

Från PM massa till Nano



Mäta partiklar är som att jaga Dr. Jekyll and Mr. Hyde:



Filter sampler



Gravimetriska processen

För konditionering i lab 25/50

Vägning före exponering

Installera filter i samplers

Om lagrad i samplers: termisk berg och dalbana

Åter till lab för konditionering 25/50

Vägning och rapportering



Optisk partikel räknare

Baserad på LED eller laser teknik

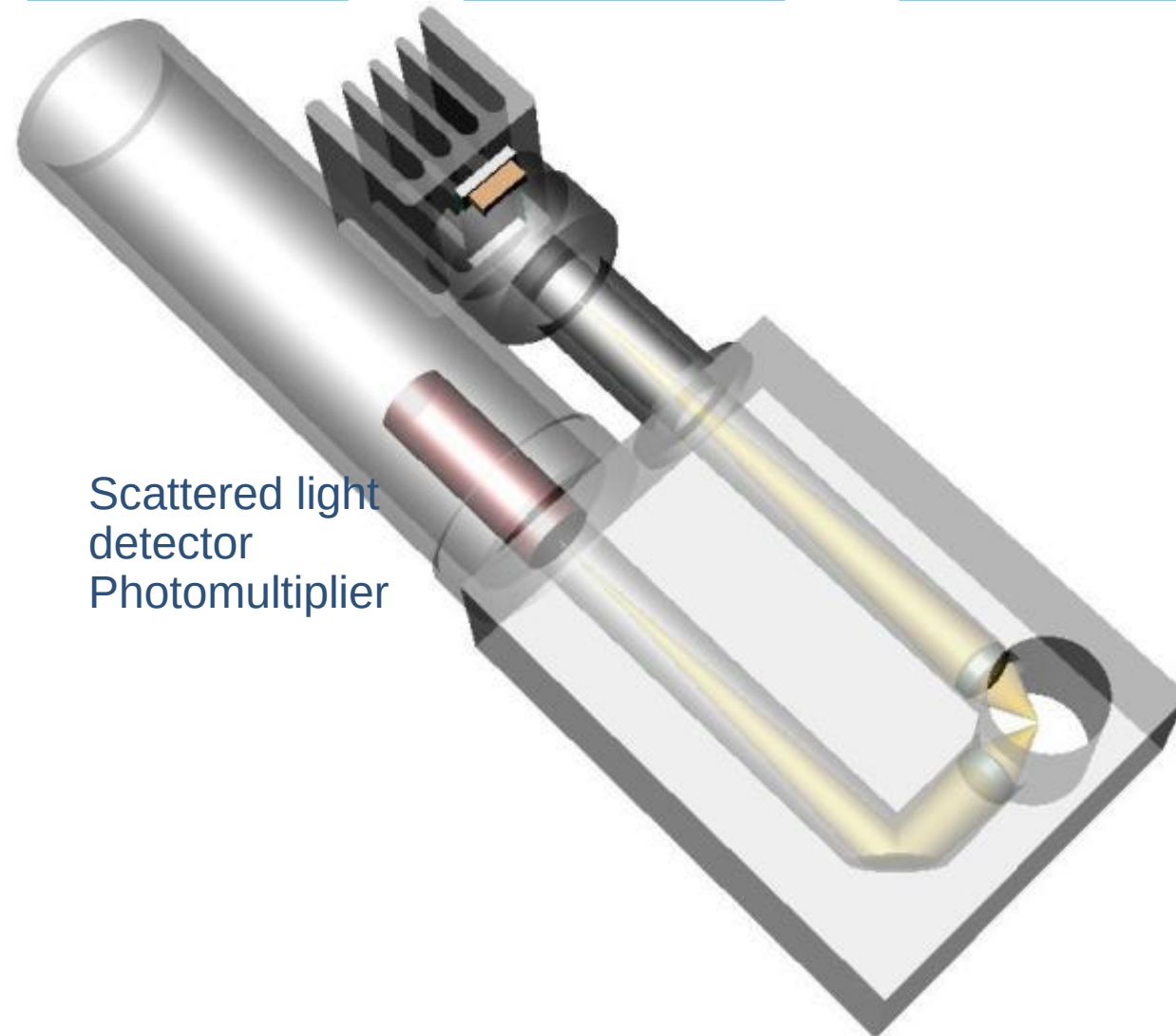
Från TSP ner till 180nm

Storleksfördelning

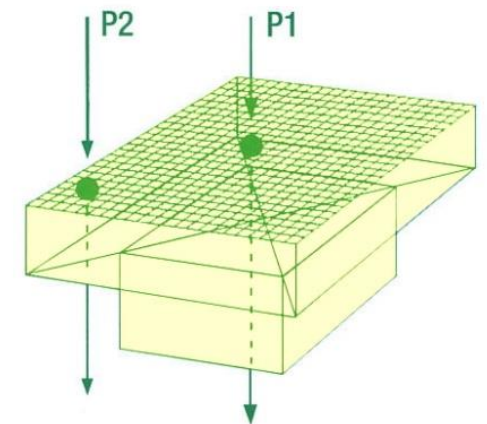
Multi fraktionering



Mätprincip



Scattered light
detector
Photomultiplier



Aerosol channel with
T-shaped
measurement volume

Nya utmaningar

Att fånga nano partiklar på filter ej möjligt

Emissioner från fordon

Igår



Idag



Fordons emissioner

Ingen partikelmassa

Storleksområde 10 – 300nm

Ingen reglering av partikel antal

Nya metoder att mäta och övervaka
nanopartiklar

CPC – Condensing Particulate instrument

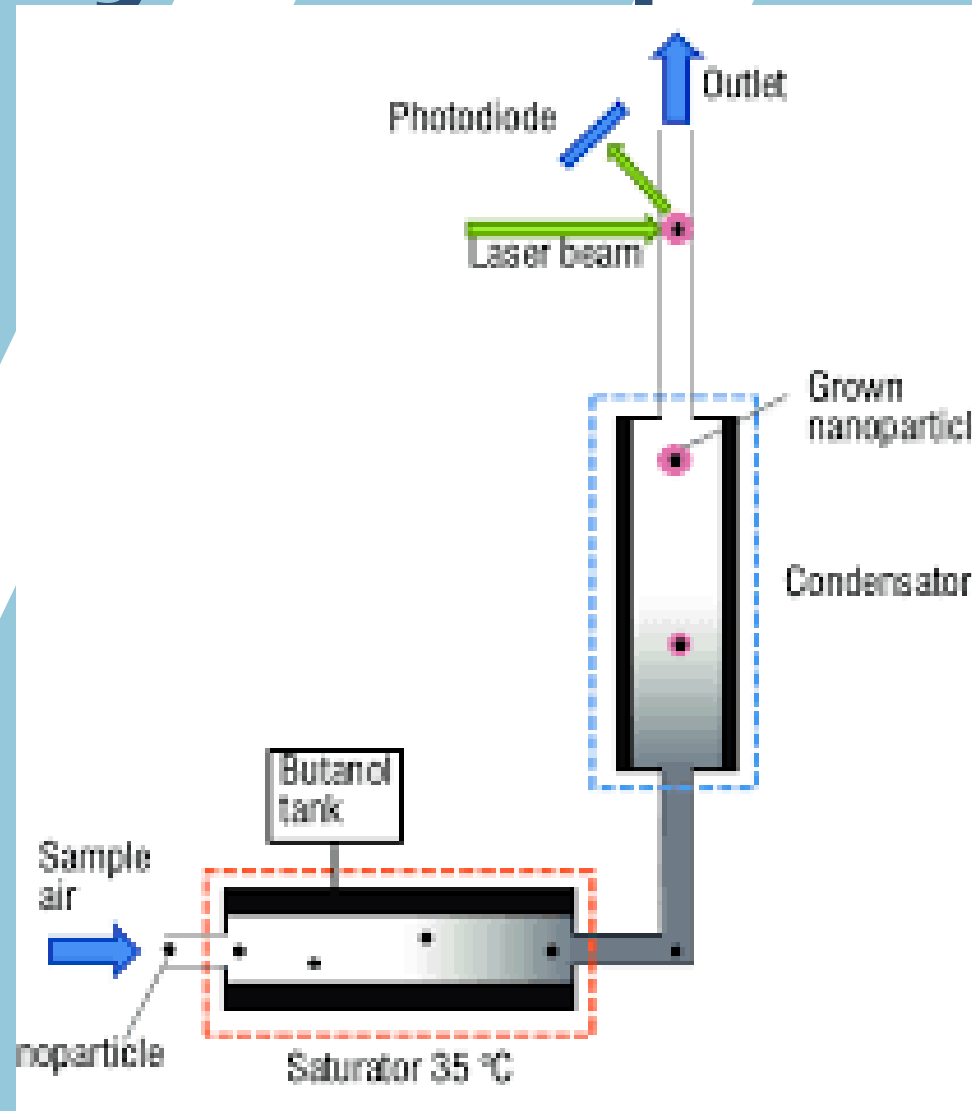
Från sub nanopartiklar

Responstid från 180ms till sec.

