CD 2000

The bipolar corona discharge CD 2000 is used to neutralize the charge of a dust or liquid aerosol or even to electrically charge it, as required. For this purpose, a current is set on the positive and negative high voltage source so high that it is still entirely conducted through the corona discharge generated at the tip in the corona chamber, but no (or few) sparks are generated. This current is programmed via the current limitation of the HV power supplies. The voltage limitation is set slightly higher than is necessary for the current determined, such that this current flows under all circumstances (temperature, condition of the electrode). The positive and the negative high voltage supplies and the CD 2000 are independent of one another and are independently adjustable.

Model Variations

CD 2000 Type A
Version with lower mixed air flow

CD 2000 Type B
Version with higher mixed air flow

OPERATION PRINCIPLE

BIPOLAR DISCHARGE SYSTEM

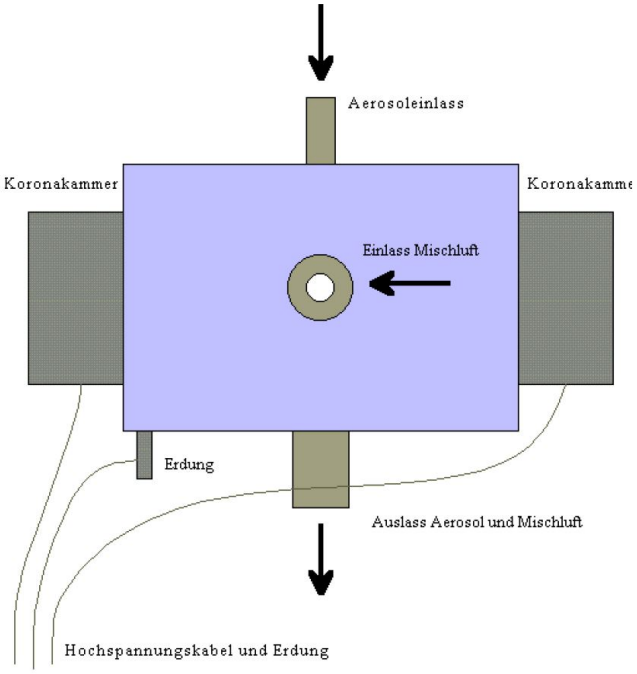

Fig. 1: Functional principle of corona discharge

A dust or liquid aerosol is supplied at the aerosol inlet. The particles in this aerosol have to be discharged. The mixed air inlet is fed with dry, pressurized air. The mixed flow air is passed through two ionization chambers. In these chambers, the air is enriched with ions from the corona discharge with positive and negative high voltage. The aerosol air stream and the mixed air enriched with ions are mixed in a small mixing chamber. The charges of the particles in the aerosol are neutralized by the ions in the mixed air. This takes a certain time. That means, the complete discharge only occurs in the volume after the CD 2000 outlet (e.g., in the tubing system or the upper part of a filter holder). An approximate value for the dwell time is 0.5 seconds. A satisfactory discharging effect was found in configurations that ensure a dwell time of at least 0.2 seconds.

Attention

Many standards, e.g., EN 779 for room filters, require a discharge unit.

Comparison measurement

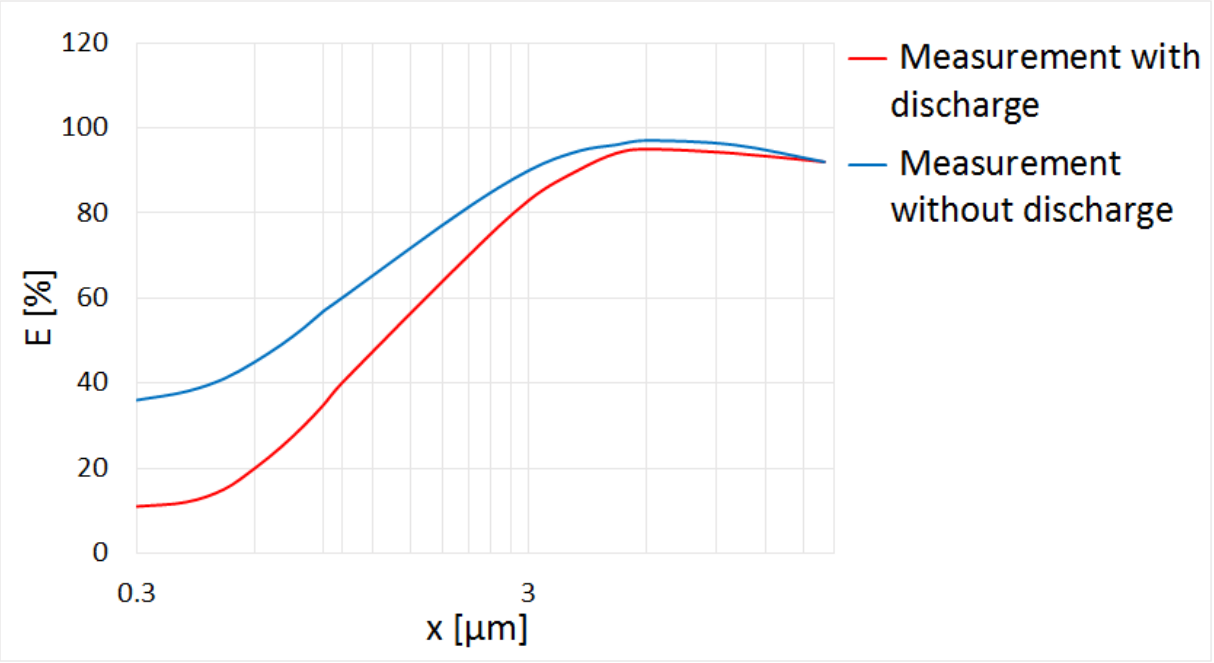

Fig. 2: Fractional separation efficiency with and without CD 2000

With a filter medium or filter (exception: Electret filter medium or Electret filter), the fractional separation efficiency is usually measured higher without a discharge unit than with one.

Benefits

- No operation license is required for radioactive instruments
- Bipolar discharge through negative and positive ions
- Applicable for solid and liquid aerosols
- Robust design
- Simple operation
- Reliable function
- Low maintenance
- Reduces your operating expenses

DATASHEET

Reported data	Voltage: 0 – 6,000 V $\triangleq$ 0 – 10 VPwer: 0 – 1,000 μA $\triangleq$ 0 – 10 V
Volume flow (mixed air)	Type A: for 2 – 18 m^3/h, type B: for 3 – 36 m^3/h
Volume flow (suction flow)	0 – 4 m^3/h
Power supply	115 – 230 V, 50/60 Hz
Power consumption	50 W
Aerosol outlet connection	Aerosol and fed mixed air, $Ø_{inside}$ = 12 mm, $Ø_{outside}$ = 16 mm
Mixed air connection	Cleaned pressurized air, type A: $Ø_{inside}$ = 6 mm, $Ø_{outside}$ = 8 mm, type B: $Ø_{inside}$ = 13 mm
Operation principle	Ionization with corona
Mains fuse	F 3,15 A, 250 V
Aerosol inlet connection	$Ø_{inside}$ = 6 mm,Øoutside= 8 mm
Special features	Positive and negative high voltages are provided by two independent power supplies, maximum voltage: ± 6,000 V, maximum power: ± 1,000 μA

APPLICATIONS

- Discharge of electrically charged aerosols
- Aerosol research
- Filter testing

Mehr Informationen:
https://www.palas.de/en/product/cd2000