Barcode Making of Vacuum Capacitors

After introduction at the end of 2007 COMET will release a new barcode in January 2010 for all Vacuum Capacitors. This new bar code substantially improves the contrast consistency and readability of the barcode. Unique identification for each capacitor enables easy tracking and traceability throughout the life of the product.

Specification of Marking Process

Issue	Quantity	Unit	Remarks
Procedure			Glass melting on glazed ceramics
Readability			Commercial Bar-code-scanner with Code128 ability Alpha numerical characters for easy identification
Codification	CODE128		Full ASCII-Code
Letter height	3	mm	
Barcode width	19…30	mm	Depending on ceramic diameter
Barcode height	11	mm	
Electrical resistivity	> 1.5 10^9	Ohm	(Best ∞)
Thickness	7…20	µm	Barcode thickness (depth in glazed surface)
Other features			Resistant to common ambient conditions Temperature resistant and non flammable
Restrictions			Scratching, sanding, grinding or all other abrasive fluids, papers, etc. or cleaning or electrochemical procedures. May seriously impact not only the readability of the barcode but the functionality of the capacitor in some applications. In case of doubt please contact COMET AG. Handle with gloves.

Barcode

Figure 3:
The serial number is shown as a barcode and also in numeric characters for easy identification without a reader

Conclusion and benefit

This new barcode marking will have no negative influence on the product quality or performance. All COMET capacitors undergo the standard DC and AC electrical testing before shipment to the customer. In addition to this, type approval tests at 13.56 MHz under real operating conditions of the product have been carried out as part of the qualification process of this improved barcode marking process. All these tests showed absolutely no change in electrical performance when compared to product without barcode.

Electrical Verification

The vacuum capacitors with new barcodes have been subjected to high-power RF tests. The results shown below are average values out of 9 tested samples of each Series.

Test Setup

COMET RF test chamber
Frequency: 3 – 30 MHz
Power level: up to 25kW
Test specimen

Infrared temperature sensor

RF current sensor

Uni-Con

Specification

CVUN-500BC/12	50 – 500pF
	Peak working voltage: 7.2kV max
	Max Current: 94Arms
Test condition:	13.56MHz up to 90 Arms, C-position 78pF

Result: External discharge happens at 19.4kVp more than double the specified peak working voltage. All discharges occurred at the ceramic/metal interface but did not have any relation to the position of the barcode.

Power-Con

Specification

CVPO-500BC/15	50 – 500pF
	Peak working voltage: 9kV max
	Max Current: 123Arms
Test condition:	13.56MHz up to 92.5 Arms,
	C-position 97pF

Result: Nearly identical to those of the Uni-Con Series, external discharge occurred at average voltage of 20.21kVp, more than double the specified peak working voltage. Again no correlation between discharge location and the product barcode could be found.