

*New Generation of PKS100E  
- long term stability -*



*Scale*

The logo for Scale, featuring the word "Scale" in a stylized, cursive font. Above the text is a graphic element consisting of a curved line with a rainbow gradient (red, orange, yellow, green, blue) and small tick marks along its length, resembling a scale or a measurement tool.

# Companies

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SCALE MT GMBH (GERMANY) AND SCALE ATS GMBH (REST OF THE WORLD)

**Founded:** 2016 & 2025

**Employees:** 8

**CEO:** Philipp Seifert (Scale MT GmbH), Dr.-Ing. Peter Schwanzer (Scale ATS GmbH)

**Located:** Germany, 93049 Regensburg, Ladehofstraße 26

**Business segments:**

- Maintenance and repair of particle counters
- Accredited PN-calibrations ISO 17025 (monodisperse, polydisperse Aerosol and PCRF)
- Particle generators
- **Particle Calibration Device *PKS100E***



# Particle Calibration System PKS100E (GENII)

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Aerosol material:	NaCl-solution (0,9 Vol.%)
Particle concentration:	30.000-1.500.000 #/cm <sup>3</sup>
Median:	70 nm <b>± 5 nm</b> (Germany)
Minimum volume flow:	10 l/min (@ zero point)

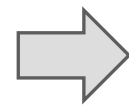
reference particle counter **Dekati ePNC**

# Benefits of on-site calibration w. salt



- No shipping of the devices
- Quick and easy calibration in-field
- Decentralized calibration without expensive laboratory equipment
- Only one annual maintenance and recalibration for the calibration device to ensure a high level of accuracy and long-term stability
- **Safe calibration with salt**

## Why we don't use soot for the calibration device:

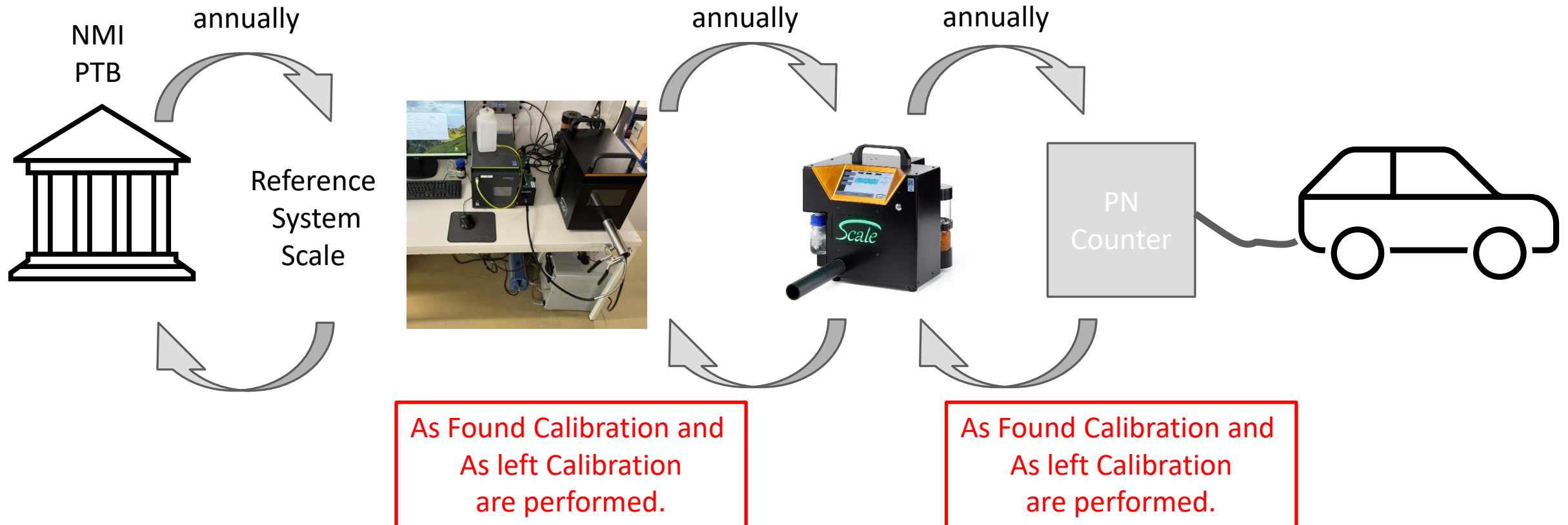


- High costs for equipment (Soot generator, Sample gas conditioning and Dilution)
- Long-term stability for a mobile device
- Safety of the technical persons
- Long warm-up time

