetak.com



Southern Manufacturing & Electronics 2025 Breaks Records For Exhibitor And Visitor Attendance

Southern Manufacturing & Electronics 2025, the UK's premier annual trade fair serving manufacturing in the mechanical and electronic engineering sectors, concluded its most successful show to date in early February. Celebrating its 27th anniversary this year, the international event saw a significant surge in visitor attendance and exhibitor participation, solidifying its position as a vital business hub for industry professionals. In addition to the bustling showground featuring everything from cutting-edge technology to more everyday items essential for factory operations, the expo featured 53 independently-approved, open-format seminars including a keynote address from Ben Fletcher, COO at Make UK.

The number of attendees reached 10,204, a 14% increase compared to 2024. This year's visitor profile reflected the perennially diverse nature of the show. The biggest cohort was from the aerospace manufacturing sector, which plays a crucial role in the South East of England, employing thousands of highly skilled engineers. More than 72% of visitors had purchasing influence, underlining the event's importance as a platform for business growth. The number of exhibitors also grew, by an impressive 12%, with 535 companies showcasing their latest products and innovations, breaking the notional 500 barrier for the first time.

Southern Manufacturing & Electronics 2025 marked a significant step forward in enhancing the visitor experience. People were provided with new smart badges that enabled seamless information collection via an EasyGo reader on each stand. The innovative system eliminated the need to carry brochures around, while simultaneously providing exhibitors with valuable data on who had expressed interest. On average, each stand collected 60 EasyGo leads, demonstrating very positive engagement. The show also launched Southern Connect, a dedicated app designed to expedite networking and matchmaking between attendees. It

saw excellent uptake, with 41% of visitors utilising its features alongside the printed guide. The app facilitated 31,191 actions, 1,974 connections between 3,948 participants, and 85 meetings arranged directly through the platform.

Simon Farnfield, a director at Easyfairs, the new proprietor of the event enthused, "We are thrilled with the resounding success of the exhibition in this our first year of ownership. The record-breaking number of visitors, increased exhibitor participation and enthusiastic adoption of our new networking technology demonstrate the show's continued importance to a broad spectrum of manufacturing. The positive feedback we have received, particularly regarding EasyGo and Southern Connect, underscores our commitment to providing a valuable and engaging experience for everyone involved."

An interesting meeting between two companies underlined the collaborative initiatives that exhibiting at the show presents. A regular returnee that takes the same stand space every year, British CMM (coordinate measuring machine) manufacturer LK Metrology met with a fellow exhibitor, bearing manufacturer Bowman International, which was promoting its 3D printing expertise. The company discovered LK when visiting the 2024 show and within eight weeks had bought a measuring machine from them. What appealed in particular to Bowman was the Made-in-Britain graphics on the CMM manufacturer's stand. LK's sales and marketing director commented, "It is very worthwhile for us as a business to be here year in year out, in the same place, in a great location to help us push and advertise our UK brand."

Several other companies attributed sales directly to their presence at the show, highlighting the event's effectiveness in connecting suppliers with buyers. Many praised the high quality of leads from a diverse range of industries, indicating strong potential for future business. The networking technology was frequently mentioned for helping to stream-

line lead capture. The overall organisation, including setup and venue facilities, was also singled out for being smooth, well-managed and very accessible. Exhibitors described a buzz on the show floor, with strong attendance and a positive atmosphere contributing to a successful experience.

Visitors were similarly enthusiastic. A design engineer from Rolls-Royce said, "I have found the exhibition very useful and good for getting ideas and contacts. It's really useful to come across lots of technology and products that I hadn't seen before and it's good to attend and keep up to date with the latest trends. I would definitely recommend this show - there's so much to see and I am looking forward to attending the seminars!"

Other visitors liked the show's comprehensive range of products and services, valuable networking opportunities with both new and existing contacts, and the chance to discover the latest industry trends and technologies, particularly in areas like additive manufacturing, AI and digitalisation. Many of those canvassed appreciated the informative seminars and commended the professional atmosphere and organisation of the event, including the helpful app and spacious layout of the hall.

The high footfall and lively atmosphere were also frequently mentioned, with many visitors highlighting the value of face-to-face interactions and the ease of finding relevant suppliers. Overall, the show was considered a worthwhile and enjoyable three days, with many attendees expressing their intention to return every year.

This year's Southern Manufacturing & Electronics, held at the world-

class Farnborough International Exhibition and Conference Centre, was such a success that it has been shortlisted by the trade magazine Exhibition News for a coveted EN Award in the category 'Best Trade Show 5,000 to 10,000sqm' at a dinner in London at the end of March 2025.



Metal Fabrication: The Evolution Through Automation

Metal fabrication stands as one of the oldest industries in human history, having laid the foundation for many modern advancements and applications. Despite its deep-rooted heritage, the contemporary metalworking sector has undergone a transformative evolution driven primarily by the rising tide of automation. This shift marks a significant departure from traditional practices, reshaping the landscape of the industry in ways that demand attention and adaptation.

Automation Skyrockets in the Metalworking Sector

Historically, the metalworking industry lagged behind other sectors in terms of technological automation. However, this trend is rapidly changing. As of 2023, the United States boasted approximately 101.7 thousand metal fabrication robots actively in operation. Current projections indicate that this number will ascend dramatically—more than tripling by 2030. This meteoric rise in automation is not confined to a single modality; it spans various applications within metalworking, including cutting, welding, machining, and material handling.

Moreover, the integration of automated technologies has revolutionized workflows, leading to entirely new processes, such as the creation of 3D-printed metal products. Such innovations underscore the urgency for industry leaders, particularly those who may not yet have fully embraced robotic technologies, to reassess their strategies and understand the implications of this rapid transformation.

Why Is Metalworking Automation Growing?

The meteoric rise in the adoption of robotics in metalworking can be traced to several converging trends. Recognizing these developments will enable organizations to leverage new technologies to their advantage in the future.

1. Improved Precision

One of the most compelling reasons for the uptick in automation is the superior precision offered by robotic systems compared to traditional manual workflows. In an industry where the demand for minimizing waste and error is paramount, robotic automation presents a clear advantage. Many metalworking tasks are highly repetitive, making them susceptible to human error. Robots, in contrast, operate consistently without the risk of fatigue or distraction.

Automated systems can consistently achieve levels of precision that are often unfeasible for human workers. This precision leads to a significant reduction in errors, which, in turn, minimizes scrap material waste. Each year, the U.S. generates approximately 19.2 million tons of metal waste; thus, even a marginal decrease in errors can have a substantial impact on resource conservation and efficiency.

2. Enhanced Efficiency

Robots are inherently faster than their human counterparts, contributing to enhanced operational efficiency. The speed at which robots operate, combined with the elimination of errors and the subsequent need for rework, allows fabricators to increase their overall throughput



in response to rising demand without necessitating costly expansions of facilities or workforce.

Concerns about job displacement due to automation persist; however, in reality, robots are more likely to address existing skills gaps rather than replace human workers. The metalworking sector is currently grappling with a significant shortage of skilled labor, particularly welders, estimated at 375,000 job openings. As such, robots act as a solution to this pressing issue by supplementing a dwindling workforce.

3. ****IoT Connectivity****

The advent of the Internet of Things (IoT) is revolutionizing how automated systems operate within metalworking facilities. By incorporating connected sensors, robots can achieve increased accuracy and are subject to upgraded management and operational strategies that maximize their return on investment.

One major advantage of IoT integration is predictive maintenance. Regular preventive maintenance can significantly enhance the longevity and functionality of equipment. However, many repairs are often reactive rather than proactive, leading to unnecessary downtime and inflated costs. By utilizing IoT sensors, facilities can anticipate equipment failures, allowing technicians to perform maintenance before issues escalate, ultimately maximizing productivity while reducing operational costs.

4. ****AI Functionality****

The incorporation of Artificial Intelligence (AI) into metalworking robot-

ics is further advancing the industry. Traditional automation systems often grapple with inflexibility, particularly when faced with unexpected deviations in processes. Integrating AI can infuse robots with the ability to adapt dynamically to changes in their environment.

