

LED CoSim+

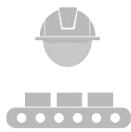
COSTING TOOL FOR LED MANUFACTURING

COMPLETE AND POWERFUL TOOL DESIGNED FOR THE LED COMMUNITY

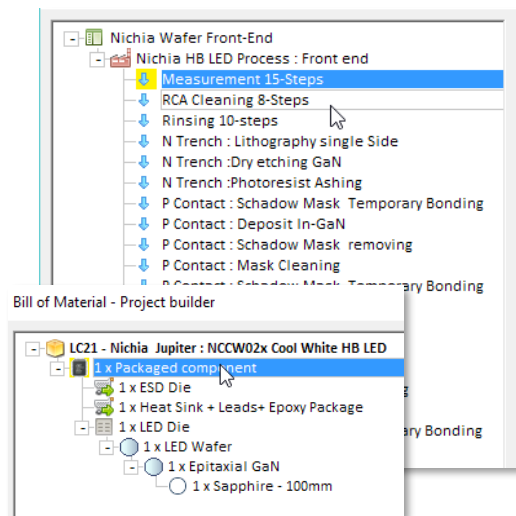
Due to their particular manufacturing processes, including GaN epitaxy and dedicated packaging, LED device costs can be difficult to estimate. Regular LEDs, High Brightness LEDs and Ultra High Brightness LEDs all involve very different process steps.

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 |
|--|--------------------------------|---------------------------------|---------|------------------------------|-------------------------------|--------------------------|-------------------------------|--------------------------|------------------------------------|----------------------------|------------------|
| screenshot | | | | | | | | | | | |
| Osram GaN on SiC Blue LED for New LED Wafer | | | 96.7% | 63.02 | 18.15 | 25.21 | 44.21 | 150.60 | Optimal Mode 51733 Wafer / Year | | |
| Osram 50mm Epitaxy GaN on SiC Blue | | | | | | | | | | | |
| Epitaxy | Epitaxy GaN : Bake-Out | GaN MOCVD Epitaxial Reactor | 99.00% | 34.68 | 10.36 | 8.14 | 33.86 | 87.05 | | | <=80% |
| Epitaxy | Epitaxy GaN : Temperature Ramp | GaN MOCVD Epitaxial Reactor | 99.90% | 1.91 | 0.57 | 0.45 | 0.44 | 3.36 | 1.089 | 1.361 | 80% |
| Epitaxy | Epitaxy GaN : Nucleation Layer | GaN MOCVD Epitaxial Reactor | 99.90% | 5.72 | 1.71 | 1.35 | 1.30 | 10.09 | 0.272 | 0.340 | 80% |
| Epitaxy | