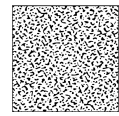
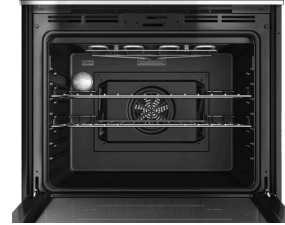


B/S/H/



CDOT Barcode



## CUSTOMER CASE STUDY

How B/S/H Achieved End-to-End Traceability in Oven Cavity Production with CDOT Barcodes

<https://www.bsh-group.com>

Industry - Appliance Manufacturing

### The Challenge: Losing Sight of the Product's Journey

B/S/H, a global leader in home appliances, faced challenges in tracing oven cavity parts through complex production stages. Conventional tracking methods, such as datamatrix and QR codes, failed to endure extreme conditions like welding, enameling, and high-temperature heating, resulting in process inefficiencies and increased scrap.

The production of oven cavities involves multiple intricate processes such as welding, degreasing, enameling, and high-temperature heating. These conditions often degrade or destroy conventional 2D codes like DMC or QR codes, leading to an inability to trace the progress of individual cavities through the production process. This lack of visibility resulted in operational inefficiencies, increased scrap rates, and compromised quality control, impeding B/S/H's ability to fully realize its digital transformation goals.

The key challenges B/S/H faced included:

- **Loss of traceability during harsh processes** like enameling and heat treatment.
- **Product losses** due to the inability to track cavities through complex stages.
- **Higher scrap and rework ratios**, increasing production costs.
- **Impeded quality control**, as process parameters could not be linked to individual parts.

Barriers to scaling digital initiatives, such as predictive maintenance and data-driven process optimization, further emphasized the need for a robust and reliable traceability barcode. B/S/H required a system **that could endure the demanding conditions of oven cavity production while providing real-time data visibility throughout the entire manufacturing process.**

## The Solution: CDOT Barcode

Recognizing the need for a more resilient barcode, B/S/H partnered with Cosmodot, an innovator in exploring new mediums for the cyber-physical integration of raw materials, parts, and products in manufacturing. Cosmodot introduced the CDOT barcode, a durable 2D code designed to withstand even the harshest industrial processes, including high-temperature treatments, enameling, and chemical exposure.

The CDOT barcode offers several key advantages:

### High Durability:

The CDOT barcode can survive the extreme conditions of oven cavity production, ensuring that traceability is not compromised at any stage.

### Standart Laser Application: Real-Time Monitoring:

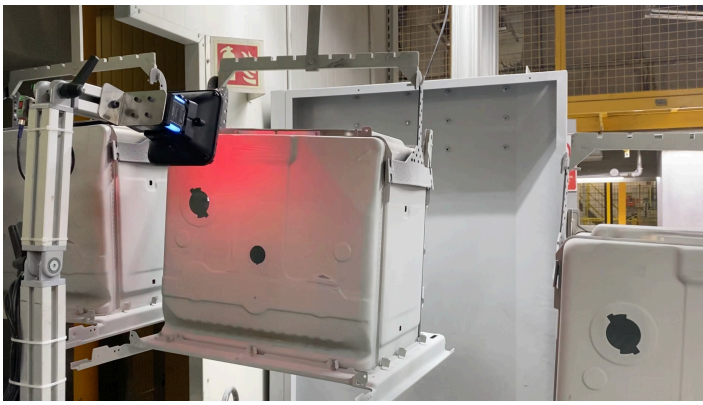
Using a laser marking device, a unique CDOT barcode is permanently marked on each cavity, enabling it to be read and tracked throughout the production process.

Cosmodot's system allows BS/H to monitor and record process parameters, such as temperature, welding data, and chemical treatments, associated with each cavity in real-time.

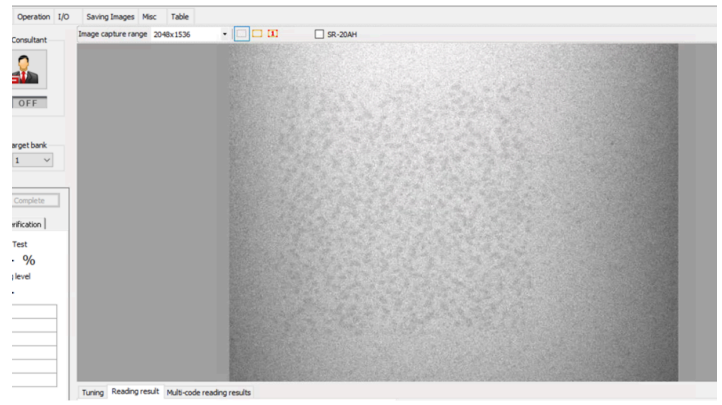
### Seamless Integration:



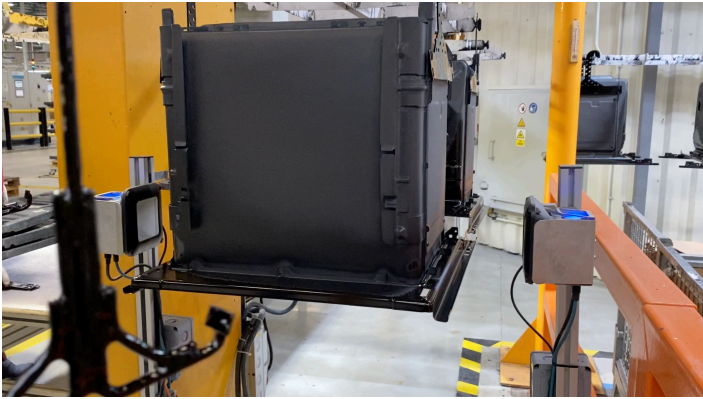
The CDOT barcode required no special hardware and was integrated into B/S/H's existing production infrastructure, including regular laser markers and barcode readers.



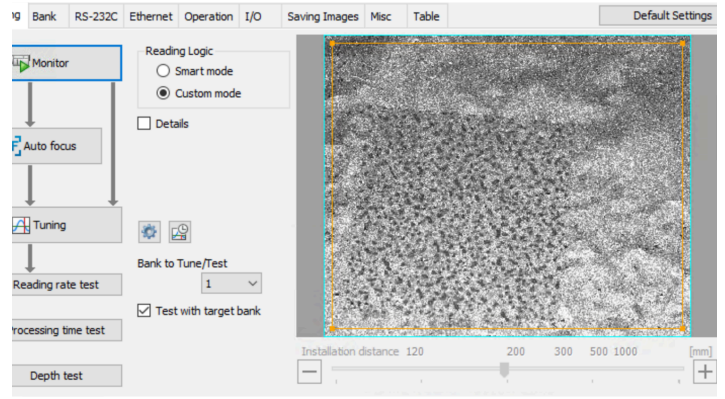
Reading after 120µ enamel powder coating



Readable CDOT barcode through powder



Reading after furnacing at 850°C / 1562°F



Readable CDOT barcode after furnacing

## Quantifiable Impact: Unleashing Operational Excellence

The impact of CDOT barcodes on B/S/H's manufacturing operations has been nothing short of transformative. By achieving comprehensive item-level traceability, B/S/H has witnessed substantial improvements in key performance metrics:

- 1. Product Losses Mitigated:** With the ability to track individual components throughout their lifecycle, B/S/H has significantly reduced product losses, enhancing operational efficiency and profitability.
- 2. Scrap Ratio Reduction:** Accurate traceability has empowered B/S/H to swiftly identify and isolate defective components, minimizing scrap and optimizing resource utilization.
- 3. Quality Assurance:** By meticulously monitoring process parameters associated with each individual cavity, B/S/H has fortified its quality control mechanisms, ensuring consistent adherence to stringent standards.
- 4. Productivity Gains:** Streamlined traceability has eliminated time-consuming manual interventions, enabling seamless production flows and boosting overall productivity.
- 5. Accelerated Digital Transformation:** The integration of CDOT has unlocked a wealth of data-driven insights, propelling B/S/H's digital transformation journey and paving the way for advanced manufacturing initiatives.



At the recently held B/S/H Production Days in Łódź, Poland, the B/S/H Turkey Team was awarded **3rd place for “Best Marketplace”** for their **Cavity Traceability with Cosmodot Technology**. This innovation has inspired more than 30 production sites around the world with its CDOT barcode and real-time monitoring and management technology.

“ Since the process is very delicate, we need to track all the bodies as they go through the production process. This means that each body must have a unique, individual code. However, when we look at conventional barcode technologies, it is difficult to achieve this because the processes are very intense. If we use standard coding methods, the codes often get lost or become unreadable during these processes. **That’s why we used CDOT barcodes. Even when the code is significantly damaged during these processes, barcode readers can still detect and track the product.** By looking at the body of the product, we can trace how it went through the initial press process, how it continued through the subsequent processes, and under what temperature and humidity conditions it was produced. In the event of a potential complaint, we can directly identify the source.

— Ersan Korkmaz, Plant Director, B/S/H

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## The Road Ahead: Towards a Fully Traceable Future



Emboldened by the resounding success of the oven cavity traceability, B/S/H envisions an ambitious future where traceability becomes an integral part of its operations across all facilities. The goal is to establish a comprehensive, end-to-end traceability ecosystem, encompassing suppliers, manufacturing processes, and after-sales services.

By harnessing the power of process and usage data associated with each component, B/S/H aims to pave the way for advanced analytics and industrial AI applications. These cutting-edge technologies will further optimize production processes, driving continuous improvement and cementing B/S/H's position as a manufacturing vanguard.

As the world grapples with escalating demands for transparency, sustainability, and operational excellence, B/S/H's audacious embrace of CDOT has set a precedent for the industry. This trailblazing partnership has not only redefined the boundaries of traceability but has also catalyzed a paradigm shift towards Traceability 4.0, a frontier where manufacturers can unlock unprecedented levels of visibility, control, and efficiency.

In the edge of manufacturing innovation, B/S/H's collaboration with Cosmodot will be heralded as a bold step towards a future where every component's journey is meticulously chronicled, enabling a harmonious symphony of quality, sustainability, and operational prowess.

TO LEARN MORE, PLEASE CONTACT YOUR COSMODOT REPRESENTATIVE OR VISIT US ONLINE AT [THECOSMODOT.COM](https://www.thecosmodot.com)