For instance, a machine vision system equipped with AI can detect misaligned parts and intuitively adjust a robotic arm's operations accordingly. Furthermore, AI algorithms can analyze the properties of the materials being handled, enabling robots to choose optimal processing methods for each unique scenario rather than relying on a one-size-fits-all approach. This adaptability allows robots to function synergistically with human workers, making them invaluable in environments that require a flexible response to ever-changing workflows.

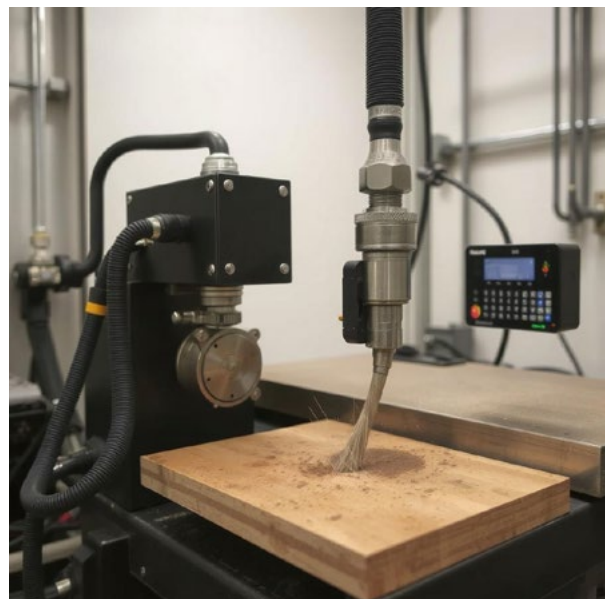
5. ****Better Safety****

The increasing focus on worker safety in the metalworking industry has propelled the adoption of automation technologies. In 2020, primary metal manufacturers recorded a concerning rate of 3.9 injuries per 100 workers, significantly higher than the average across industries. As awareness of occupational hazards grows, the appeal of automation as a safer alternative to manual labor becomes more pronounced.

Processes that are highly automatable often carry substantial risks for human workers. By integrating robotic solutions to handle these perilous tasks, companies can create a safer work environment, effectively reducing the likelihood of safety incidents. Moreover, advancements in AI and IoT technologies have made newer robotic systems safer than their predecessors, further enhancing workplace safety.

In conclusion, the metalworking industry is on the brink of a significant transformation powered by automation. The combination of improved precision, enhanced efficiency, IoT connectivity, AI integration, and an increased focus on safety illustrates a shift that will define the future of metal fabrication. Industry leaders should heed these trends and consider how embracing automation can provide their businesses with a competitive edge in an increasingly complex and demanding market.

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Key Manufacturing Trends To Watch For In 2025

The manufacturing industry is characterized by a high level of competition. To succeed, it is vital to keep pace with digital transformation, emerging technologies, and workforce developments, which can create valuable opportunities for enhancing operational efficiency and gaining an advantage over competitors. This document outlines the latest trends in manufacturing, guiding professionals toward achieving excellence in machine shop operations.

****Digital Transformation in Machine Shops****

Digital transformation is fundamentally altering the landscape of machine shops through the integration of data insights, robotics, and process automation. The adoption of these modern manufacturing practices significantly enhances the ability of shop floors to meet ambitious production goals, automate repetitive processes, and address diverse customer demands with precision. The question arises: How is digital transformation influencing production machining cycles?

****The Role of Data and Analytics****

Data is essential for attaining machine shop excellence. It provides the insights necessary for innovation and the continuous refinement of production lines, thereby ensuring ongoing improvements and customer satisfaction. As articulated by one Hexagon client, "The more

data we gather from every step of the process, the better we can refine and improve it."

Consequently, many contemporary manufacturers are embracing data-centric technologies, including:

- Internet of Things (IoT) sensors for real-time monitoring of production processes
- Artificial intelligence (AI) for enhanced data analysis of production machining cycles
- Integrated production machining software to eliminate data silos between teams
- Collaborative quality and process reporting tools

A data-centric infrastructure ultimately generates real-time analytics for machine shops, resulting in:

- Accelerated, informed decision-making that promotes smarter manufacturing practices
- Simplified identification and remediation of bottlenecks in production machining
- Prompt detection of deviations from quality standards by dedicated quality teams
- Real-time insights for predictive maintenance aimed at preventing production downtime
- Enhanced agility in responding to customer needs, which allows for greater flexibility and product customization through predictive data analysis

****Automation and Robotics****

Machine shops frequently encounter operational obstacles such as labor shortages, skills disparities, high production demands, and stringent quality standards. Fortunately, automation offers a viable solution to these challenges. It is a critical component in eliminating cumbersome manual tasks, enhancing overall productivity, and minimizing errors in production machining cycles. Several notable examples illustrate the impact of automation:

- ADFL utilizes an automated system for time analysis, production cost estimation, and quote generation, resulting in expedited and accurate job quotes.
- Omega Enterprises has managed to decrease cycle times by 50% through the employment of CAD/CAM software for the automation of manufacturing preparation, rather than relying on manual tracing.
- Wabtec has successfully reduced quality costs by 35% via automated reporting mechanisms that quickly identify process defects.

Furthermore, the latest advancements in robotics have enabled machine shops to allocate personnel to more complex and creative endeavors. For instance, robotic systems are now deployed for the packing, loading, and unloading of materials, while automated guided vehicles (AGVs) facilitate the transportation of parts within facilities. Collaborative robots assist teams in various tasks, including quality inspection and traceability, which require a high degree of precision.

****Advanced Manufacturing Technologies****

Fostering innovation and enhancing production efficiency are essential priorities for every machine shop. Thanks to advancements such as 3D printing, IoT sensors, and integrated production machining software, the agility of manufacturing processes has markedly improved.

****Additive Manufacturing (3D Printing)****

Additive manufacturing, commonly referred to as 3D printing, has revolutionized the operational procedures of machine shops, particularly in the preparation and setup phases. This approach is both economically viable and sustainable for rapid prototyping, facilitating lightweighting and part consolidation. Additionally, it allows shops to quickly prototype customized products in response to on-demand production needs.

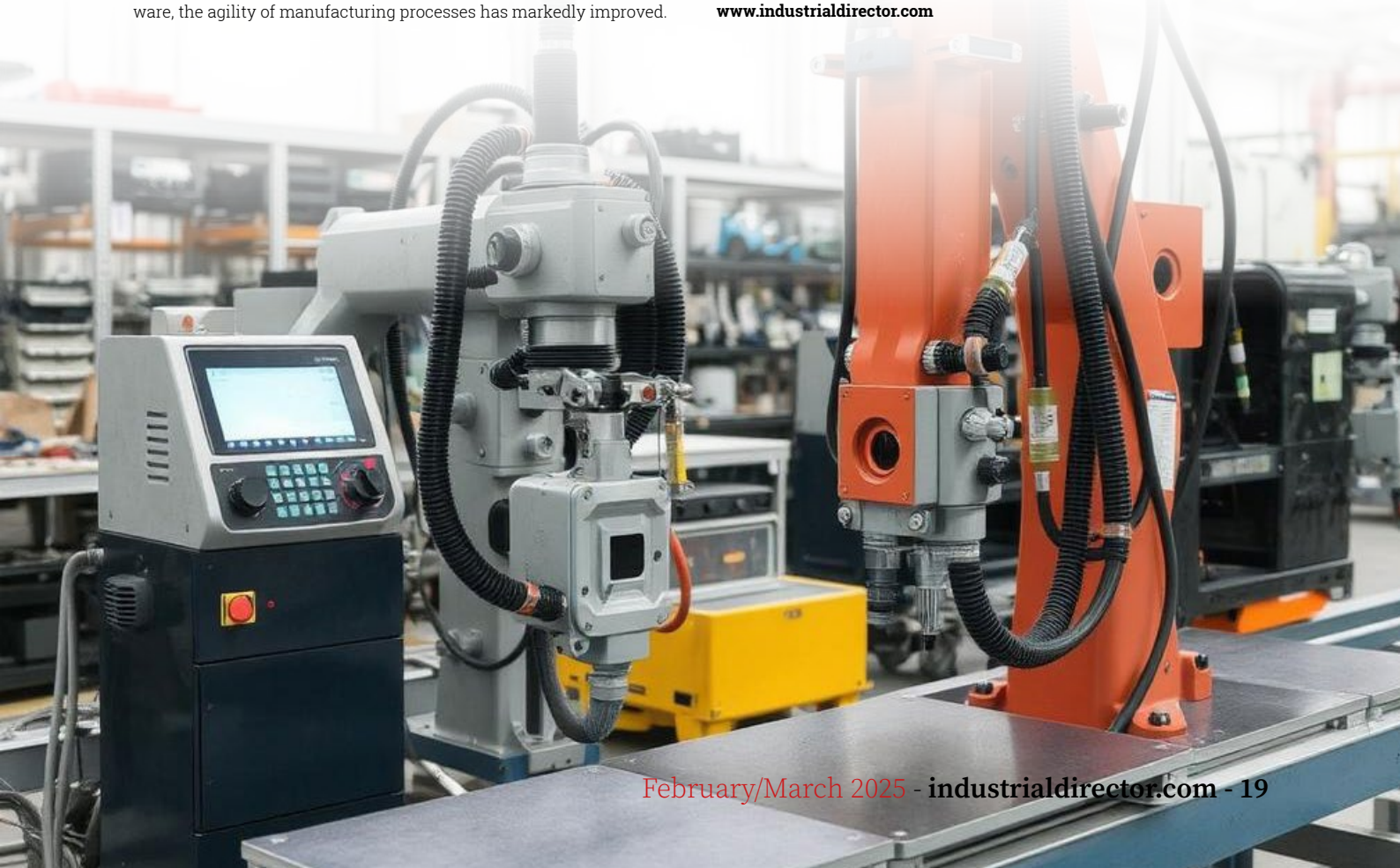
A notable success story comes from Omega Enterprises, which successfully reduced part duplication time from 40 hours to 20 hours by creating and printing 3D replicas of glass bottles. This innovation has enabled the company to commence machining activities sooner, thus expediting the entire production machining program.

The influence of additive manufacturing and digital simulation within the industry is profound. With 3D printing, companies can streamline setup processes through the dynamic creation of fixtures and jigs. The technology continues to evolve, offering enhanced capabilities such as large-scale 3D printing for the production of extensive components and machines that can manufacture parts more rapidly and efficiently without sacrificing quality.

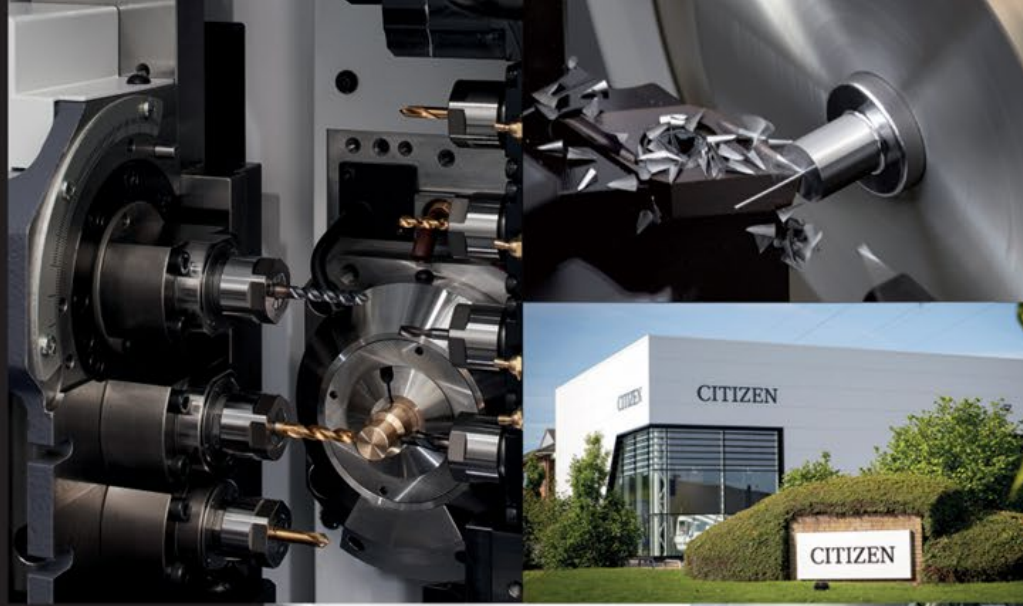
****Internet of Things (IoT) and Smart Factories****

The integration of IoT devices, sensors, and data analytics is unlocking new levels of excellence on machine shop floors. These technologies provide real-time monitoring of production statuses and quality, significantly improving operational efficiency and responsiveness in manufacturing environments.

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Chip-Breaking On Lathes Is Highly Functional

Josh Watkins, director of Welsh subcontractor Harlech Engineering, has recently bought two lathes from Citizen Machinery, a Miyano fixed-head model installed in mid-2023 and a sliding-head Cincom one year later. Both benefit from the manufacturer's LfV chip-breaking software in the operating system of the Mitsubishi control, which he says has transformed turning efficiency and productivity in his Swansea factory.

The twin-spindle, double Y-axis-turret Miyano ANX-42SYLFLV turning centre fitted with a three-metre bar magazine replaced a slower, single-turret lathe of a different make. It resulted in significantly higher productivity, both through faster cycle times and fewer operations, usually producing components in one hit. It was, however, the LfV software that set the machine apart from a couple of similarly specified lathes on the market that Mr Watkins was also considering.

Before taking the decision to purchase, he asked Citizen Machinery's applications department in Bushey to carry out time trials on a couple of brass components he machines for the automotive industry. One was a dial assembly bracket that sits behind a car fascia.

It was taking 8 minutes to produce on a sliding-head lathe on which the spindle power and driven tool capability were limited, so further time on a vertical machining centre was needed to produce two tapped holes – and the part had to be handled and reset for the second operation. The same component comes off the Miyano complete in 4.5 minutes. There are four other brackets in the same family that similarly benefit from faster production.

A second type of shorter bracket that used to be produced in one hit on a sliding-head lathe was also programmed and proved out on an ANX in Bushey. It likewise is being produced faster on the fixed-head machine in Swansea, with the added benefit that Mr Watkins has been able to free up the slider for other, more appropriate work.

Free-cutting brass does not require any special attention in regard to chip-breaking, but other materials do, such as 316 stainless steel, which accounts for more than three quarters of the work going through Harlech's shop floor.

Mr Watkins commented, "Historically we have used two other types of chip-breaking software on sliding-head lathes, but Citizen's LfV is more effective than either.

"The function is easy to incorporate into a cycle, as it simply requires a single line of G-code to switch it on or off.

"Moreover, the starting parameters suggested in Citizen's off-line Alkart Wizard software are normally nearly perfect, so there is little trial and error involved."

Harlech also uses LfV when producing copper studs for an outdoor furniture manufacturer. This malleable material is notorious for generating stringy swarf that wraps around the tool and workpiece, risking damage to both. With the Citizen chip-breaking software switched on, the ribbons are reduced to shorter chips that can be evacuated as easily as those produced when cutting brass.

The studs are turned longitudinally and undergo a lot of face turning to produce a dome shape and face grooves. It is a long-running contract that in the past has been fulfilled on both fixed- and sliding-head lathes having ineffective or no chip breaking software. Cycle time is approximately two minutes and after every 10 parts it was previously necessary to stop the machine to clear the working area of copper ribbons. Now the job runs unattended into or even through the night on the ANX.

Mr Watkins advised, "This is a big help, as the studs are required in batches of 1,500. The microsecond intervals of air cutting that breaks the swarf into fine chips lengthen this exclusively LfV cycle slightly, but on the plus side we are able to take deeper cuts, so there is little difference overall. Best of all it just works, without any fuss or tweaking of parameters."

On other materials that tend to string, LfV is switched off for up to 80% of the time to maximise productivity. For example, it is typically on for

rough turning the outside diameter (OD) of a stainless steel part but off for finish turning, on again for drilling and especially for internal boring, and off again for parting. The versatility of being able to engage and disengage the function so easily is paramount.

By mid-2024 it was apparent that, with business holding up strongly, more sliding-head lathe capacity was required in the Swansea facility. A 32 mm bar machine was needed to fulfil the largest possible range of work. As Citizen's Cincom L32-XLFV also benefits from the chip-breaking software, it was the obvious choice to bring the subcontractor's tally of sliding-head lathes to eight, the other seven being of a different brand.

Mr Watkins says the chip-breaking software is equally effective on the slider, working perfectly when turning internally or externally, drilling, or milling at either spindle. A good example of its effectiveness is when producing a black acetal, shaft-type component for the veterinary industry. Plastics are also known to generate long, stringy swarf when being turned. Following comprehensive training at Citizen's Brierley Hill centre and afterwards on site in Swansea, Harlech engineers were able to program an efficient cycle to produce the 165 mm long part from 30 mm diameter bar without any problems due to entangled swarf.

In the main spindle, it is faced and deep hole drilled to two-thirds of its length, bored and internally threaded, the latter operation without LfV. The software is switched on again for OD turning, after which longitudinal slots are milled without LfV using a ball nose cutter. After parting off and transfer to the synchronous sub spindle, the remainder of the through-hole is drilled, followed by boring and thread cutting, with the chip breaking function either on or off as for the front-end machining.

The other facet of the Cincom L32 that Mr Watkins likes is the modular tooling layout, in particular the manually-rotatable B-axis tool post that allows live cutters to face forward for axial work or to be turned through 90 degrees for work on the outside diameter. In addition, it can be positioned anywhere between 0 and 90 degrees, facilitating angular machining by up to three tools. This provides considerable flexibility when programming the machine in Alkart Wizard and it is easy to key into the control the angle at which the tool post has been set and clamped.

Mr Watkins concluded, "We have been a family-run business since 1990. Toolmaking and press working used to account for a majority of our turnover, but subcontract turning and milling is more than two-thirds of our business now. We mainly serve the medical, automotive, domestic appliance, electronics and rail industries.

"We have been investing heavily over the past eight years in modern, multi-axis CNC plant to become ever more efficient. I must say, however, that the latest two Citizen lathes with LfV have taken our productivity to a whole new level."



UMC-350HD

40 5 AXIS
TAPER 10,000 RPM
18+1 TOOLS

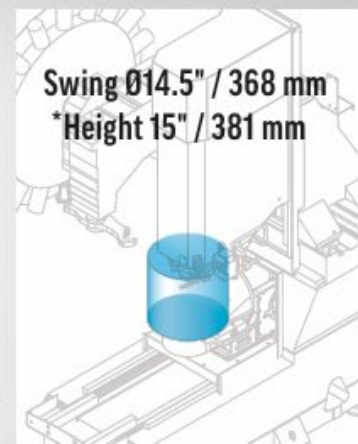
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- Includes Wireless Intuitive Probing System
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- TRT210 dual-axis rotary

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The UMC-350HD combines the 40-taper performance of our DM-1 Drill/Mill Center with the versatility of our **TRT210 dual-axis rotary** to create a lean-style UMC that's perfect for 3+2 and simultaneous 5-axis machining of small parts.



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 - Max part weight is 3 lb (1.4 kg)
- Includes CE-compliant safety guard fencing

 **Affordable Automation**



 **Versatile Automation**

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- Bundled Package - No 3rd party integrator needed
- All set up and operation are done through the Haas control and remote jog handle
- Single gripper included; double gripper available
- Includes CE-compliant safety guard fencing



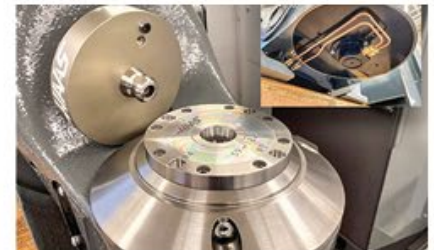
UMC-350HD Complete - Integrated Workholding Solutions



75 mm Air Vise Kit - Automatic Operation

INCLUDES:

- 75 mm self-centering air vise
- Pre-installed pneumatic union and hardware
- Hardened-steel jaws with serrations
- Foot pedal and M-codes
- Replacement hard and soft jaws available



Zero Point Clamping Kit - Automatic Operation

INCLUDES:

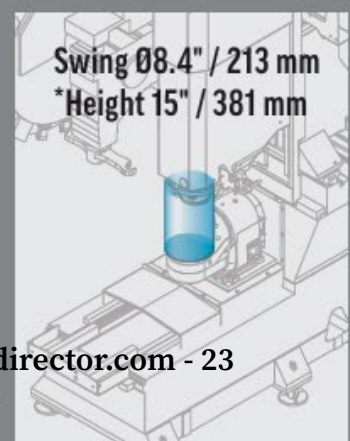
- Zero Point Chuck, and pull stud
- Pre-installed pneumatic union and hardware
- Foot pedal and M-codes
- Accurate, repeatable fixture locating



UMC-350 **30 TAPER** **5 AXIS** **10,000 RPM** **20+1 TOOLS**

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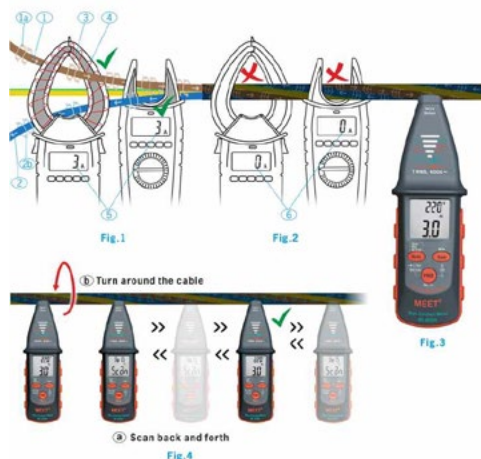


NCCV Meter: A New Era For Measuring More Data On A Multi-Core Cable

MEET International Ltd. was established in 1992 and has become one of the leading manufacturers of multi-function testers worldwide. Our unparalleled expertise in design engineering and manufacturing enables us to create a variety of testers, detectors, sensors, clamp meters, infrared thermometers, digital multimeters (DMMs), digital multimeters with data logging (DMMDS), thermal cameras, moisture meters, non-contact voltage (NCCV) meters, calibrators, and more, all featuring unique capabilities.

Our goal in developing a state-of-the-art multifunction NCCV meter is to collect more data and information from a single wire or multi-core cable through our patented miniature multi-sensor technology. This meter not only measures current but also assesses voltage and frequency, and it performs non-contact AC current detection on shielded or buried cables.

The MEET product series incorporates the latest advancements in high technology and multifunctional digital design, accommodating a wide range of applications including DIY projects, educational purposes, technical use, and professional settings. All our products are designed and manufactured in accordance with international safety standards. MEET has built a solid reputation for delivering creative and unique products that ensure stable, reliable quality at competitive prices.



Our motto, "We create, design, and develop unique products," drives our significant investment in research and development (R&D). We are supported by a comprehensive range of mold-making facilities, allowing us to offer services from prototyping to original equipment manufacturing (OEM).

Our production facility is located in Guangdong Province, China, just a one-hour drive from Shenzhen Railway Station. It is well-equipped with various tools and technologies, including plastic mold-making equipment, plastic injection machines, surface-mount technology (SMT) machines, bonding machines, ultrasonic welding machines, and both pad-printing and silk-screen printing machines.

A strong team of professional hardware, software, and app development engineers, technicians, managers, and skilled workers is dedicated to producing high-quality products. We use only the best materials, implement strict quality control, and ensure on-time delivery, enabling us to offer reliable products and robust services to our end users.

All of our products are CE-approved.

