Marking

Black and White QR code mark on Mirrored Stainless Steel 316

A Quick Response Code (QR code) is a type of matrix barcode, first designed for the automotive industry in Japan. The QR code system was initially invented to track vehicles during manufacture. Today, QR codes are used in a much broader context for commercial and convenience purposes aimed at mobile-phone users.

The challenge is to mark the QR codes in a short amount of time and to be readable using a smartphone or barcode reader. A series of 10mm marks were created in this application: a black, white and combined mark.

In this application, the black mark is created by surface oxidation. The challenge is to heat the surface without any signs of melting. Within the mark area, the heating should be uniform to gain a good quality mark and this can be achieved by controlling the laser and scanner parameters. The black oxidated mark was produced in a single pass, created in 23.3 seconds.

The difficulty in producing a white mark is to achieve an even finish, viewable from different angles. The best results are achieved by using high scan speeds combined with low pulse energy, which gives a uniform mark. The white mark was produced in two passes, achieved in 4 seconds.

Application Parameters

Type	G4 20W RM-Z
Power	10W
Scan Speed	>1.3
Hatch Spacing	8mm
Energy	WF1 @500kHz – one pass