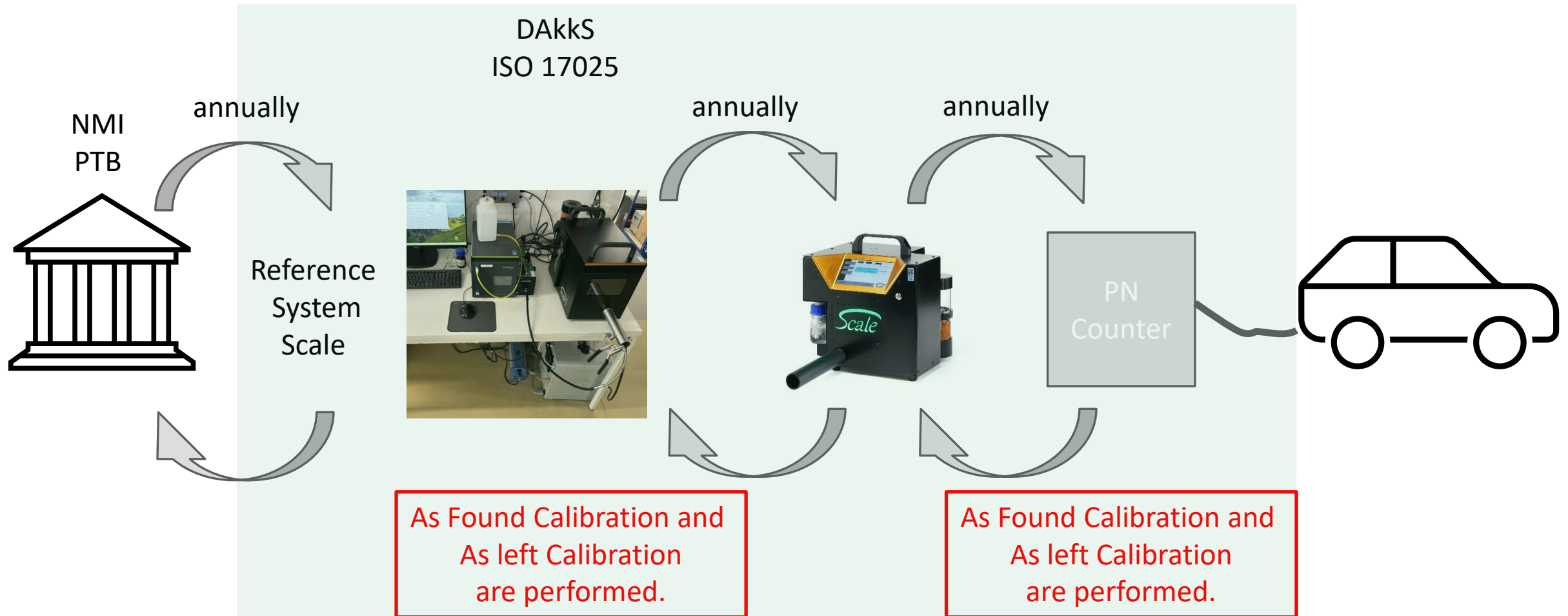
**AND MOST IMPORTANT:**

**SOOT is not always the same as SOOT !!!**

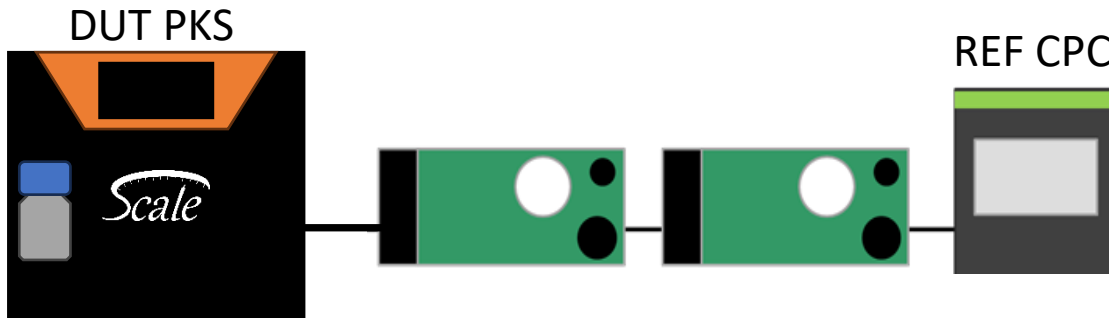
# Calibration Process in Germany



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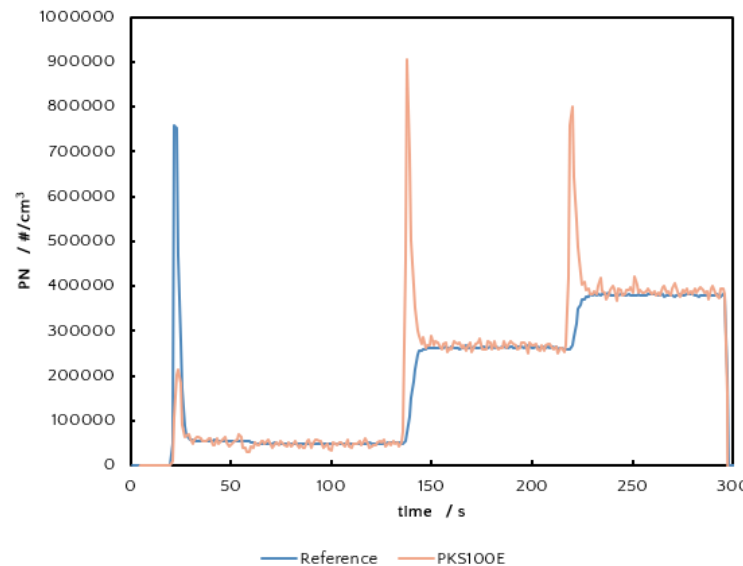
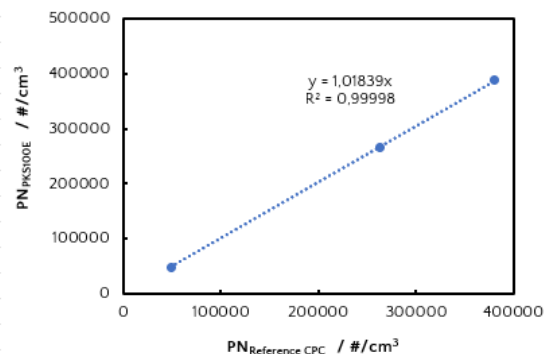


