CONTAMINATION MANAGEMENT SOLUTIONS

Perfect solutions for airborne molecular contamination management and particle contamination monitoring

PFEIFFER VACUUM

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Perfect solutions for airborne molecular contamination management and particle contamination monitoring

Contamination challenges

Contamination such as particles or molecules can impact devices with or without packaging during the manufacturing or storage operations.

Our know-how

With more than 10 years of experience in contamination management, Pfeiffer Vacuum provides innovative monitoring and containment solutions that are used notably in the following fields of application:

- Microelectronics
- Optics
- Display manufacturing
- Photovoltaics
- Pharmaceutical Industry

Our solutions

Our products have been qualified by technology leaders and have demonstrated quantified results such as:

- Yield enhancement
- Quality improvement
- Manufacturing flexibility

Customer benefits

- Collaborative customer-oriented solutions
- Highly skilled team with worldwide knowledge and experience in contamination management
- Innovative and high performance equipments
- From R&D to production

Pod Analyzer

Pod Regenerator

Dry Particle Counter

PFEIFFER VACUUM
APA

APA 302 / APA 302 LF

Pod Analyzer
In-line FOUP monitoring and airborne molecular contamination tracking

APA 302

Sub-ppbv levels of contamination such as acids can degrade process performance and decrease product yield.

Fab airborne molecular contamination (AMC) requirements have been defined, but AMC at the equipment and FOUP level needs to be understood and defined as stated by the ITRS[1].

APA 302 is a unique patented solution to monitor and track in-FOUP AMC in a production environment with or without wafers.

LabInFab option

To go further in molecule identification, the APA 302 LF (LabInFab) option enables the fab operator to safely trap FOUP and wafer contamination on site which can be analyzed in a second step with best-in-class instruments (chromatography etc..)

Customer benefits

- No FOUP modification needed
- Throughput > 16 FOUP/h (with full automation OHT[2])
- Real time measurement
- High sensitivity (even for HF)
- Possibility to trap contamination for further analysis with LF option

[1] ITRS: International Technology Roadmap for Semiconductors
[2] OHT: Overhead Hoist Transportation (automatic loading through fab robot)