Normalt fast installerade



CPC general princip



Små handburna enheter

Små dimensioner

Låg vikt, utmärkta för person exponeringsstudier

Arbetsplatser

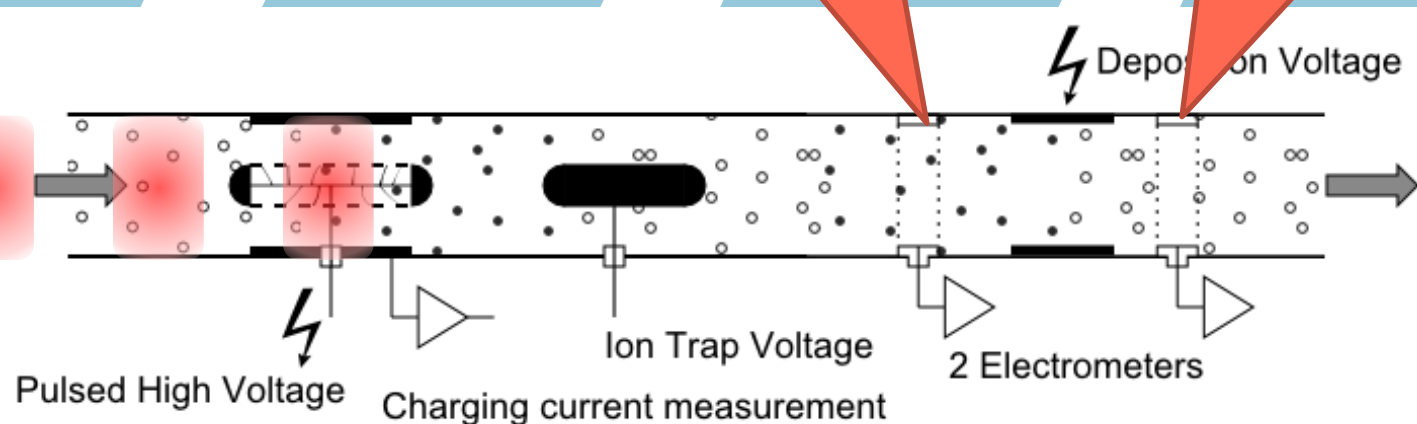
Nano partikel samplers



Princip

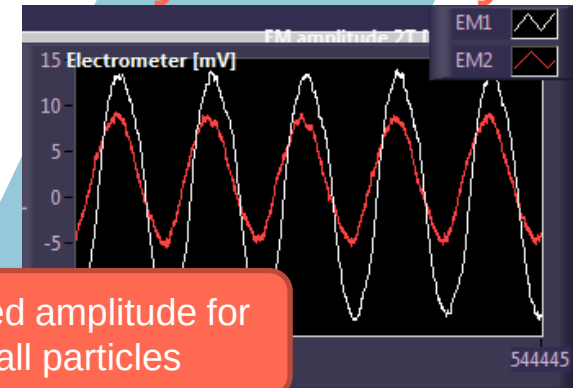
Pulsed charging creates clouds of charged particles

Electrostatic precipitator selectively removes small particles – reduced signal in 2nd cage:

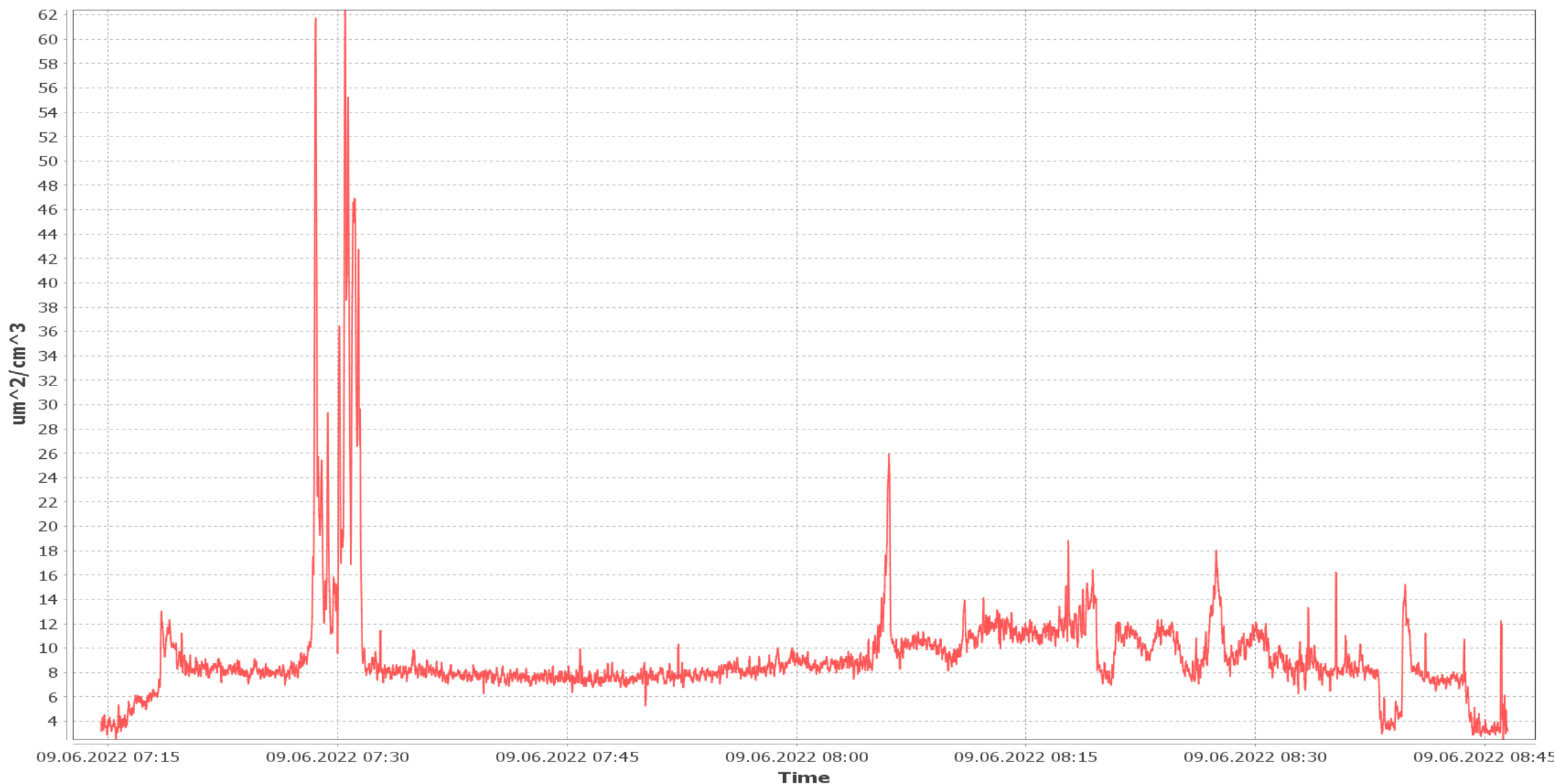


Full amplitude =
total charge

Reduced amplitude for
small particles



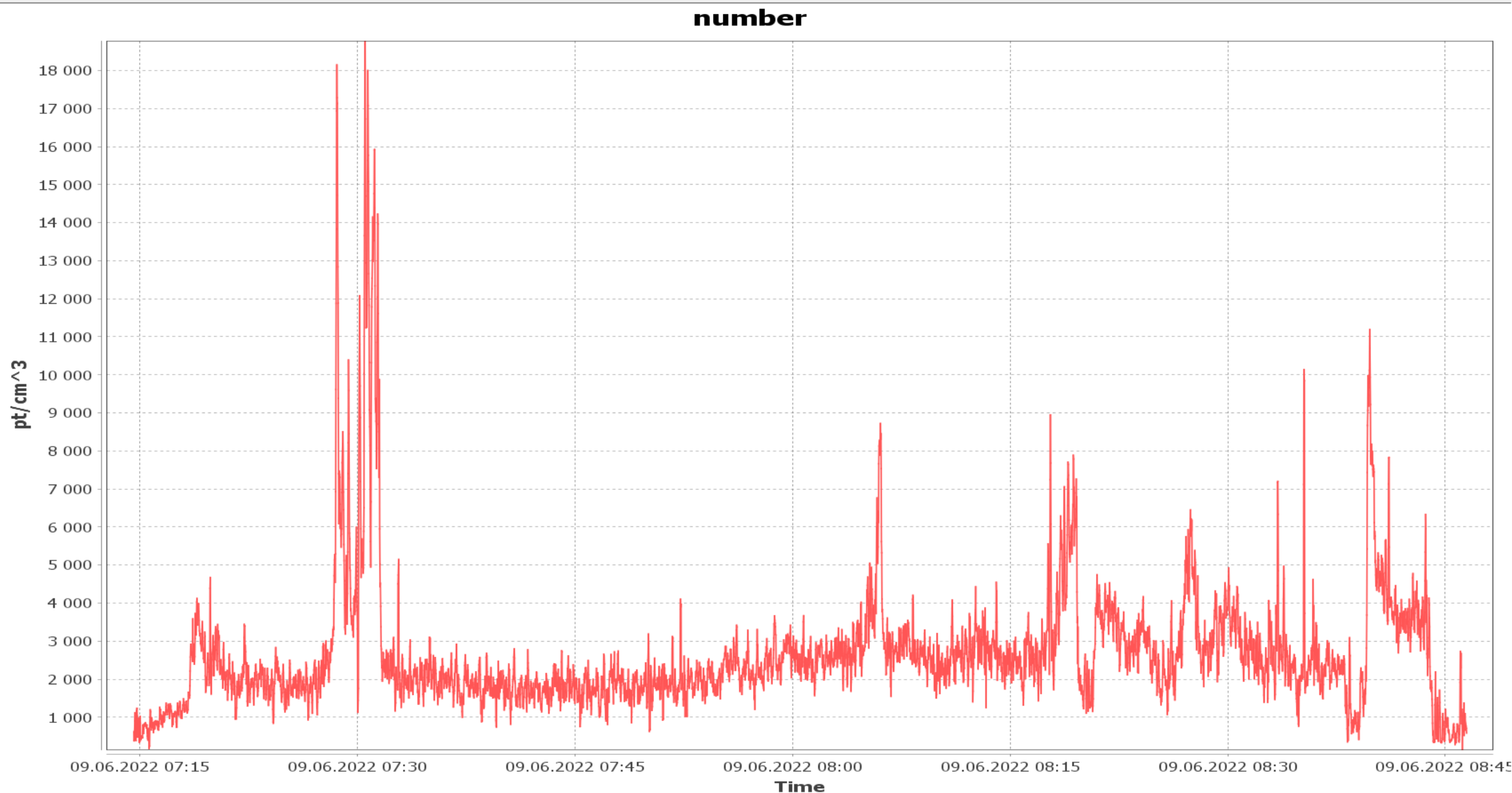
File	Options	Help
Folder icon	About...	
	Help...	
	Help on GPS...	
Filename	8291_07...	
Start Date	9.6.2022	
Start Time	07:14:33	
Serial N...	8291	
Hardware	3,2	
Firmware	230	
Average...	9,32	
LDSA*m...	5963	
operatio...	1957 min	
Cal cons...	5,94	
Cal date	10.1.2022	
EM gain	1511.0	
Average...	2643,76	
Average...	81,57	
Average...	3,31	