Conventional clamp or open-jaw meters have been used for the past 70 years to measure current only on separated wires, such as live or neutral wires, or between live wires. As illustrated in Figure 1, when voltage is supplied to the load on a single-core wire, the AC current flows toward the left-hand side (1) and creates a clockwise magnetic field (1a).

The existing conventional clamp meter utilizes a laminated iron core (3) wrapped with hundreds of turns of enameled wire (4), creating a secondary magnetic current that flows from one direction of the cable (1) and generates a small millivolt signal for the electronic circuit of the clamp meter. The results (5) reflect the load current flow of a single-core wire.

Conversely, if the clamp meter is positioned on the opposite side of the return wire, the current flowing back to the supply (2) generates a counterclockwise magnetic field (2b). Regardless of the measuring method employed, it is only possible to measure on a single-core wire, not on a cable with two or more twisted cores, as shown in Figure 2.



This limitation is due to the cancellation of the magnetic fields created by the two directions of current flow (1) and (2), resulting in zero induced voltage (6), though occasional readings may occur based on leakage or unbalanced current.

Additionally, it is impossible to measure AC voltage on cables using non-contact methods for two- to five-core cables (except armored or shielded cables).

In contrast to traditional clamp open-jaw meters, our revolutionary new generation of multifunction multi-core NCCV meters from MEET offers a unique solution to measure various parameters and collect information on single or multi-core cables without the need to separate the wires or be restricted to an open side (Figure 3). The specially designed, fully insulated miniature multi-sensor can operate in very tight spaces.

As depicted in Figure 4, users can easily place the NCCV sensor probe on a single or multi-core wire/cable and either rotate (b) or scan (a) to quickly measure and gather information such as:

- AC current
- AC voltage
- Current flow through live or neutral wires
- Location of live and neutral wires

An exciting advanced feature is the Bluetooth wireless connectivity, which allows for dual-mode communication to transfer or share measured data between the meter and a smartphone or tablet. This includes information on:

- Electric power
- Impedance
- Frequency
- Inrush current
- AC peak voltage
- BTU
- Horsepower
- Calculation of CO2 emissions

Additionally, users can record data in real-time through a smartphone or tablet, snap a picture of the data, and easily share it via email.

TDT Machine Tools

The BIG Machine Company

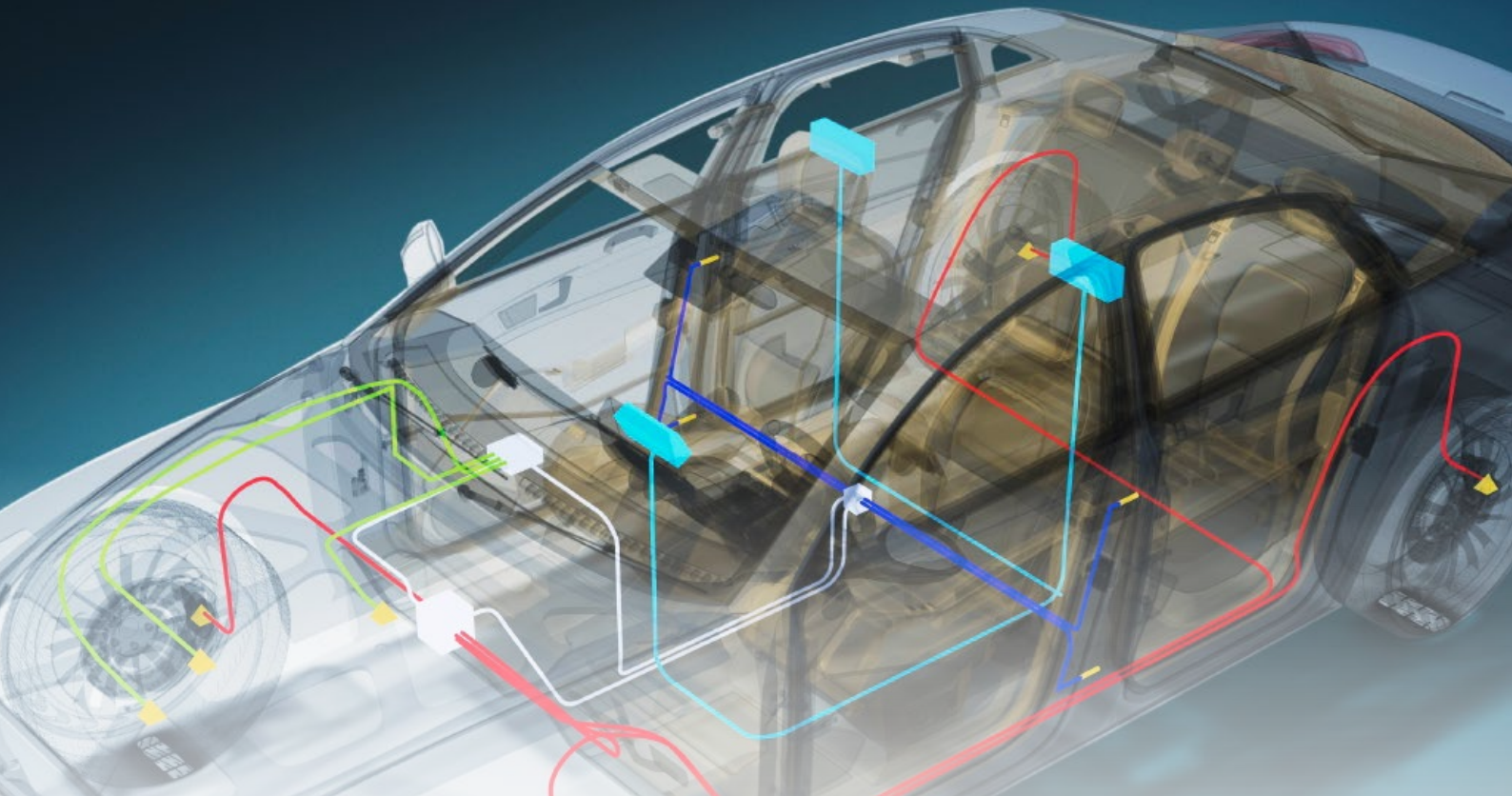
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Rohde & Schwarz Offers Extended Test Capabilities For Gmsltm-Based Solutions

Rohde & Schwarz has collaborated with Analog Devices, Inc. (ADI) to create a wide range of tests for Gigabit Multimedia Serial Link (GMSL) devices. The GMSL technology from ADI provides a cost-efficient, scalable, and simple SerDes solution designed to improve performance for high-speed video links, primarily used in In-Vehicle Infotainment (IVI) and Advanced Driver-Assistance Systems (ADAS) in vehicles. The collaboration will enable engineers, developers and manufacturers to create and deploy GMSL-based ADAS and IVI systems rapidly.

Rohde & Schwarz now incorporated the ability to perform Physical Medium Attachment (PMA) tests in accordance with GMSL requirements. The solution is fully integrated into the Rohde & Schwarz oscilloscope firmware and offers an extensive range of signal integrity tools. These tools include LiveEye, which allows for real-time monitoring of signal behaviour, and advanced jitter and noise analysis. Additionally, it in-

cludes built-in eye masks for forward and reverse channels.

To verify narrowband crosstalk, the solution includes a powerful built-in spectrum analysis on the R&S RTP oscilloscope. Furthermore, cable, connector, and channel characterization can be performed using vector network analyzers provided by Rohde & Schwarz.

GMSL technology is increasingly becoming a fundamental element in automotive applications, including safety, monitoring, infotainment, and autonomy, owing to its ability to reliably transport high-resolution digital video for camera and display-based applications.

Balagopal Mayampurath, Vice President of ADI's GMSL Technology Group said, "It is significant that GMSL is adopted by several OEMs and Tier-1s, making it a de facto video connectivity standard in the automotive industry. The tests from Rohde & Schwarz expedite the process for customers to build and deliver GMSL-based solutions and they are critical in supporting the automotive ecosystem."

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84% Of Manufacturing IT Leaders Say Combining Ai And Low-Code Would Help Their Organisation Innovate Faster

New research from Mendix, a Siemens business, has found that low-code platforms have become a strategic enterprise enabler that supports digital transformation at an organisational level.

With essential data locked in legacy systems for many manufacturing organisations, application development that digitises operations is a valuable approach for the industry. Whether that's improving quality control, streamlining processes, increasing customer satisfaction, or employee safety, accelerating digital transformation is high on the agenda – with 52% of manufacturing IT leaders ranking digital transformation as their leading low-code use case.

'The Low-Code Perspective: Insights from Enterprise IT leaders' report provides an overview of the key trends shaping the low-code market among 2000 global enterprise tech C-suite executives and senior IT decision-makers in Benelux, Germany, Japan, the UK and the US. The research highlights that:

- 99% of manufacturing organisations surveyed are using low-code as part of their development process. Low-code is now a mainstream technology. For the majority of respondents (75%), low-code improves their organisation's ability to innovate at scale.
- 77% of respondents identify the C-suite as the driving force for low-code adoption. Low-code is seen as a strategic enterprise technology used to facilitate digital transformation and enhance operational efficiency. Long-term organisation investment means the entire C suite is

now involved in low-code decision-making.

- A definitive 84% of manufacturing IT leaders surveyed say combining AI and low-code would help their organisation innovate faster. Yet, 69% have concerns regarding the governance around AI-assisted coding. Survey results indicate that IT leaders want to invest in low-code and AI, but they acknowledge that functional implementation requires upskilling for both developers and non-technical users alike.

The highlights of low-code

The research shows that low-code development brings significant benefits to the enterprise. Respondents identified productivity as a core benefit, particularly for tech teams looking to meet lofty digital transformation goals. The survey demonstrated a clear consensus that low-code increases productivity and helps organisations innovate faster at scale:

- 83% of survey respondents say that low-code improves productivity on technical teams
- 76% agree that low-code streamlines the development process
- 75% agree that low-code improves time to market
- 84% agree that combining AI and low-code helps their organisation innovate faster
- 75% agree that low-code enables development teams to innovate at scale

Low-code: A top-down decision

According to the research, low-code has become a technology the entire C-suite advocates for. Half of manufacturing organisations



state the COO (50%) and the CEO (51%) are both heavily involved in decision-making surrounding low-code adoption. The manufacturing industry actually reports the highest amount of CEO involvement than the other sectors surveyed.

This makes sense - the survey clearly demonstrates that low-code is having an impact across the global enterprise. Respondents are using low-code to digitally transform (52%), improve legacy processes (48%), and reduce operational costs (43%) - these are all use cases that have an organisational impact.

77% of the respondents stated that the C Suite sees low-code as the only option for coding in the future. Organisations need to manage costs as they innovate - and low-code helps them do so. It also allows them to build better, future-proofed apps faster.

Educate and upskill for the best ROI

81% of respondents are using low-code and AI-assisted coding, but while adoption is on the rise, AI-assisted development isn't foolproof. For a majority of technical leaders, the need for further education for both developers and non-technical users will be key:

- 69% technical leaders are concerned about the governance of AI-assisted coding
- 86% agree that more training needs to take place to ensure developers are using AI-assisted coding properly
- 82% agree that the C-suite in their organisation understands that they will need to upskill their technical staff to capitalise on the potential of low-code
- 70% agree that the C-suite in their organisation understands that they will need to upskill non-technical staff to create fusion teams that capitalise on the potential of low-code.

Yet, most senior IT decision-makers agree that low-code platforms work in partnership with their organisations to reduce risk – and are adapting to the governance of low-code:

- 68% agree that low-code reduces risk / increases compliance with the latest regulations
- 42% of respondents ranked governance and security as one of their three defining criteria for vetting a low-code platform. However, extensibility is an important factor for those in manufacturing (37%) – higher than any other sector surveyed.

Raymond Kok, CEO of Mendix, said, "We have always believed that low-code had the potential to be much more than a tool to automate manual processes. This survey shows that the market agrees. Used wisely, low-code is about rethinking entire business processes from the ground up. In turn, this enables the other critical benefit of low-code: innovation. Enterprises will be able to speed up digital transformation cycles and innovate at scale. Low-code also opens new avenues for

fusion teams to think bigger when it comes to using tech to transform their organisation for the future, as long as they are prioritising upskilling users to maximise the potential of low-code for their unique use cases.

Low-code continues to be closely aligned to today's market's needs, while also offering a springboard for future innovation."

Methodology: The Low-code Perspective is based on insights from 2,000 senior tech decision-makers (34% members of the technical C-suite and 66% senior IT decision-makers) in enterprises with a minimum employee size of 1,500 in Benelux, Germany, Japan, the UK and the US.

This press release references insights specific to the Manufacturing industry, one of four sectors surveyed alongside Financial Services (FSI), Public Sector and Retail (with 500 respondents surveyed from each sector). These insights have been gathered by Coleman Parkes on behalf of Mendix between June and July 2024.



12



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CERATIZIT Invests In Platform Provider Spanflug

The CERATIZIT Group has acquired a minority stake in Spanflug Technologies GmbH. The strategic investment is intended to promote synergies in product development, sales and internationalisation. This underlines the strong commitment of both companies to making the manufacturing industry fit for the future through digitalisation and automation.

Spanflug Technologies operates a leading manufacturing platform in Germany. CERATIZIT S.A., a Plansee Group company, is recognised as one of the leading providers of hard material solutions for machining and wear protection. The contracts were signed at the end of October. The two private companies did not disclose the amount of the stake and the investment.

Higher precision through tool data

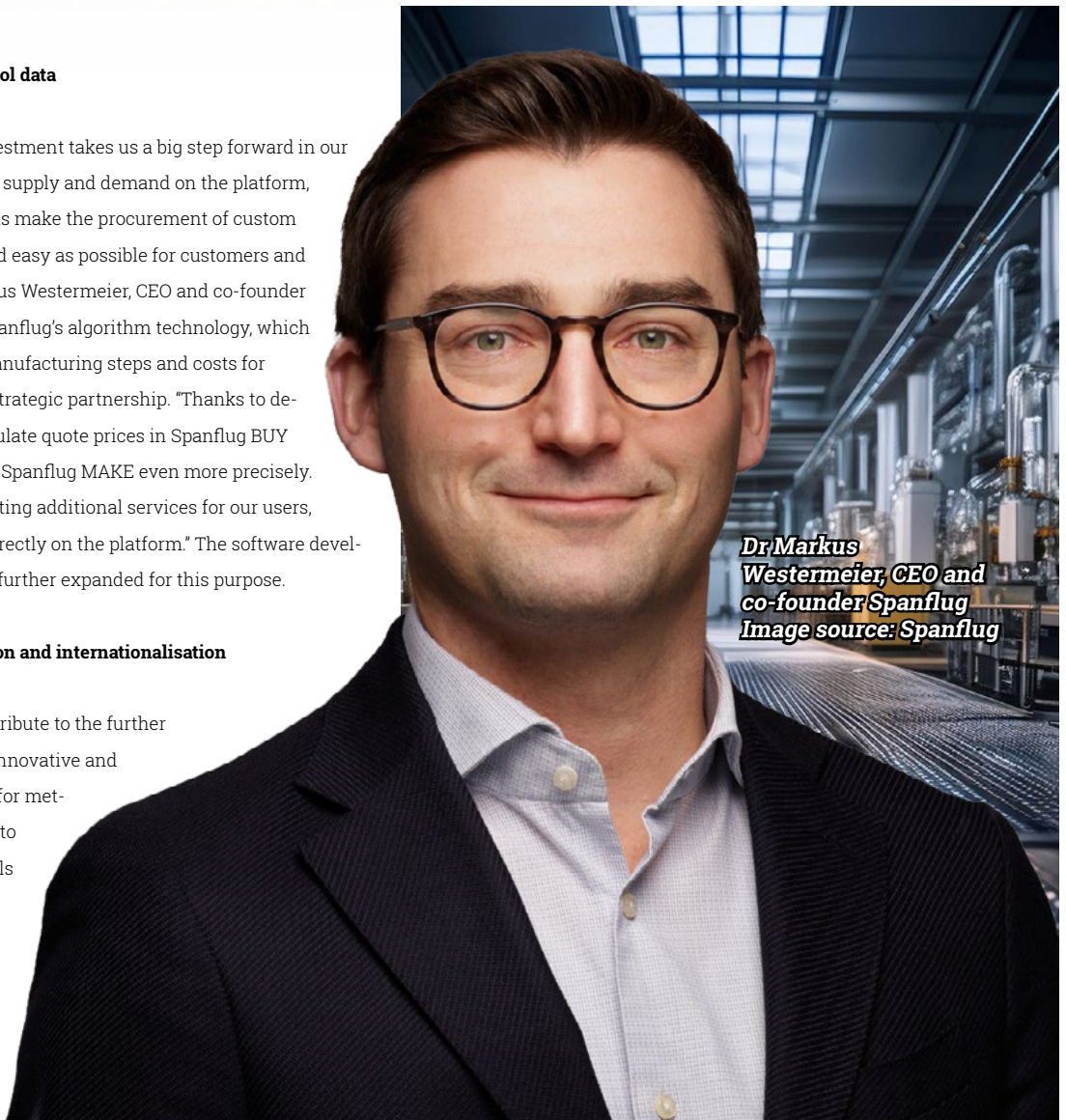
"The CERATIZIT Group's investment takes us a big step forward in our mission to digitally connect supply and demand on the platform, automate processes and thus make the procurement of custom machined parts as quick and easy as possible for customers and suppliers," explains Dr Markus Westermeier, CEO and co-founder of Spanflug. In particular Spanflug's algorithm technology, which calculates the necessary manufacturing steps and costs for parts, will benefit from the strategic partnership. "Thanks to detailed tool data, we can calculate quote prices in Spanflug BUY and manufacturing costs in Spanflug MAKE even more precisely. This will also enable interesting additional services for our users, such as tool procurement directly on the platform." The software development at Spanflug is to be further expanded for this purpose.