# Why you don't need a salt-soot factor for the Reference Device PKS100E

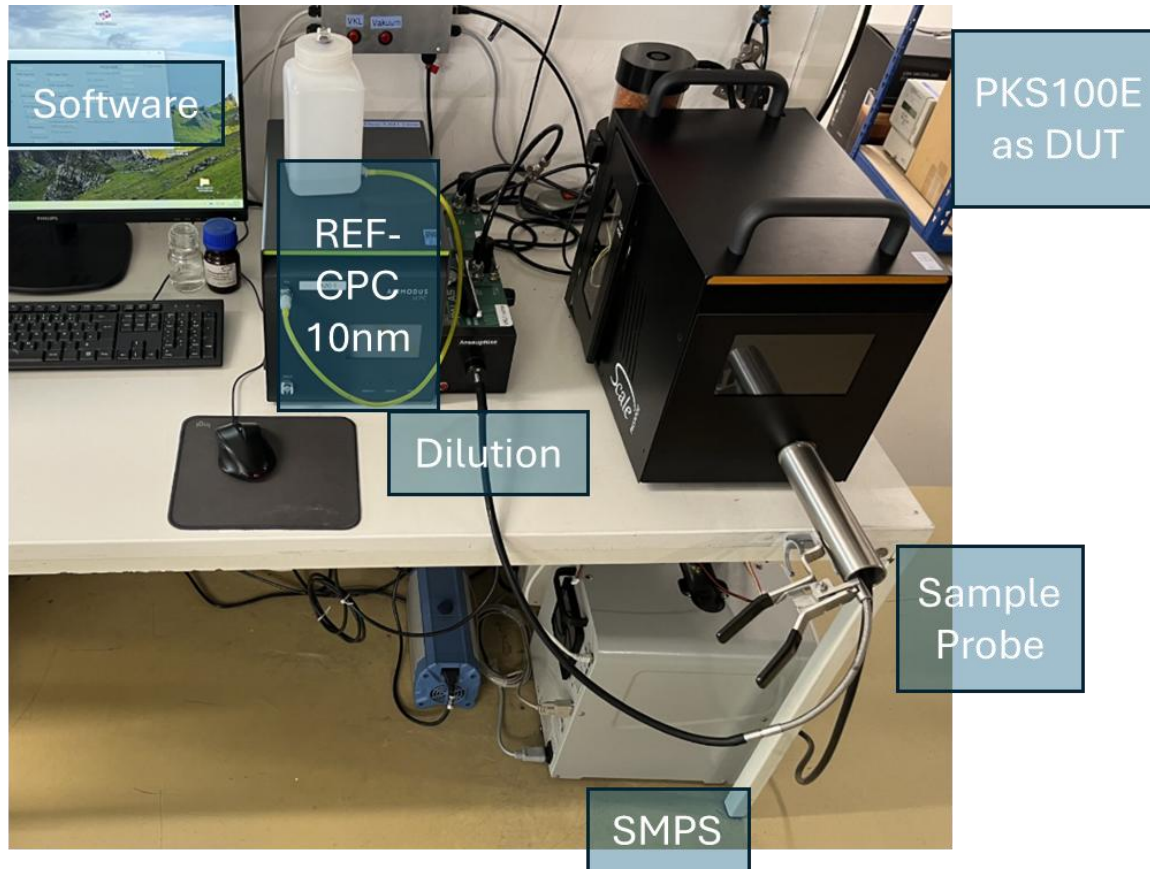


- We adjust the DC-sensor inside the PKS100E to show the same reading as the reference CPC.
- The PKS100E will always show the real total concentration, like the laboratory CPC would show it, as long as the **particle size distribution** remains constant.
- This means you don't need a salt-soot factor for the **internal DC-Sensor** as it displays the same as a laboratory CPC for the generated aerosol.
- As our particle generator is very stable, the PKS100E is a well defined reference system.
- **You only need a salt-soot factor for the particle counter (DUT) you measure with the PKS100E**

Stellung [°]	Ref [# / cm <sup>3</sup> ]	PKS [# / cm <sup>3</sup> ]	PKS [%]
790	49020	48536	0,990
838	263613	267117	1,013
864	380506	388611	1,021
			100,82443%

