AGK 2000

Solid particle aerosols produced from suspensions, e.g., with biological agents, and solutions such as NaCl and KCl, are required for numerous research, development, and quality assurance applications. NaCl/KCl aerosols or aerosols produced from biological agents are prescribed as test aerosols in various standards to ensure the comparability of filter media, measuring equipment, and filters. To be called such, test aerosols must be generated consistently regarding particle size distribution and particle concentration over the test period. Furthermore, it must be possible to reproducibly produce the particle size distribution and the concentration. A specially developed nozzle ensures that these requirements are met by preventing the crystallization of the salt crystals at the nozzle outlet. The particle size spectrum can thus be adjusted reproducibly in the range of approx. 5 nm up to 15 μm, depending on the concentration of the solution.

Operation principle

Generation of solid particles out of suspensions, solutions, and biological agents

Two-substance nozzles are mainly used for dispersing liquids, suspensions, and solutions. For dispersing salt solutions, the conventional atomization methods, such as that of the Collison Nebulizer, which was also built by Palas, are not particularly suitable since salt crystals precipitate at the nozzle outlet and lead to partial obstruction of the nozzle system.

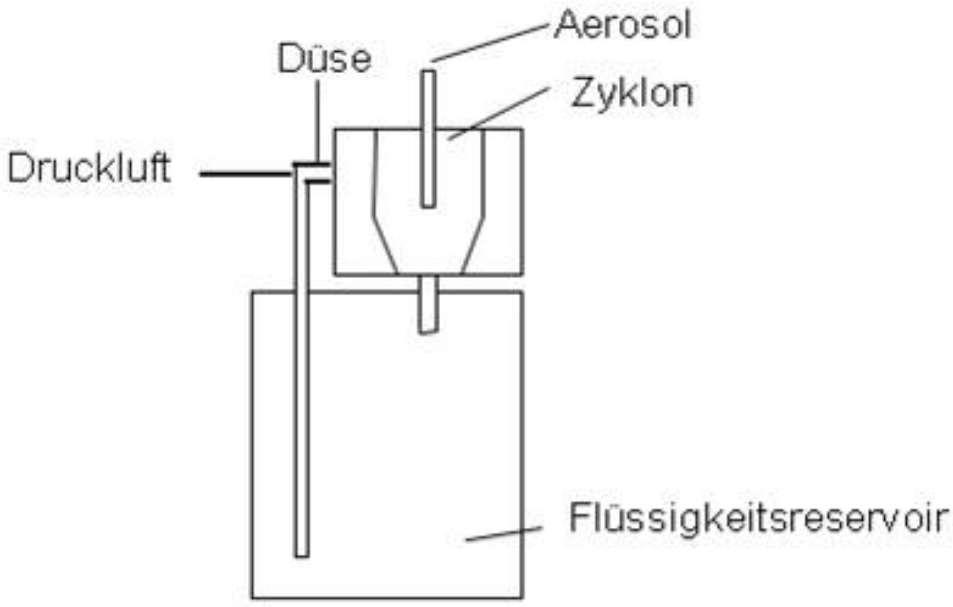

Fig. 1: Schematic diagram of the AGK 2000 with cyclone

A special nozzle developed by Palas enables the atomization of salt solutions with the highest dosing constancy.

Depending on the solution concentration of salts in the reservoir, the particle size of the aerosol can be influenced. Higher solution concentrations lead to larger particles.

Dependency of the particle distribution from the concentration of the solution (Figs. 2 and 3). Measuring device: welas® digital system from Palas.