APA 302

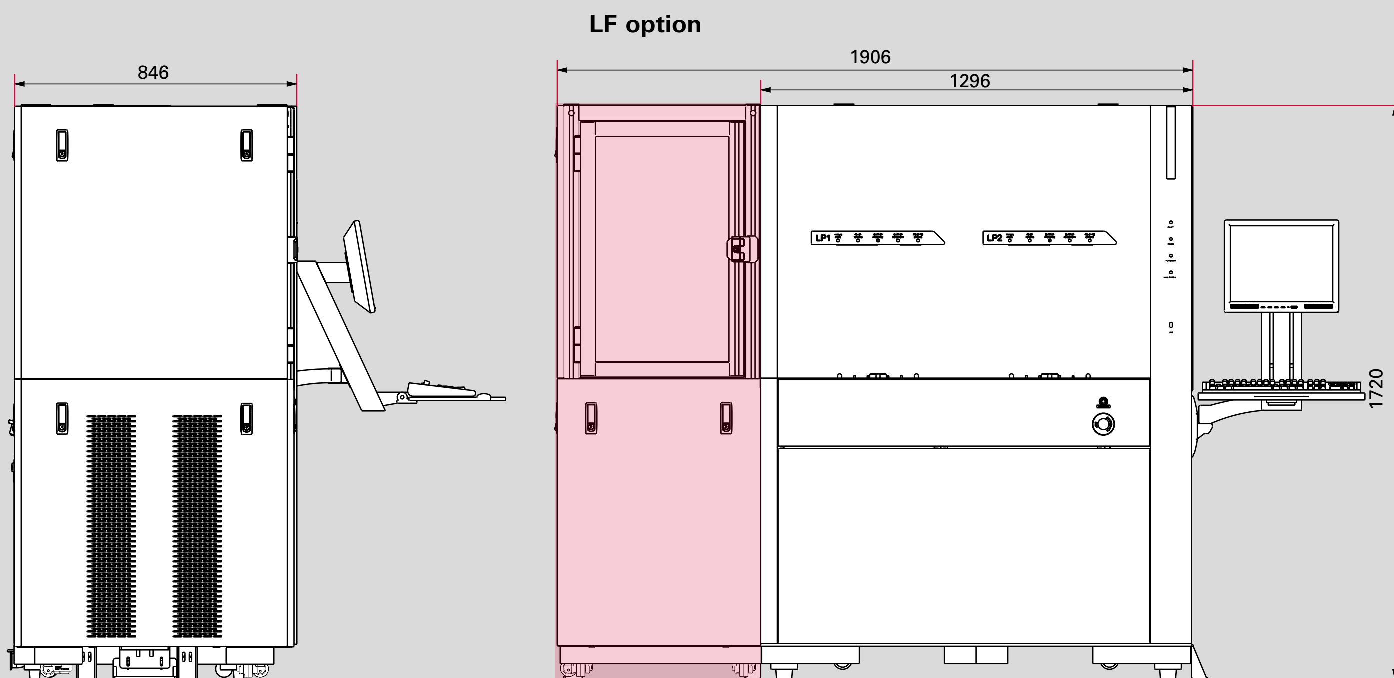
APA 302 LF

APA 302 performances:

Analyzer	Scale	Limit of detection	Response time within 2 min
NH_3[1)]	0 – 200 ppbv	< 0.2 ppbv	> 80 %
Total acids[1)]	0 – 200 ppbv	< 0.2 ppbv	> 90 %
SO_2	0 – 500 ppbv	< 0.5 ppbv	> 85 %
H_2O	0 – 100 % RH	5 %	> 90 %
Total volatile organics	0 – 99 ppmv	< 25 ppbv	> 90 %
HF	0 – 1000 ppbv	< 0.5 ppbv	> 70 %[2)]

1) Based on IMS technology, includes Ni63 source (< 10mCi)
Other options available: please contact us
2) Measured with 500 ppbv of wet HF vapor

Dimensions



LF option performances: safe molecular contamination sampling with impinger and tenax tube (see also next page)

Dimensions in mm

APA 302 LF

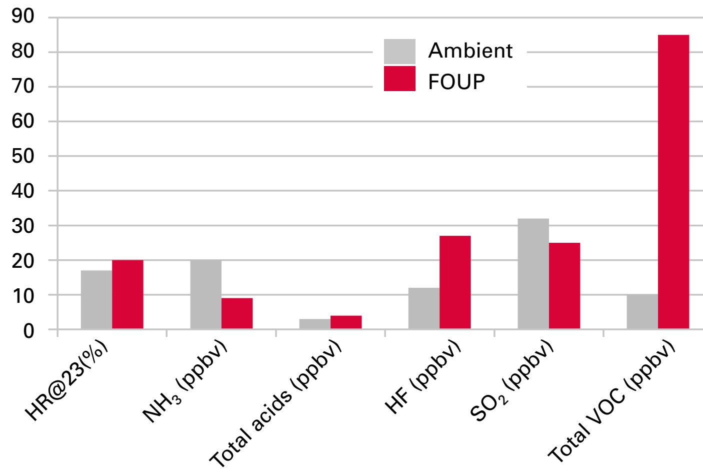
Pod Analyzer with LabInFab option
In-line FOUP monitoring and airborne molecular contamination tracking

FOUP measurement with standard recipe

FOUP sampling with LF (LabInFab) recipe

LabInFab configurations

Number of traps per FOUP	Sampling flow per trap	Ease of use & sampling reliability
4 (standard)	Up to 1500 sccm	Automatic leak test
8 or 12 (option)		Custom recipe (duration, line purge, flow selection, etc...)