**LDSA**

— Lung deposited surface area 8291



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— Number 8291

Nya möjligheter





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SitesSensor GroupsGraphs

2B TechnologiesHi, Mikael

Auto Mar 6 2021 10:01AMTrip DetailsPMI_0 ▾

Dashboard

Trip Report

Map

Files

Data Tag

Data Drill

Time Compare

Download Data

Advance



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Sites

Sensor Groups

Graphs

AQMeshData

https://www.aqmeshdata.net

2B Technologies

Hi, Mikael

Auto Mar 6 2021 10:01AM

Trip Details

PMI_0

3 / 6 / 2 0 2 2 1 8 : 1 9 : 4 8

3 / 6 / 2 0 2 2 1 8 : 1 9 : 4 8

Values

150

100

50

0

03:00 AM

04:00 AM

05:00 AM

06:00 AM

07:00 AM

08:00 AM

Tack för er uppmärksamhet

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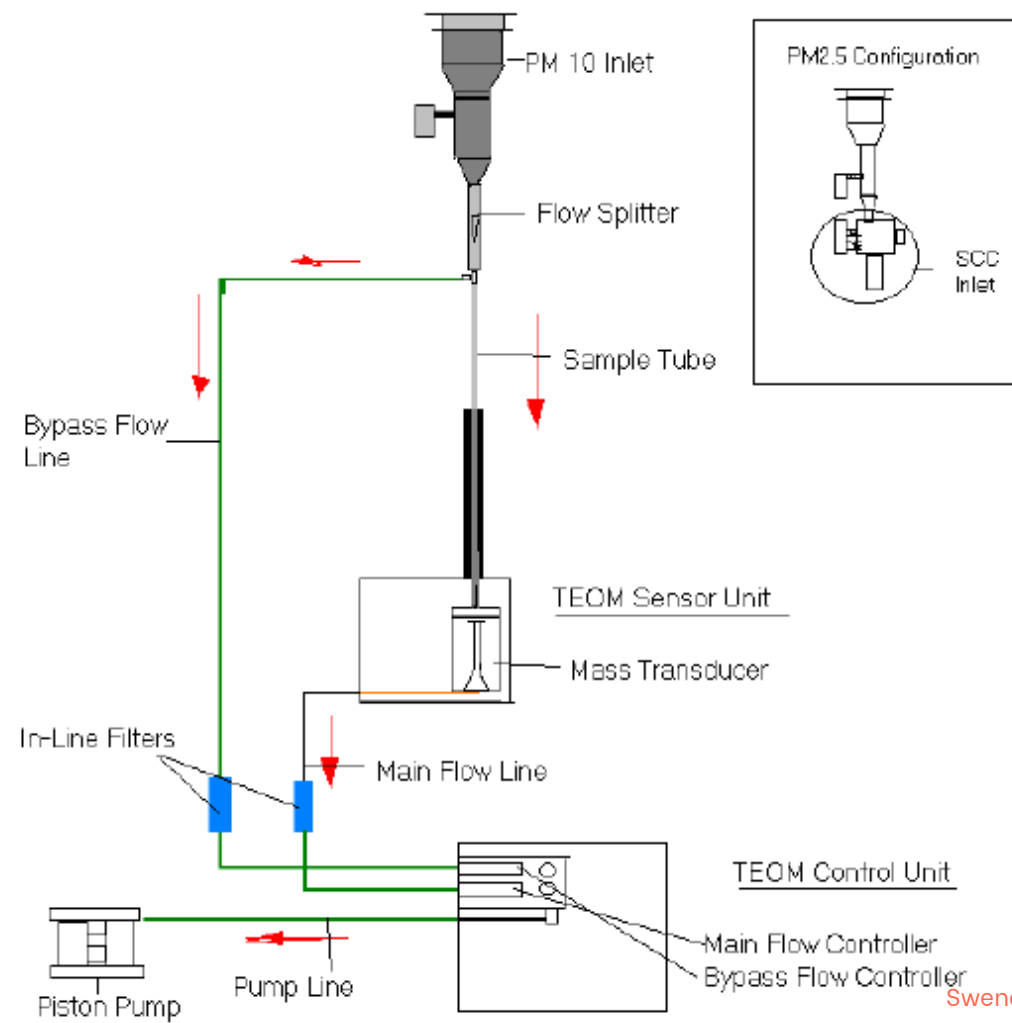
@Acoemgroup



Acoem Group



TEOM 1400



What do we do @ Acoem?

Providing instrumentation for particulate and gaseous measurements

Fixed, mobile and personal monitoring applications

Broad toolbox to choose from

Not “only” an instrument provider, measurement services and rentals

We are a user with experience of daily operations as well as supplier

Challenges

No the same particle weighted in lab. after recondition as when collected

Result not very accurate in time, not providing any real-time information

To overcome this the TEOM analyser was borne

Realtime gravimetric based analyser, origin one fraction available