

MAC-TS4 Vacuum Bottle Test Set

By Vacuum Interrupters Inc.

- **Predict the Bottle Life Remaining**
- **Test « In Situ »**
- **Determination of the Vacuum by ionic current measurement**
- **Easily Portable**
- **CE Marked**



It is well known that the vacuum interrupter chambers work well until they no longer work, sometimes with disastrous results. The MAC TS4 offers a means of predicting the remaining life of vacuum bottles, without the need for dismantling for laboratory testing.

A flexible coil is wound around the bottle (contacts open), and electrical connections are made at either end. Initiating the automatic test sequence creates a magnetic field to channel the ionic current generated between the contacts by the application of a high voltage. The magnitude of this current enables the accurate determination of the level of vacuum in the bottle. This value, in combination with other criteria concerning the history of the bottle is used to make a prognosis on which is based the decision to immediately replace the bottle, or to leave it in place for 3, 5 or 10 years.

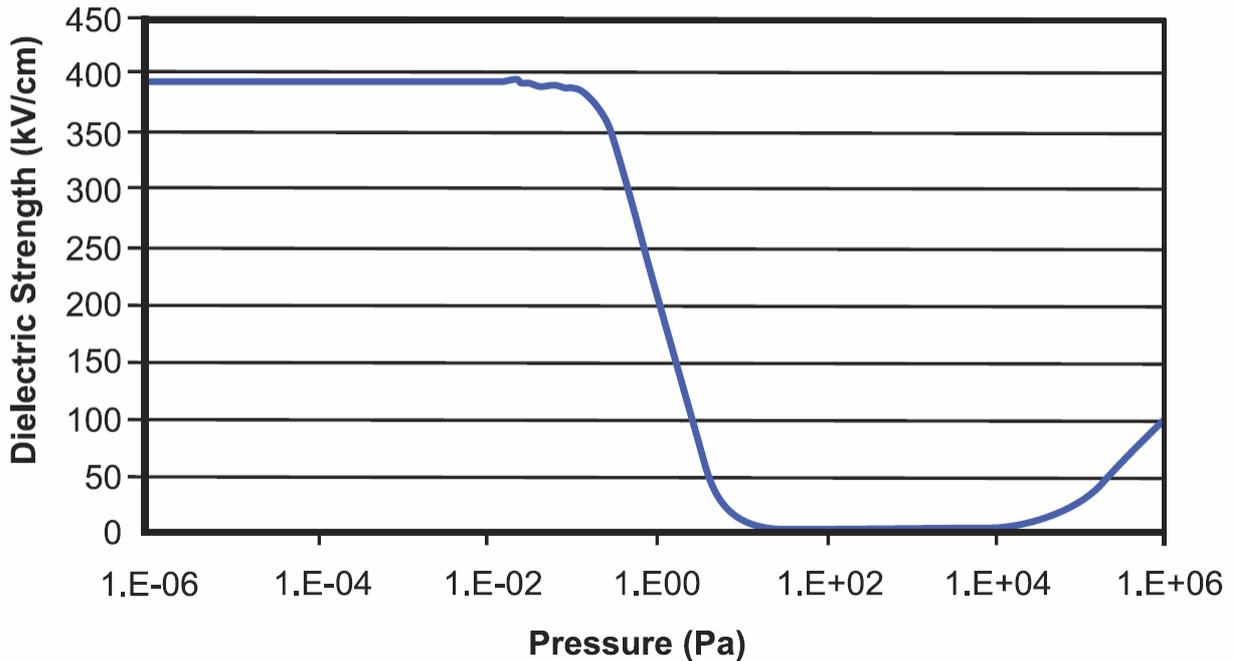
When to change a Vacuum bottle? Vacuum Switches, Inc. can provide the equivalent of almost any bottle up to 38 kV and 3000 A. We have replacements for most major manufacturers including GE, Eaton, CH, Westinghouse, ABB and Siemens, and our design office can make custom bottles to replace obsolete examples which are even older.



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Paschen Curve for Dry Air



The graph above shows that the interrupting capacity of a vacuum chamber will drop sharply if the pressure exceeds 10^{-2} -Pa. The Penning Discharge Principle shows that the application of a high voltage to contacts which are surrounded by a magnetic field will generate a current (ionic) between the contacts that is a function of the voltage, the level of the magnetic field and the pressure. The Magnetron Atmospheric Condition test carried out by the MAC-TS4 applies a voltage of 25 kV (dc) and generates a magnetic field of 200 gauss, which enables measurement of the low currents which are generated and thus calculation of the pressure in the bottle. Knowing the pressure, and with information about the age and the number of operations made by the bottle, enables a confident prediction of the remaining bottle life.

Right -
A schematic of
the MAC-TS4
operation

