

# LED CoSim+

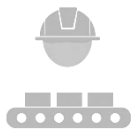
## COSTING TOOL FOR LED MANUFACTURING

### COMPLETE AND POWERFUL TOOL DESIGNED FOR THE LED COMMUNITY

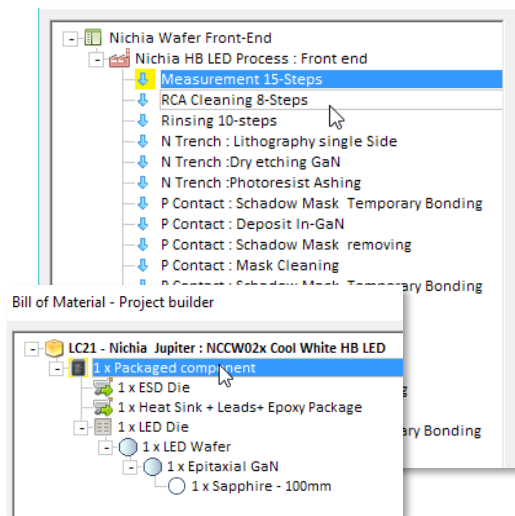
Due to their particular manufacturing processes, including GaN epitaxy and dedicated packaging, LED device costs can be difficult to estimate. Regular LEDs, High Brightness LEDs and Ultra High Brightness LEDs all involve very different process steps.

LED CoSim+ is a unique and very flexible tool for evaluating the cost of any LED process or component, already used by manufacturers and end users.

With the possibility of storing steps and process flows in libraries, this new version dramatically reduces the duration of the cost evaluation.



Step by step, describe your process flow to get a detailed manufacturing cost analysis.



## PROCESS-BASED TOOL

### Why do you need this tool?

- Optimize your manufacturing cost
- Challenge your own production / process choices
- Create a business plan
- Change your fab and process
- Evaluate economic feasibility
- Simulate your equipment's operating cost

### Who should buy this tool?

- Marketing executives
- Process managers
- R&D engineers
- LED equipment suppliers
- Purchasing managers



### LED TYPES

White  
Color  
UV  
IR  
Laser

### PACKAGING

Phosphor Deposition  
Ceramic, IMS  
Leadframe Substrates  
Flip-Chip, CSP  
Molded Lens  
etc.

### SUBSTRATES

GaN on Sapphire  
GaN on SiC  
GaN on Silicon  
GaN on GaN  
GaAs  
etc.

### TECHNOLOGIES

Nichia  
OSRAM  
Lumileds  
CREE  
SETi  
etc.

### DATABASE

Equipment  
Substrates  
Materials  
Wafer fab units  
Assembly units  
etc.

## MAIN FEATURES



### Multiple process flows

Any LED process flow can be simulated with hierarchical description for multiple dies or processes, across an unlimited number of process steps or process flows.

### Multiple conditions and supply chain

You can set up the tool with your own conditions, including location, clean room class, process type and subcontracting operation parameters.

### Results are fully open-format

Modify or export final results, build reports with any Excel workbook.

### Safely workgroup-compliant

Secure multiple access, data sharing and data integrity.