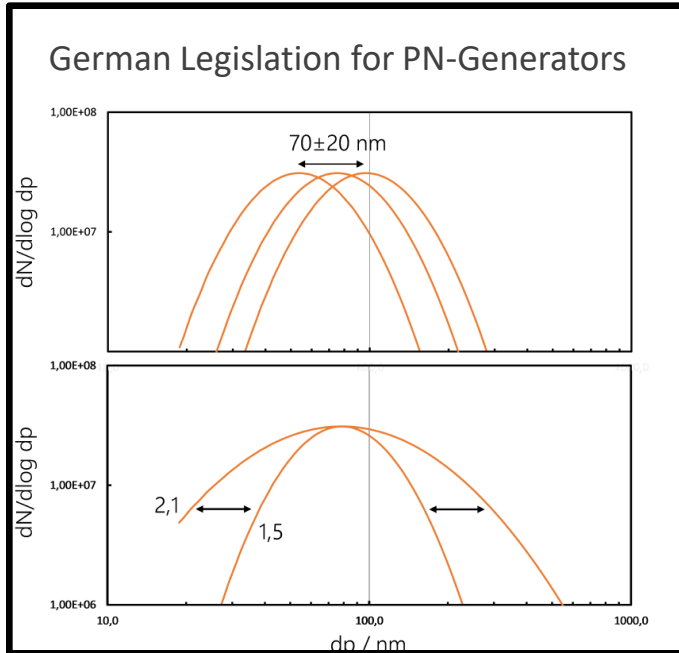


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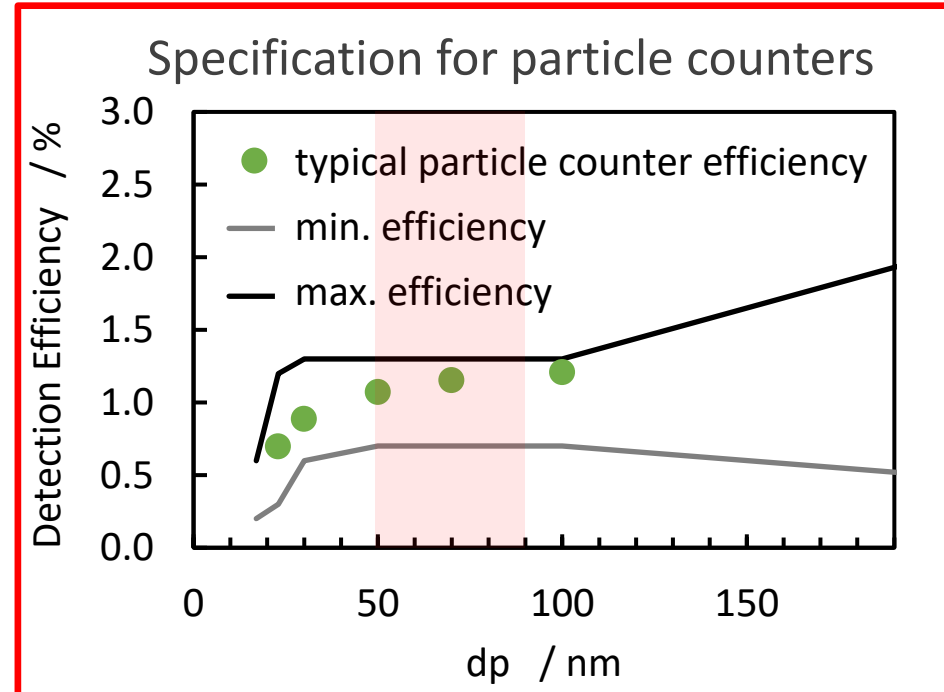


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# Challenges of different particle size distributions for particle counters.

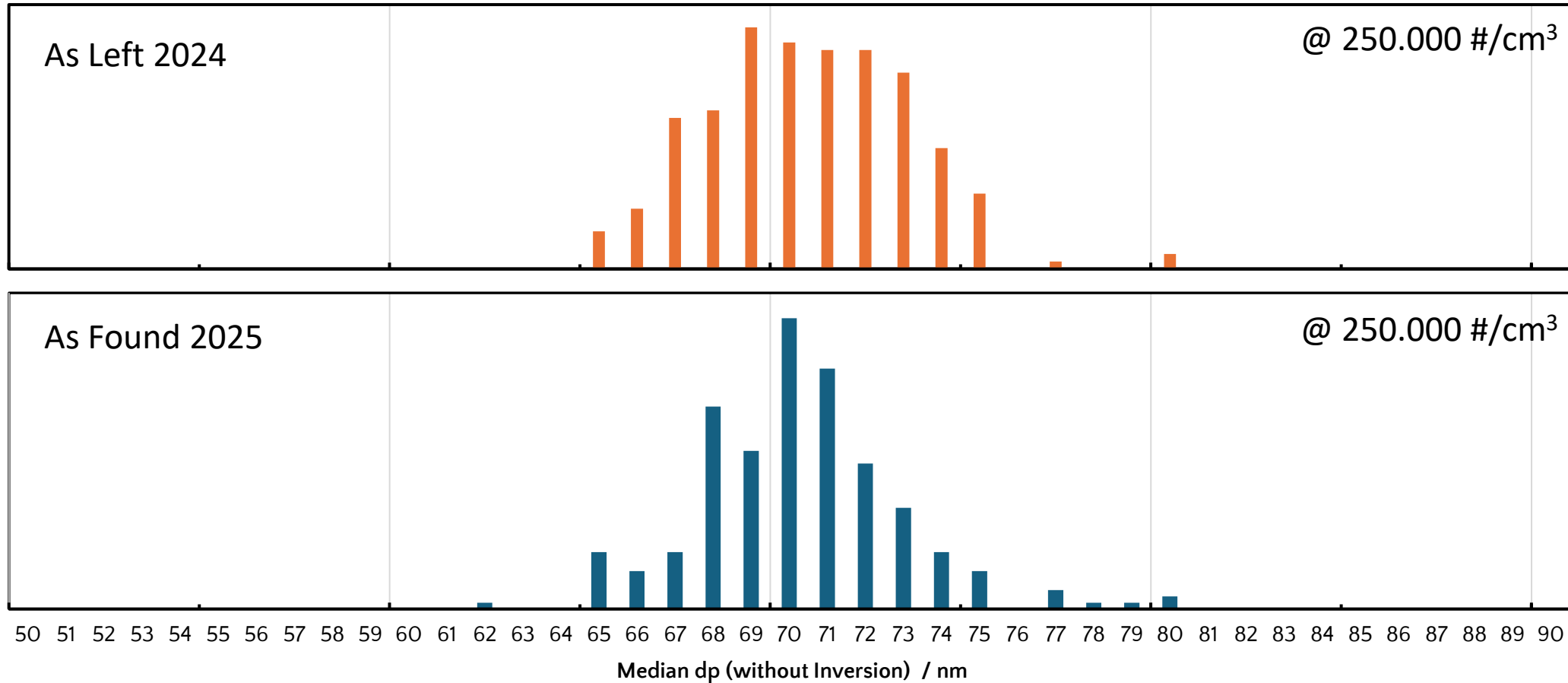


In Addition

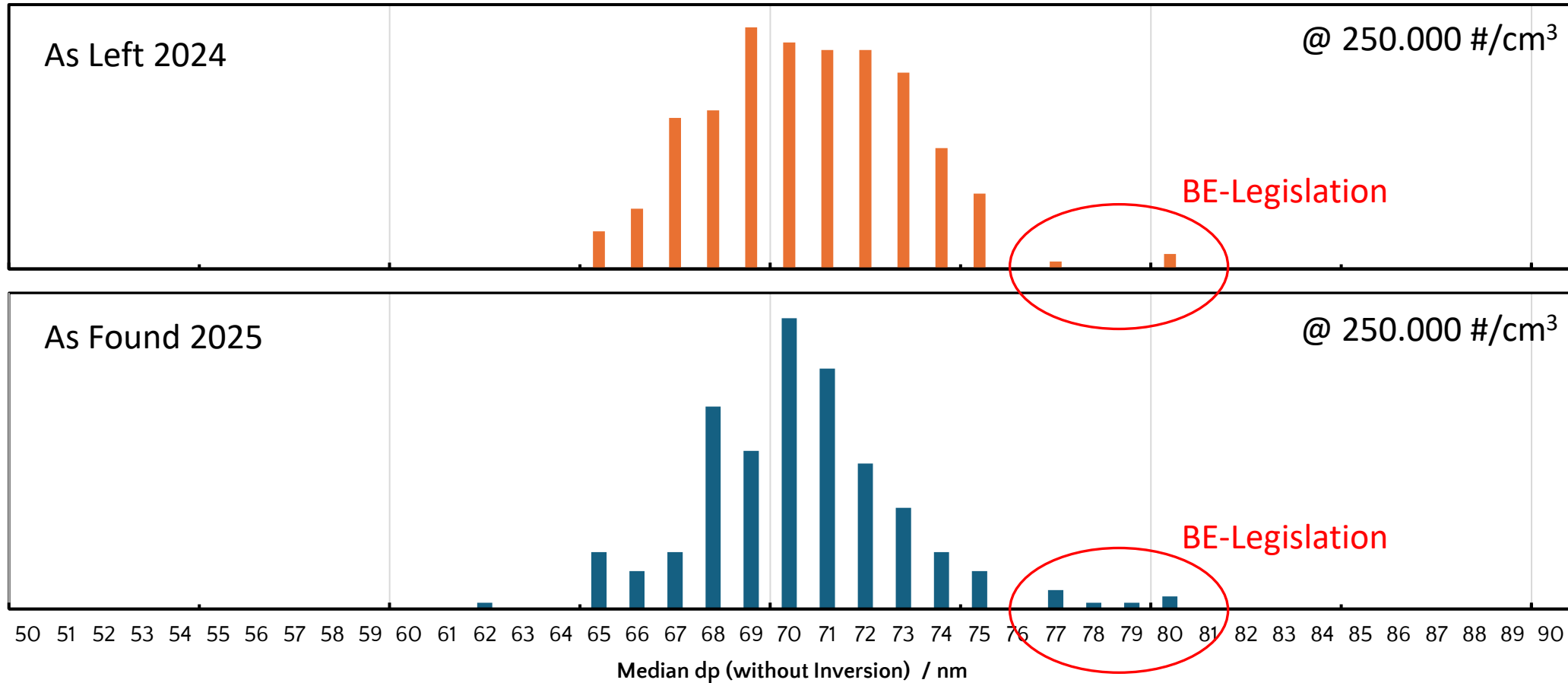


Counting efficiency of standard particle counters on the market, changes significantly in the 50 to 90 nm range

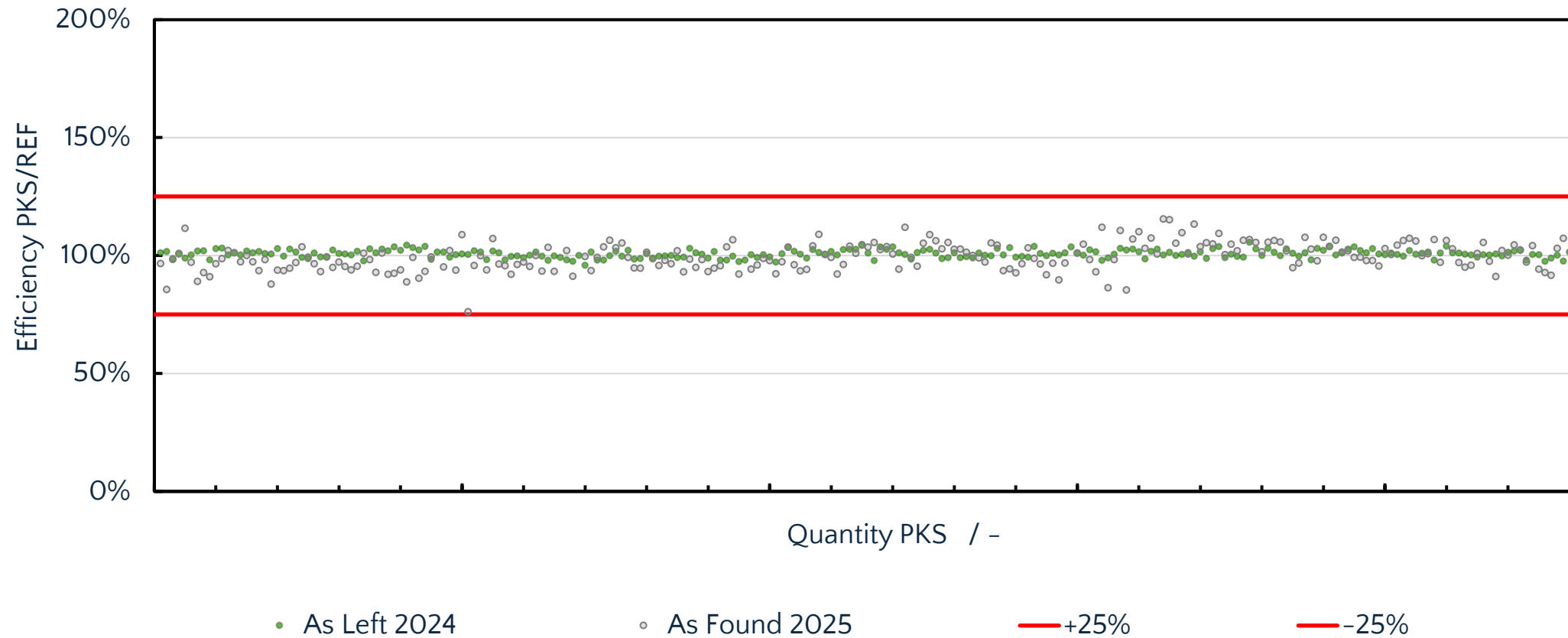
# Results PKS100E As Left and As Found



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# Conclusion

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- In our opinion, there is no better material than salt for mobile calibration.
- A salt-soot factor is definitely useful in the PTI market due to the varying sensitivities of the individual manufacturers of particle counters (**we offer to determine the salt-soot factor for all manufacturers on your behalf**).
- A consistent particle size in the reference device is of essential importance!
- The PKS100E device is particularly notable for its long-term stability (particle size and efficiency).

Thank you for your  
attention

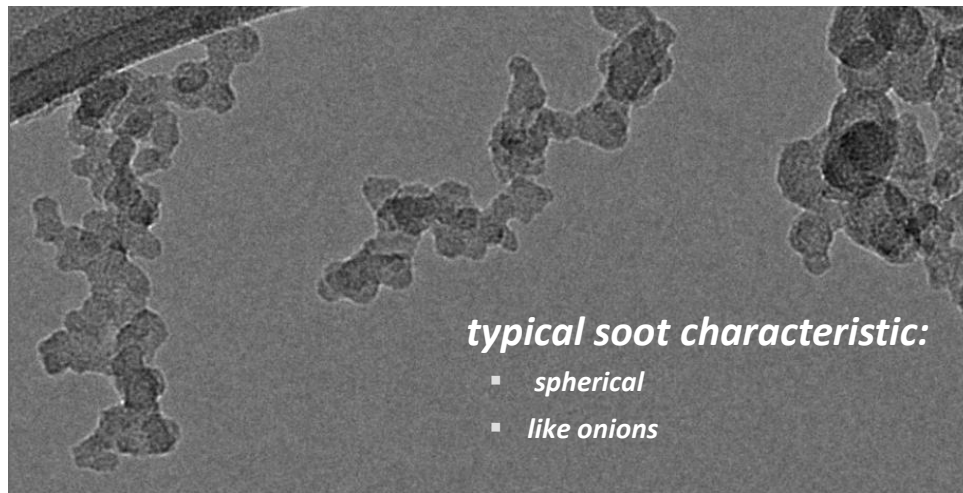
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PETER SCHWANZER (CEO SCALE ATS GMBH)



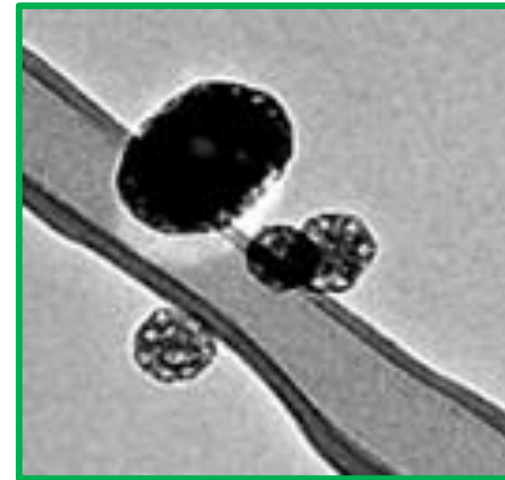
# Salt Morphologie (PKS100E)

**Target:** As similar to diesel soot as possible

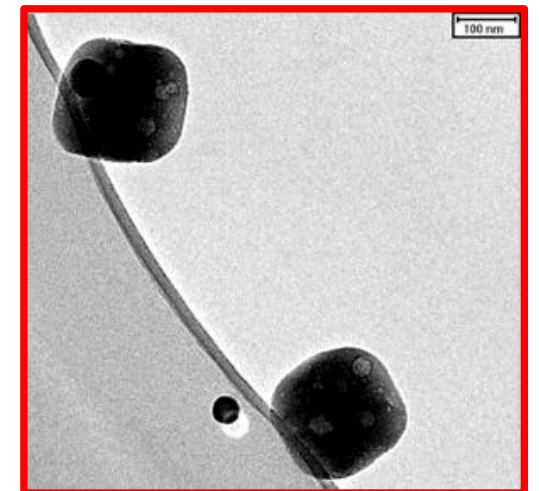


**Figure:** Soot particles from an internal combustion engine

**Particle from the PKS100E**



**Bad Example:**



Different ways to produce salt particles

- Atomizer (single-fluid nozzle, Two-fluid nozzle)
- Heat up with oven
- Melting with laser