VOC trapped by Tenax tubes

AMC collected by impingers

APR 4300

Pod Regenerator
Yield enhancement and airborne molecular contamination management

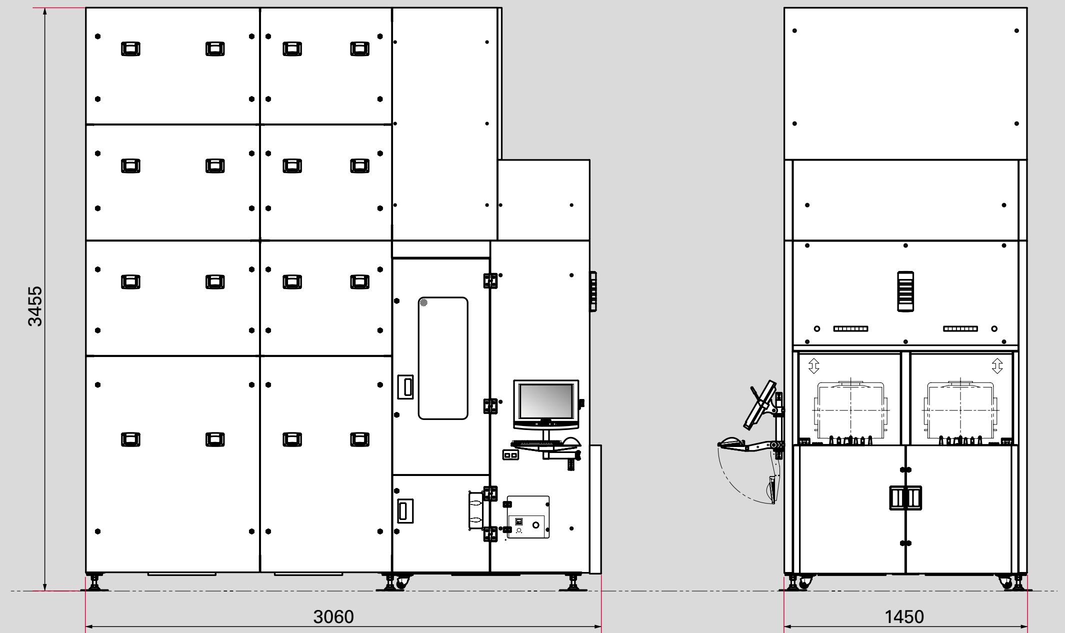
Moisture and airborne molecular contamination (AMC) such as evaporated fluorine are released in the FOUPs slot-to-slot space during queue times. These elements can generate crystal growth or other defects on patterned wafers which leads to yield loss and performance degradation.

APR 4300 is the unique patented solution to remove AMC from wafers and FOUP during queue time.

Customer benefits

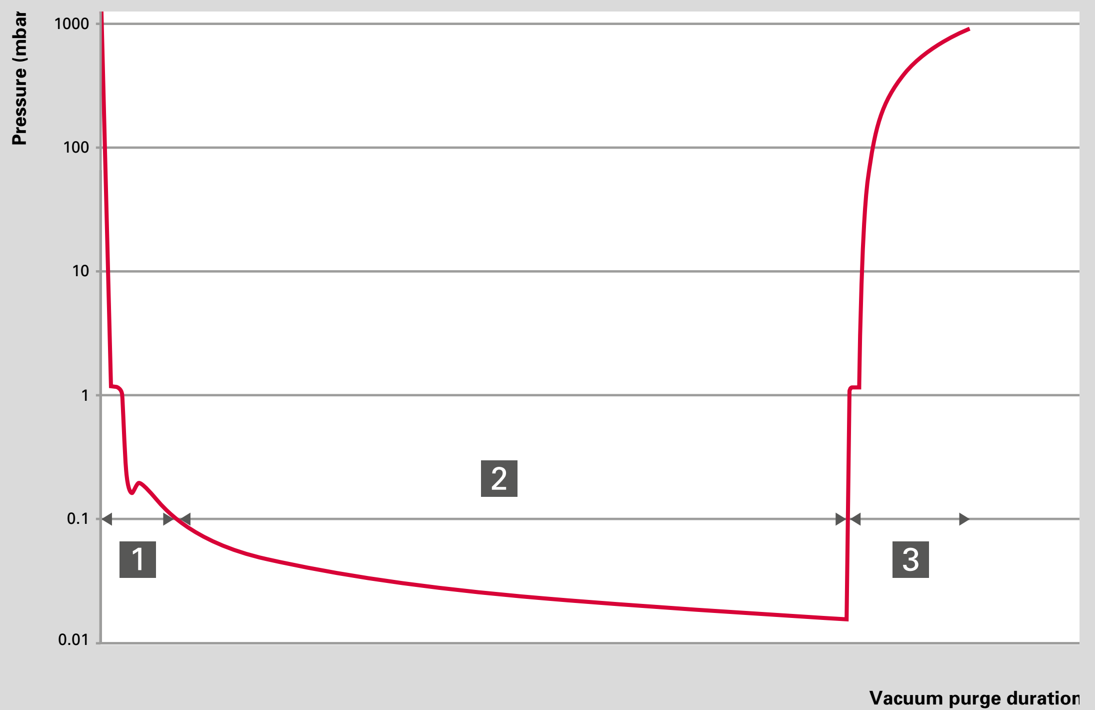
- Flexible configuration
- SEMI S2 compliance
- 4 FOUPs/cycle
- Yield enhancement up to 7 %