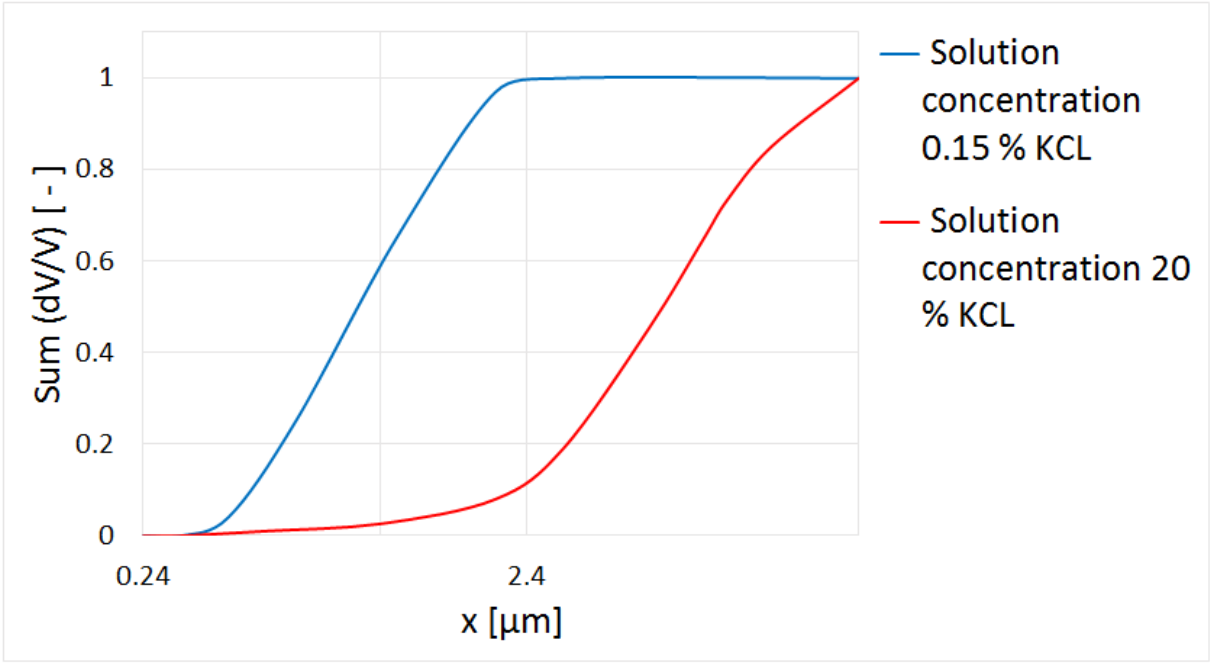

Fig. 2: Representation of the volume-based integral distribution of a 20 % KCl solution and a 0.15 KCl solution

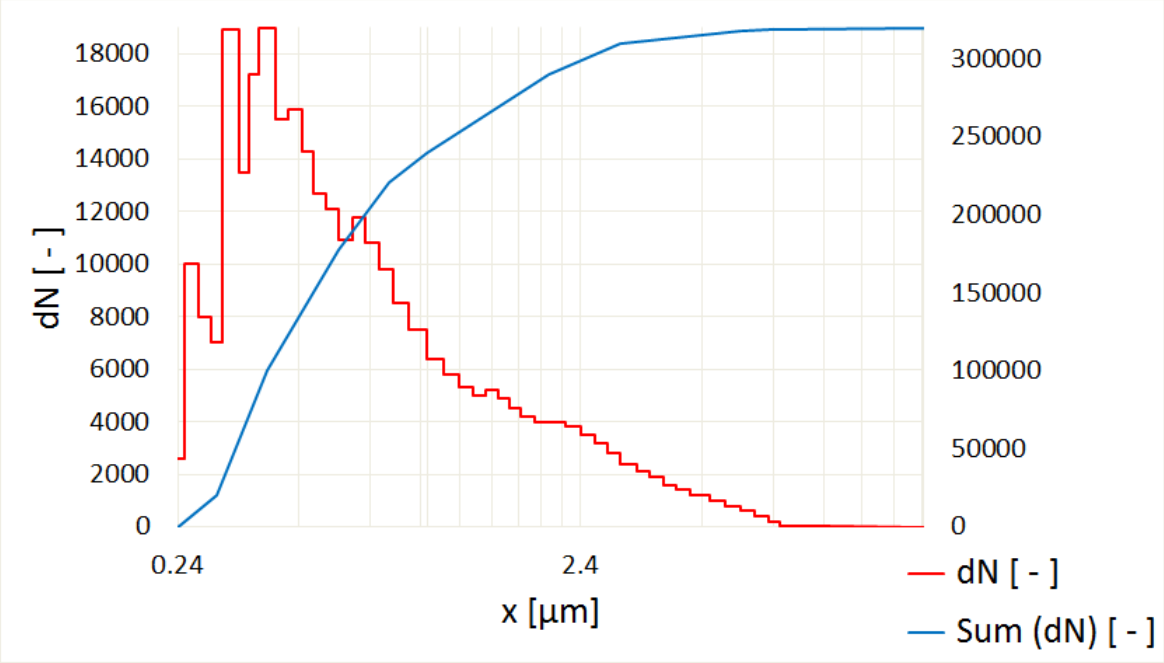

Fig. 3: Representation of the number size distribution of a 20 % KCl solution

Extensions/Accessories

The AGK 2000 has a straight or curved drying column and is optionally pressure-resistant up to 10 bar.

Benefits

- Excellent short-term and long-term dosing constancy
- Wide adjustable particle size range
- Easy filling of the reservoir
- Large reservoir (500 cm^3)
- Robust design, proven in industrial applications
- Easy to operate
- Reliable function, high reproducibility
- Little maintenance required
- Reduces your operating costs

DATASHEET

Particle size range	0.005 – 15 μm
Maximum particle number concentration	Ca. 10^7 particles/cm^3
Volume flow	3 – 10 l/min
Volume flow (accessories)	6 – 20 l/min (drying column)
Filling quantity	300 ml
Particle material	NaCl, KCL, biological agents and other particles in suspensions
Dosing time	Several hours nonstop
Pre-pressure	4 – 8 bar
Carrier/dispersion gas	Random (generally air)
Compressed air connection	Quick coupling
Aerosol outlet connection	$Ø_{inside}$ = 20 mm, $Ø_{outside}$ = 30 mm
Weight	Approx. 3 kg

Applications

- Filter industry:
  - Car interior filters
  - ASHRAE room air filters
  - Engine air filters
  - Respiratory filters
- Chemical and pharmaceutical industry
- Generation of tracer particles
- Flow visualization
- Aerosol research

Mehr Informationen:
https://www.palas.de/en/product/agk2000