Driving forward digitalisation and internationalisation

"We are very pleased to contribute to the further development of Spanflug's innovative and customer-centred platform for metalworking and look forward to exploring new sales channels together," explains Melissa Albeck from the CERATIZIT Executive Board. With 50 subsidiaries worldwide, the technology leader in the carbide industry is also an

important partner for Spanflug in accelerating the internationalisation of the platform and establishing and expanding its presence in global markets.

Summarising, Westermeier emphasises: "After the consistently positive experience with the German Machine Tool Builders' Association (VDW) as a minority shareholder in Spanflug, it was clear to us that an additional strategic investor from the manufacturing industry was the best fit for us and our goals. We are very pleased that with CERATIZIT we have gained a global player that can support us beyond the investment with specific expertise, important data and international structures."



Dr Markus Westermeier, CEO and co-founder Spanflug
Image source: Spanflug

Fortress Supports Milling Firm With Daily Data

Food safety specialist Fortress Technology has been assisting select Mennel Milling plants in the United States to protect product quality, as well as safeguard its people, processes and productivity. Addressing machine downtime while simultaneously boosting operational excellence, the fifth-generational family firm highlights why they are supportive of the Fortress metal detection and checkweighing data software package.

Headquartered in Ohio, The Mennel Milling Company has been on a strategic expansion mission. Currently the seventh largest flour milling company in the US, for over 138 years Mennel Milling has traditionally produced and distributed its products in bulk quantities via rail car, semi-truck trailer, 2,000-lb super sacks and 50-lb bags. Recently however, with the addition of smaller, retail bag pack systems to address consumer demand, Mennel has prioritised the efficiency and performance of its quality control inspection and checkweighing solutions.



Always seeking to drive operational excellence and standardise equipment, Senior Corporate Packaging Engineer Dieter Flick is part of the Mennel team who has been charged with this effort. Utilising decades of experience, Dieter is responsible for maintaining and upgrading existing equipment, to enhance personnel safety and boost production efficiency.

ROBUST RAPTOR REDUCES DOWNTIME

Since installing its first Raptor Combination metal detector and checkweighing system in Newton, North Carolina on the packing line in 2023, Jonathan Mace reports that they have incurred no unplanned downtime on the new equipment so far. The Project Engineer cites simplicity, robustness and reliability as some of the biggest benefits of these machines.

Producing, packaging, and the inspection of approximately 750,000 lb. of flour daily requires durable and reliable machinery. Jonathan expands: "In a milling and packaging environment, screens can be easily damaged, and clearances can be extremely tight. Sometimes the products themselves contain salt and phosphate, which can be corrosive. The Raptor's stainless steel construction has held up so far in these challenging environments."

Highlighting the plastic cover over the HMI panel as another useful design feature Jonathan adds: "This is a great addition as it helps to prevent damage to the screen. This plastic cover helps prevent loose flour circulating in the environment from settling onto the conveyor, building up and negatively impacting weighing accuracy."

As a seven-story milling plant with a variety of moving machinery operating around the clock, vibration could potentially affect the performance and signals of sensitive metal detectors and checkweighers. The Fortress machines offer a couple of clever solutions that suppress this noise interference, ensuring that metal detector performance is not affected.

SUPPORTING DIGITAL CAPABILITIES

Tethering multiple front-end production machines to back-end reporting software in real time has been hailed as the next step in smart man-

ufacturing. Using an Ethernet connection, Fortress Technology's Contact 4.0 solution enables Mennel to review and collect data, as well as securely oversee the performance of an unlimited number of Fortress machines connected to the same network.

This has proven helpful to the team's effort of making informed, well-timed production and brand assurance decisions, as well as maintenance schedules, notes Dieter: "Every morning, the production manager, the maintenance manager and I receive a report automatically generated by Contact 4.0 to assist in our decision making. Contact 4.0 clearly displays both the checkweigher's histogram of batch weight distribution and bag data points to issue concerns over rejects, calculating the amount of product giveaway. These tools help us define problems with our filling system upstream."

The digital tool is currently being utilised in Mennel's Fostoria, Ohio factory on both their checkweighing and metal detection systems.

"The reliability of these machines and technologies and their ease-of-use, especially when calibrating and testing the inspection equipment, has proven very important to our QA department. More importantly, our customers are specifying higher standards for metal detection to avoid any product contamination," adds Dieter.

Highlighting the benefits of implementing a fully networked, standard-

ised equipment and technology plan, Dieter concludes: "A high-quality product combined with excellent service has always been the key to any successful operation."





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Study Establishes Precise Impact Of Ai On Development And Engineering

Harnessing AI will transform development and engineering functions – but success requires organizations to reshape themselves. That is one of key findings of a major Arthur D. Little (ADL) report, which highlights how AI can contribute to 25% growth and 60% productivity gains by 2030 across the innovation cycle, and provides concrete actions for companies to take now.

The in-depth, comprehensive study, carried out with NAE (Netherlands Academy of Engineering), IVA (Royal Swedish Academy of Engineering

Sciences), and KIVI (Koninklijk Instituut van Ingenieurs), is based on information from over 900 AI and technology case studies, multiple hands-on projects, and survey feedback from 95 respondents across industries including high-tech, manufacturing, processing, pharmaceuticals and healthcare, defense, energy, and logistics.

Driven by changing customer demands that increase complexity, stricter regulatory requirements, and a fundamental shift from products to heterogenous solutions built on diverse technological domains, development and engineering must transform. Doing nothing is not an option.

