

# New Advanced Purge

## High Performance with low CoO

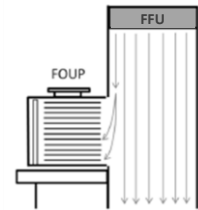
### PURGE

Purge with N2 (Nitrogen) or CDA (Clean Dry Air) is very efficient to protect wafers inside a FOUP from internal and external Airborne Molecular Contamination (AMC).

ENTEGRIS has developed FOUPs which provide a uniform laminar purge flow due to porous diffusers at the rear of the FOUP: Advanced Purge Diffusers in A300 & Spectra.

However, in spite of these efficient purge gas diffusion features, once the FOUP door is opened, the FOUP purge performance is affected by the equipment mini environment air flow.

Indeed, the mini environment air flow enters the opened FOUP, bringing moisture and oxygen back inside despite the flow applied by the purge. Countering the incoming airflow to keep RH (Relative Humidity) at a low level inside the FOUP requires to drastically increase the N2 purge flow rate. It then induces a very high N2 consumption, and therefore high costs.

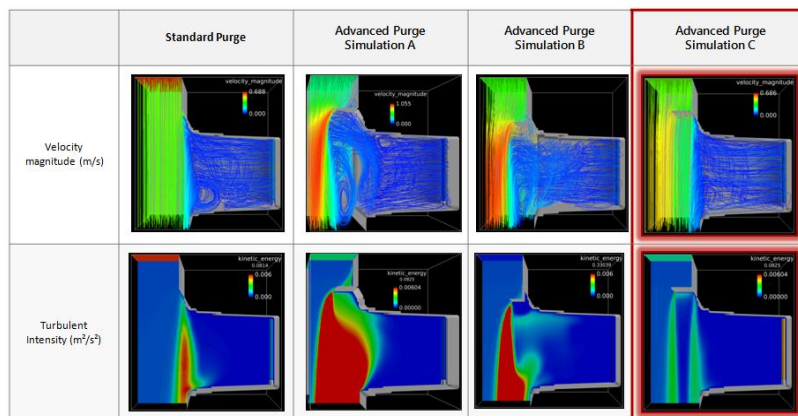


### RECIF TECHNOLOGIES ADVANCED PURGE

Entegris has patented technology to improve the purge when the FOUP door is opened. RECIF Technologies, through rights extended by Entegris, designed an industrial solution able to prevent the mini-environment laminar flow from entering the FOUP, even at low purge flow rate.

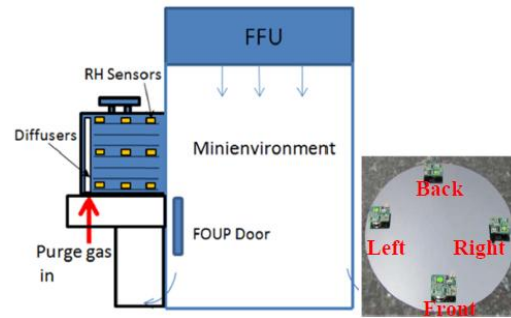
### COMPUTATIONAL SIMULATIONS

RECIF Technologies has conducted studies on mini-environment and Purge flows modeled via Computational Fluid Dynamics in order to determine the best design for the "flow converter" (dimensions, position, size, shape...)

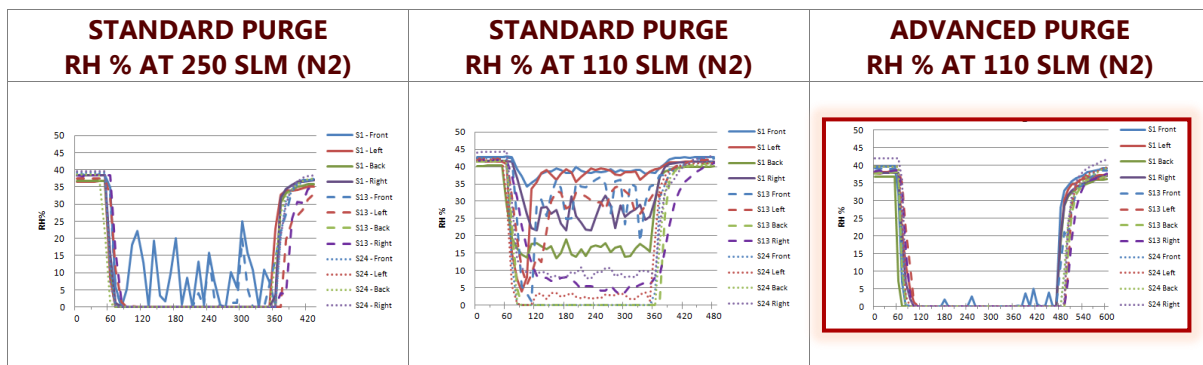


## TESTS @ imec

In the frame of the ECSEL Joint Undertaking Collaborative Program Pin3S, RECIF has implemented its solution in a wafer sorter at imec to demonstrate and measure the benefits. RECIF Technologies' advanced purge solution was able to maintain in the opened FOUP a RH below 5%, with a N2 flow rate of no more than 110 SLM\*.



\* Standard Liter per Minute, at IUPAC Standard Temperature and Pressure (0°C / 32°F & 100 kPa / 1 bar)



Thanks to its "Advanced Purge", RECIF Technologies is able to reduce N2 consumption by more than 50%, down to a N2 flow rate of 110 SLM while maintaining RH below 5% inside the opened FOUP.

The technical solution developed is simple, cost efficient and easy to implement compared to any other proposals. Continuous improvement should allow reducing even further N2 consumption while keeping the same RH performance levels.



**For more information:**

[www.reciftech.com](http://www.reciftech.com)  
Contact@recif.com

[www.imec-int.com](http://www.imec-int.com)  
wim.vansumere@imec.be

[www.entegris.com](http://www.entegris.com)  
gary.gallagher@entegris.com  
Jorgen.lundgren@entegris.com



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