### Support and updates available



Step Family	Process Sequence / Operation	Equipment	Yield	EQUIPMENT COST (USD / Wafer)	CLEAN ROOM COST (USD / Wafer)	LABOR COST (USD / Wafer)	CONSUMABLE COST (USD / Wafer)	TOTAL COST (USD / Wafer)	Active Equipment needs	Actual allocated Equipment	Equipment UpTime
<b>screenshot</b>									Optimal Mode		
<b>Osram GaN on SiC Blue LED for New LED Wafer</b>			96.7%	63.02	18.15	25.21	44.21	150.60	51733 Wafer / Year		
<b>OSRAM 50mm Epitaxy GaN on SiC Blue</b>			98.41%	34.68	10.36	8.14	33.86	87.05	<=80%		
Epitaxy	Epitaxy GaN : Bake-Out	GaN MOCVD Epitaxial Reactor	99.00%	7.63	2.29	1.79	1.74	13.45	1.089	1.361	80%
Epitaxy	Epitaxy GaN : Temperature Ramp	GaN MOCVD Epitaxial Reactor	99.90%	1.91	0.57	0.45	0.44	3.36	0.272	0.340	80%
Epitaxy	Epitaxy GaN : Nucleation Layer	GaN MOCVD Epitaxial Reactor	99.90%	5.72	1.71	1.35	1.30	10.09	0.816	1.021	80%
Epitaxy	Epitaxy GaN : Buffer layer	GaN MOCVD Epitaxial Reactor	99.90%	0.43	0.10	0.08	8.95	9.57	0.049	0.062	80%
Epitaxy	Epitaxy GaN : N layer	GaN MOCVD Epitaxial Reactor	99.90%	5.01	1.50	1.18	12.83	20.52	0.715	0.893	80%
Epitaxy	Epitaxy GaN : Active layer MQW	GaN MOCVD Epitaxial Reactor	99.90%	10.17	3.05	2.39	5.94	21.55	1.452	1.814	80%
Epitaxy	Epitaxy GaN : P layer	GaN MOCVD Epitaxial Reactor	99.90%	3.81	1.14	0.90	2.66	8.52	0.544	0.680	80%
<b>Osram GaN on SiC Blue LED : Front end</b>			98.22%	28.34	7.79	17.07	10.35	63.55	<=80%		
Cleaning	RCA Cleaning Multi-Steps	Wafer RCA Cleaning Bench	99.90%	0.92	0.92	0.91	0.59	3.34	0.525	0.657	80%
Cleaning	Rinsing Multi-steps	Wafer RCA Cleaning Bench	99.90%	0.16	0.16	0.19	0.00	0.51	0.090	0.112	80%
Measurement	Measurement Multi-Steps	Measurement : Generic equipment	99.90%	0.48	0.23	0.54	0.01	1.26	0.327	0.408	80%
Deposition	PVD-Titanium (Ti)	PVD Sputter Reactor	99.90%	0.90	0.18	0.67	0.26	2.01	0.256	0.320	80%
Lithography	Lithography single Side	Single side stepper	99.90%	0.70	0.09	0.43	0.23	1.45	0.100	0.125	80%
Etching	Wet Etching Titanium	Wet Etch Bench	99.90%	0.06	0.14	0.72	0.01	0.93	0.163	0.204	80%
Removal	Phobresist Ashing	PR Removal	99.90%	0.28	0.14	0.78	0.03	1.23	0.200	0.249	80%
Lithography	Lithography single Side	Single side stepper	99.90%	0.70	0.09	0.43	0.23	1.45	0.100	0.125	80%
Etching	Dry etching GaN	RIE Reactor - new range	99.90%	14.26	3.20	3.35	0.69	21.50	2.035	2.544	80%
Removal	Phobresist Ashing	PR Removal	99.90%	0.28	0.14	0.78	0.03	1.23	0.200	0.249	80%
Deposition	PECVD-Oxide	PECVD Reactor	99.90%	0.45	0.09	0.46	0.05	1.04	0.128	0.160	80%
Lithography	Lithography single Side	Single side stepper	99.90%	0.70	0.09	0.43	0.23	1.45	0.100	0.125	80%

## PRICES & CONTACT

### Buy LED CoSim+ now

Site licence (one location) – 8,900€\*

Corporate licence (worldwide) – 13,300€\*

These prices include 12-months' support and database updates, and an online training session. After the first year, we suggest an annual support and update maintenance contract: site - 2,000€ / corporate - 3,000€

\*For prices in dollars please use the day's exchange rate / For French customers, add 20 % for VAT.

### Contact

For any question, please contact our headquarters in France:

[sales@systemplus.fr](mailto:sales@systemplus.fr) - +33 2 40 18 09 16

