GS1 Poland

The Global Language of Business

GS1 standards enable identification of concrete products

Introduction

The construction industry is currently facing major challenges in terms of how to increase productivity, safety and reduce costs. With global digitization processes underway, these challenges are now being addressed, and the role played by GS1 standards in developing digital solutions is being increasingly recognized. Full traceability of construction materials, from design to disposal, can be available to all stakeholders, yet the success of both requires that manufacturers focus on unique identification and product data.

Matbet, large-format concrete components manufacturer, , can counter costly mistakes at construction sites and improve product management at the warehouses. The concept of implementing unique GS1 identification based on 2D GS1 DataMatrix barcodes that was tested helps reduce errors in order picking, whereas the use of RFID technology based on the very same identification additionally allows to significantly streamline warehouse picking processes by 85%.

Challenge

Manufacturing construction materials is a multiple-stage process. On top of casting repetitive components, a manufacturer must also oversee storage, order picking and delivery. The life cycle of concrete components also requires regular maintenance. This is why it is essential to properly identify concrete products at each stage of their life cycle.

Marking of concrete products is also becoming particularly important in terms of ESG (Environmental, Social and Corporate Governance) requirements, where businesses are driven not only to maximize profit, but also to address environment, social responsibility and corporate governance. Year after year, investors are seeking more and more information about a product's carbon footprint. This allows them to make informed decisions about which product to purchase not only based on functionality, but also on their impact on the environment. A manufacturer that ensures proper identification standards can expect more interest in their products.

Matbet personnel are currently marking concrete elements by hand, using slips of paper hung on outdoor molds. After initial drying, when the mold is removed, the sheet of paper is applied to the concrete product. Unfortunately, retrieving data from a piece of paper, being a medium exposed to different weather conditions, can lead to errors. Most product identification errors occur when a product is shipped. Since there are hundreds of concrete components at Matbet's warehouse, it can take an employee up to twenty minutes to track down the correct product that is stored in the vast warehouse area.

In 2022, Matbet decided to improve their production and storage management processes through automatic product identification. The main goal was to eliminate errors in deliveries and reduce the time spent on tracking down products at the warehouse to a minimum.

Solution

Most of Matbet's manufacturing is custom-made products. The products are made based on the order placed, and then they are stored in the warehouse area. A process analysis conducted by GS1 Poland and the integrator, Jantar, showed the following challenges that Matbet faced:

- Lack of full inventory control
- Possible risk of errors while handling outbound goods
- Lengthy time spent on finding the right products in the warehouse area

Modeling of the new warehouse processes revealed, among other things, that it was necessary to use unique identifiers and technology to automatically identify the product and link it to the order placed by the customer. Due to the variety of products manufactured at Matbet, GS1 recommended that the following identifiers should be used for marking the products:

- GTIN (Global Trade Item Number)
- Serial number - combined with the GTIN number uniquely identifies each product
- Additional internal identifier - an additional product identifier assigned by the manufacturer

Ten products were selected for testing and tagged with GS1 Data Matrix or RFID tags. An example of a GS1 DataMatrix with encoded data is shown in Figure No. 1.

AI (01) GTIN - 05904067067431

AI (21) serial number - 26092022001

AI (240) additional identificator - DRENBUD,Poniec,KD3/3

Pic. 1. Sample 2D code and data contained in it

The 2D barcodes were printed on te tested and customized labels and then applied to the products. The RFID tags were placed on special antennas, making it easy to apply RFID technology to concrete. This solution also works well when managing inventory or carrying out maintenance work. Examples of applications for both carriers are shown in Figures 2 and 3.