Dimensions



Dimensions in mm

Process description



1 Conditioning to working pressure (~ 5 min)

2 Vacuum purge process: P < 0.1 mbar

3 N_2 purge to atmospheric pressure

ADPC 302

Dry Particle Counter
Unique particle monitoring inside FOUPs and FOSBs

The new ADPC 302 is the unique dry system for monitoring particle contamination inside transportation carriers. The fully automated process localizes and counts particles on the inner surfaces of FOUPs or FOSBs, including the doors.

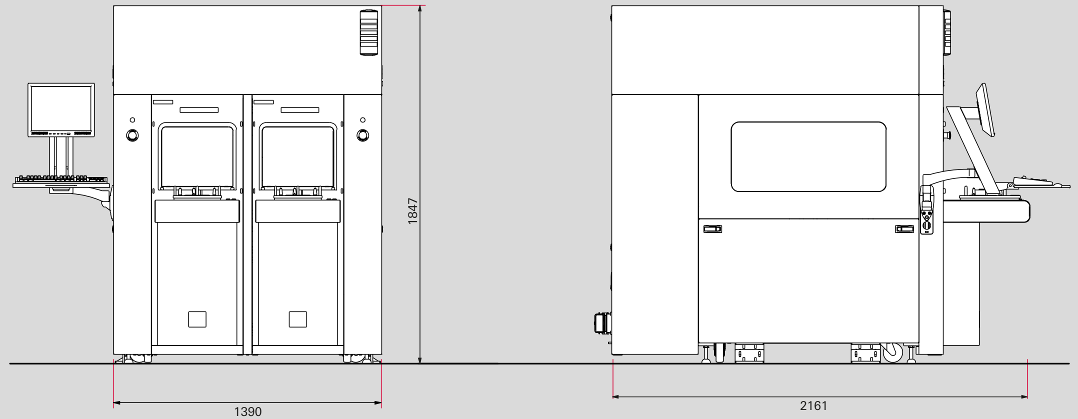
With cycle times of only 7 minutes the ADPC 302 is the ideal in-line system to considerably improve the quality control of wafer production processes.

Customer benefits

- Particle detection from 0.1 to 5 µm (other options available)
- Fully automated monitoring of carriers (shell and door)
- Throughput > 8 carriers/h (with OHT*)
- SEMI & SECS/GEM compliance

* OHT: Overhead Hoist Transportation (automatic loading through fab robot)

Dimensions



Dimensions in mm

Carrier characterization

Cleaning strategy optimization

Cleaning quality check

VACUUM SOLUTIONS FROM A SINGLE SOURCE

Pfeiffer Vacuum stands for innovative and custom vacuum solutions worldwide, technological perfection, competent advice and reliable service.

COMPLETE RANGE OF PRODUCTS

From a single component to complex systems:
We are the only supplier of vacuum technology that provides a complete product portfolio.

COMPETENCE IN THEORY AND PRACTICE

Benefit from our know-how and our portfolio of training opportunities!
We support you with your plant layout and provide first-class on-site service worldwide.

Are you looking for a perfect vacuum solution? Please contact us:

Pfeiffer Vacuum GmbH
Headquarters · Germany
T +49 6441 802-0
info@pfeiffer-vacuum.de

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www.pfeiffer-vacuum.com

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