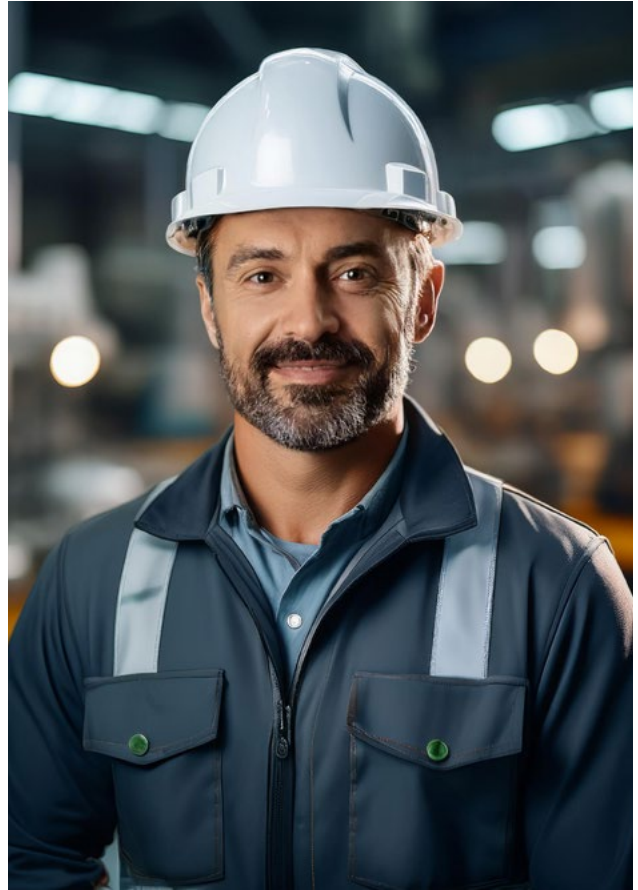
AI is central to addressing these challenges, and the study has captured

and curated a highly mature ecosystem of over 3,500 solution providers. This unique database helps show the complete field of possibilities for development and engineering teams. However, to maximize impact, AI tools must be deployed in conjunction with new ways of working – adopting a people-centric approach is vital. This requires organizations to develop capabilities, encourage appropriate mindsets, and enhance trust in AI's reliability, explainability, and security.

The report outlines actionable recommendations, including a roadmap for embedding AI in development and engineering. This starts by building a balanced portfolio of AI applications, which should then be actioned using the Networked Lab of the Future, a four-step transformation approach. This includes empowering people through the adoption of AI (democratization) and leveraging internal and external data (data collaboration) to drive success.

Michaël Kolk, Managing Partner and Global Innovation Practice Leader at Arthur D. Little, comments: "Development and engineering is transforming, requiring new ways of working and new skills and capabilities. AI underpins this. While many high level reports outline AI's theoretical potential, our study goes further, providing tangible actions that organizations can take now to realize the benefits of AI integration."

Download the report here: <https://tinyurl.com/5a52ed8c>



Mastering All The P's In Food Chain Productivity

Food safety specialist Fortress Technology examines why working smarter not harder is critical to safeguarding the future of global food security, naming performance, product, people, process and profit as the top 5 productivity priorities in UK food manufacturing.

The food chain plays a significant part in our economy. In 2022, it accounted for approximately eight percent of the Gross Value Added of the UK non-financial business economy. Although productivity may have long eluded the other sectors in UK manufacturing, the Office of National Statistics reports that in 2022 three of the four food chain sectors had a higher productivity than in 2021, with UK food and drink manufacturing rising by 2.7 percent.

Maintaining this upward productivity curve will be reliant on the sector continually innovating and adapting to production and sustainability trends as they emerge, reports Phil Brown, Sales Director at Fortress Technology Europe.

POPULATION PROJECTIONS

Balancing all aspects of food security – now and in the future – is intrinsically linked to productivity. The United Nations projects that food production from plants and animals will need to increase 70% by 2050 to compensate for rapid population growth and food demand. Industrial food production will need to adapt to keep pace.

Considerable advances in food manufacturing technology have made it possible to produce higher volumes of safe food produce, despite the decline in available land for agriculture and manufacturing facilities. However, the present state of the food industry will be insufficient to maintain or exceed the current levels of food quality and availability required for future food security. Automated technologies, optimised production systems and stricter food safety standards must be adopted

by the global food industry to ensure food products remain safe and in sufficient supply.

Globalised trade is set to increase alongside population growth. If not managed correctly, this could potentially result in unsafe food products entering the global marketplace. Utilising smart inspection equipment in tandem with automatic testing and digital data reporting can boost transparency throughout the supply chain, build trust between suppliers and consumers, and ensure each stage of production is performing its due diligence to comply with international food safety protocols.

“Technological advancements and advanced food safety equipment will be crucial in the pursuit to feed the entire world population by 2050,” states Phil Brown.

OPTIMISATION AT ALL LEVELS

To gain a competitive advantage as a food manufacturer in this turbulent market requires the ability to predict, plan, adapt and adopt new processing methods. One of the most valuable ways to contribute to a safer, more secure and sustainable food supply chain, as well as gain a competitive edge in the industry, is through process, performance and operational optimisation.

This can be accomplished by adopting lean manufacturing principles that focus on maximising value and minimising food and packaging waste. For example, streamlining processes can reduce the risk of contamination and ensure consistent quality. Additionally, implementing automated technology and digital tools can aid in identifying inefficiencies and increase responsiveness.

DISPELLING PEOPLE PRODUCTIVITY MYTHS

The most common fear when approaching food factory optimisation

and productivity is exploitation. Workers may fear they'll be over-worked and underpaid to achieve greater output or lose their jobs to automated processes. However, when productivity is done right, these apprehensions rarely materialise.

Automation and digital tools which assist boosting productivity rely on human-machine interactions to function and evolve. Predictive analytics and AI tools rely on feedback from humans to generate valuable data sets and information. In other words, optimisation cannot exist without human input.

In fact, a food factory focused on operational efficiency can actually experience greater employee engagement, championing further process improvements.

5 PRODUCTIVITY-BOOSTING BENEFITS

Productivity establishes the important correlation between effort, efficiency, effectiveness and profit. By boosting efficiency of processes using productivity-enhancing tools, less effort, money, labour, time and materials can go into producing higher output yields and increasing operational profits.

Here are several aspects of productivity that can benefit food manufacturers:

1. Process optimisation plays a crucial role in minimising resource consumption, reducing food and packaging waste and lowering the environment impact of business operations. This is achieved by identifying and eliminating unnecessary steps and streamlining operations. For example, utilising automated food inspection technology, integrating equipment into a smaller-footprint single system, and introducing automatic testing.
2. A connected, streamlined factory plays a huge role in increasing

traceability and recall responsiveness. Additionally, process integration and networked communications provide seamless connectivity, which can help to immediately highlight inefficiencies and potential bottlenecks in processes upstream, as well as minimising production line downtime. Here reliability more often than not requires simplicity.

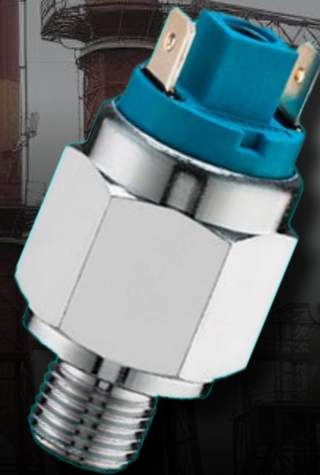
3. Implementing lean manufacturing principles has a significant impact on food safety, quality and competitiveness. By reducing complexity, there is less chance of errors or contaminants entering the production line; an important consideration given that production and energy costs are still rising, while the prices paid by retailers and wholesalers for food are generally the same or falling. As there is no value in downtime, automating processes like product learning and machine re-calibrations can save significant time, energy and product waste.

4. Most people prefer to be productive with their time. However, more often than not it can be inefficient processes that compromise productivity. Research indicates that the average company loses more than 20% of its productive capacity – more than a day each week – to organisational drag. However, employees report feeling more empowered and less overwhelmed when companies invest in well-considered tools and technologies that support processes that remove repetition and stress. The added benefit is a productive workplace fosters a positive work culture, innovation and continuous learning.

5. Increased productivity encourages an innovative environment, with potential ideas transforming food safety and supporting the pursuit of food security. Productive employees have more time and mental capacity to explore new ideas and solutions, cultivating creativity when faced with challenges and inefficiencies.

"Ultimately, the future of our food systems will be dependent on food companies finding innovative ways to tackle sustainability, while simultaneously generating greater output. Choosing reliable, productivity-enhancing equipment and systems is the first step," concludes Phil.

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