



Nearly invisible – the code can be integrated into every packaging material design.

Like a chameleon

Versatile 2D code controls the packaging processes

When the known Data Matrix reaches its limits, the Microglyph code makes its entrance. It enables Auto-ID solutions where other codes cannot be used. And it does this in a nearly invisible way.

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“Unlike the conventional matrix codes or barcodes, our technology is based on the use of tiny lines, which are inclined by 45 degrees to the left or to the right”, is how Andreas Enzinger, managing director and head of development at the Microglyph Technology GmbH in Starnberg, describes the basic principle of the versatile 2D code.

At a large international brand manufacturer, the code even controls the complete packaging process – about a billion products are marked this way annually. And it is nearly invisible to the consumer because a conspicuous marking was out of the question for the customer. “A big advantage is that, compared to the Data Matrix codes and barcodes,

contrast, the microglyphs can still be decoded reliably”, said Enzinger.

In addition to this, it is morphable; it is not necessary to reserve a special rectangular surface on the package, which could disturb the uniform brand image. “The code adjusts itself. Rings, oval areas, or arbitrary polygons are possible – so that the available area can be used to the maximum.” The company from Starnberg has even created applications where the code is virtually “hidden” in a company logo.

The perfect “position”

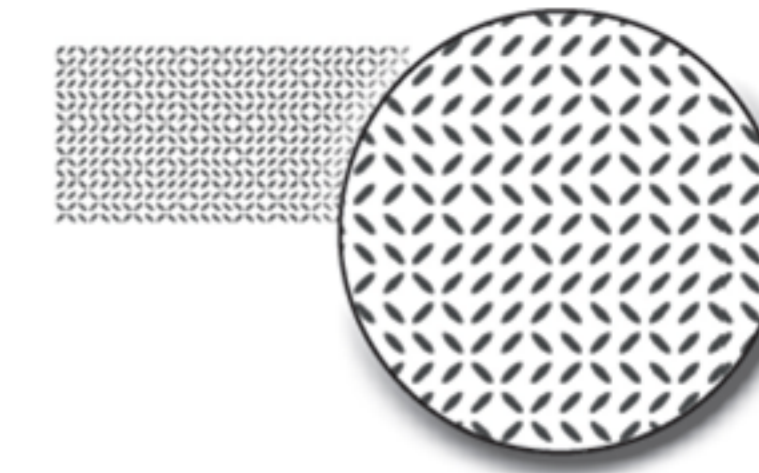
The brand manufacturer, who uses the code for controlling his packaging processes, already has his supplier Huhtamaki print the code on the packaging material. In this case it isn't the individual product, which is marked, but the brand with the country-specific versions. The primarily packaged products are grouped and then placed in tray cartons.

our code does not rely on clear or uniform contrast ratios. The colour and contrast of the code can be chosen freely. As in this application example, it can be adjusted to the colour of packaging – except for a few colour shades. This is so because, even if the human eye doesn't notice any more

These lines, also called “microglyphs”, function as binary data storage, since they are able to encode information of every kind. Enzinger says: “Batch numbers, serial numbers, or production details, such as data and time, can be stored on the packaging as decodable information.”

Andreas Enzinger, managing director and head of development at the Microglyph Technology GmbH in Starnberg.

Photo: Fig. - J.Microglyph



The information is encoded in the shape of lines inclined by 45 degrees.

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The basic patents were developed by Xerox in order to track documents in the course of business. In 2003, the company from Starnberg bought the patent licenses and continued to develop the code structures in their own research and development department. This decision was taken in response to the inquiry of an US partner for a solution in the marking and authentication of aircraft components.

Keyword ‘protection against forgery’

With this direct part marking (DPM) technology – meaning the direct marking of products – the Microglyph Technology GmbH generates more than half of its sales by now. The code is used, for example, in the automobile industry or the metal and plastic processing industry, especially for protection against forgery.

It scores especially with its robustness and a further feature, which distinguishes it from other codes: “It is perfectly suited for the marking of curved or rough and highly irregular surfaces, such as cast metal”, says Enzinger. Because: In order to read or to decode it, any visible section suffices. Even if parts of the code should be destroyed, it can be decoded safely.

At this point, the robust 2D code demonstrates its strengths: Even at high tape speeds, reading devices check that the correct number of packages is in the trays every time, that the brands are correct, and that a wrong country version hasn't slipped accidentally into the shipping carton together with the correct version – a big problem if different brands and country versions are processed in parallel. At the same time, the code also checks the correct “position” of the primary packaging. If the packaging has slipped or the code isn't within the adjustable position tolerances, the complete tray carton is ejected.

But the code can just as well be applied “live” during the packaging process, for example by inkjet printer or laser technology. However, in this case there are some limitations regarding the range of colour. The size of the area required for applying the code on the package depends on the respective print resolution. “At a resolution of 600 dpi, an area of about 4 square millimetres suffices for 10 lines of text.” For every customer project, however, it must be determined separately how much data the code should contain, how much area is available for the code, and under which condition the code will be read.

“Depending on the selected redundancy, it functions even if only 10% are visible – independently of whether it was destroyed, is partly covered, or highly reflecting surface interfere with the reading of the code. And it doesn't even matter which parts cannot be read: “There are no sensitive hotspots!”

The reading system software is parameterised and adjusted according to the individual requirements in the industrial use. The company from Starnberg also provides support in the selection of suitable marking and vision systems.

Cinematic performance

There are numerous applications. Enzinger mentions an inquiry from the USA, regarding the integration of the code into a film sequence in order to make digitalised video films copy-proof. The protection against copyright violation becomes more and more important. Thus, for example, sophisticated recorders are protected against imitations with our technology: “On the one hand, the microglyph can be so small and so well protected by its structure and colouring that it is hardly visible any more. On the other hand, due to its proprietary features, the code needs software licensed by us for its creation and evaluation. On top of that, we use a customised encryption procedure. No counterfeiter can reproduce those!”

Maren Oellerich >

Advantage

The Microglyph

■ is a proprietary 2D code; its marking and reading systems are based on licensed software;

■ encodes information in the form of tiny lines inclined by 45 degrees, the so-called glyphs. There are only two elements, the left and the right lines. Due to its decrease in size, it looks like a uniform hatching. Big advantage: it isn't conspicuous.

■ its colour can easily be adjusted to every packaging design. Advantage: the code becomes nearly invisible to the untrained eye;

■ up to 90 percent of its surface can be destroyed, but it can still be read;

■ it doesn't have to be rectangular but can take any shape;

■ it functions even on curved surfaces.