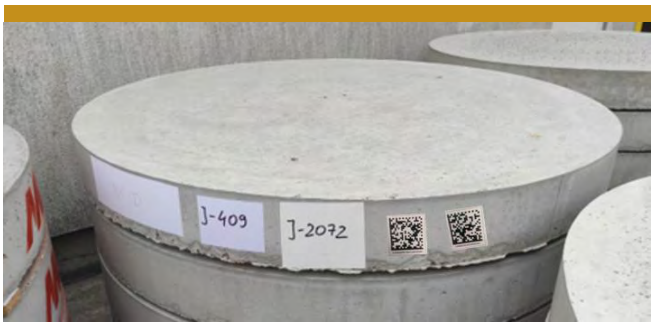

Fig. 2. Example of 2D GS1 DataMatrix code

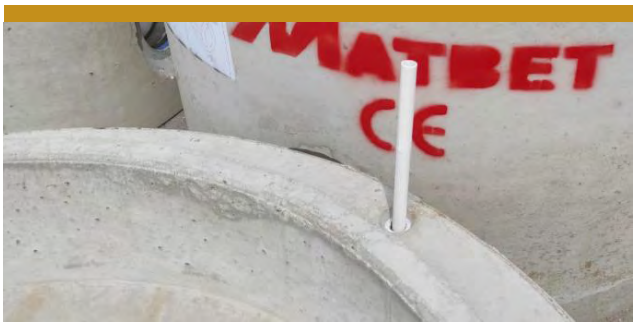

Fig. 3. An example of an RFID tag placed in a plastic tube, the so-called “antenna”

The manufacturing process at Matbet has been streamlined through the following improvements:

- Assigning unique identifiers in the manufacturing process in the ERP system
- Automatic identification of products during order picking at the warehouse
- Automatic product logging upon crossing the exit gate

The tests on the use of new technologies were conducted for 2 months in 2022. Major focus was placed on the correct identification of Matbet products and then on the process of picking products at the warehouse. The manufacturing process was divided into zones, and each flow of goods between them is logged in the ERP warehouse system. The identification of products in successive manufacturing and warehouse zones gives full oversight of the product, including the dispatch of the relevant shipment to the customer.

Benefits

With GS1 standards applied for identification of their products, Matbet can have full control over the manufacturing process, and the use of RFID tags will reduce the time spent on tracking down products **from 14 to 2 minutes, or by 85%**.

> The adoption of GTIN identifiers gives customers the opportunity to check the product in the open-access GS1 database and ensures its validity.

– Zbigniew Rusinek,
Project Manager
on behalf of GS1 Poland

> What's more, it will allow product data to be made available in many other respects than just the functionality of a product

– Mariusz Barycki,
CTO Jantar

With such a solution in place, it is possible to significantly improve the processes where product identification is required, not only at the manufacturing site but also at the customer's. Thanks to unique identification, it is possible to conveniently validate product information stored across different locations and ensure full control over product flows not only over production stages, but also across the entire supply chain, and improve safety and quality of customer service. The identifier used in the test can be applied not only to concrete products, but also to any other construction products.

Summary

The use of GS1 standards is essential if stakeholders are to effectively capture and share product information throughout the supply chain. One of such standards, the Global Trade Item Number (GTIN), plays a particularly important role, both providing unique identification of any physical product and easy access to the relevant data needed.

GTIN, combined with a serial number, can act as a key identifier to increase efficiency in sourcing and managing materials throughout the construction process and when performing maintenance or repairs. By encoding GTIN data in scannable GS1 DataMatrix or RFID tags, stakeholders can ensure access to consistent, accurate and reliable data throughout both the supply chain and the entire construction project.

The use of GS1 standards facilitates interoperability in the supply chain, enabling the exchange of sourcing and materials management information by trading partners. This provides better visibility, traceability and validity of the information on both buildings and other assets.

GS1 Poland is a internal member organization dedicated to implementing global identification and communication standards used primarily in supply chains around the world. GS1 standards, services and solutions are developed to increase efficiency, security and visibility in supply chains across physical and digital channels, in a wide variety of industries, enabling identification, collection and exchange of key information about products, locations, assets, and facilitating the implementation of Traceability and Sustainability solutions.

GS1 Polska

ul. E. Estkowskiego 6

61-755 Poznań

biuro@gs1pl.org

+48 61 62 81 590

www.gs1pl.org