

did not cause an unwanted switch-off due to current variations that had nothing to do with sparks.

Embodiments The primary object of the present invention ~~seekis thus~~ to provide a method by means of which the one skilled in the art does not need to make the compromise mentioned above.

According to a first aspect of the present invention, there is provided a method for treating a workpiece in a vacuum treatment facility wherein a negative bias is applied to the workpiece and damage to the workpieces due to breakdowns during the treatment process in the vacuum treatment facility is avoided by interrupting the treatment process if the current flowing through the workpieces to be treated deviates positively from the previously measured mean current by more than a value ΔI , characterized in that the value ΔI is coupled in such a way to the negative bias that it increases monotonously, and within at least one range strictly monotonously, with the magnitude of the bias voltage.

According to a second aspect of the present invention, there is provided a vacuum treatment facility for treating workpieces in vacuum, comprising: a vacuum chamber which can be evacuated, a substrate holder in which workpieces to be treated can be placed, a bias generator for applying a negative bias to the workpieces to be treated, means for detecting the current flowing through the workpieces to be treated, means for averaging the detected current through the workpieces, means for determining the deviation of the actual current through the workpieces from the mean current and comparison with an automatically adjustable maximum allowed deviation ΔI , characterized in that the vacuum treatment facility is designed in such a manner that the maximum allowed deviation ΔI is automatically set depending on the bias voltage applied to the workpieces.

According to embodiments of the invention, the task ~~may be~~ achieved by means of a method according to which ΔI is chosen depending on the currently applied bias voltage. According to embodiments of the invention, ΔI is automatically coupled to the bias voltage in such a manner that at a low bias voltage a small ΔI is chosen and at high bias voltage a high ΔI is chosen.

Figure 1 shows an inventive coating facility 1 with a bias generator 101 and a coating chamber 103. The bias generator 101 comprises a power unit 105. In the bias generator, its output capacity CG 107 is also shown. The input lead from the bias generator 101 to the coating chamber 103 has an ohmic resistance R_L and an inductance L_L . In the coating facility, a plasma is generated, which leads to an ohmic plasma resistance R_{PL} , a plasma inductance L_{PL} and a plasma capacitance C_{PL} . A lightning in Figure 1 indicates in particular a short-circuit occurring after a disruptive breakdown.

In Figure 1 it is possible to distinguish that at the capacitive output of the bias generator, because of the rapid processes during a spark, the power unit 105 can be disregarded. Therefore, in case of short-circuit, the flowing current is directly proportional to the voltage specified by the output capacitance.

In order now to determine which ΔI is to be chosen for which voltage, different threshold values for ΔI are set for a given bias voltage and the reasonable operating range is determined. For this bias voltage, the optimum threshold value is set for example at the center of the operating range. The bias voltage is subsequently changed, the operating range is determined for the newly set bias voltage and, with the center of the new operating range, the optimum threshold value is set for the new bias voltage. The process is repeated a few more times so that the threshold value is determined depending on the bias voltage. The threshold value is then coupled, for example electronically, with the bias voltage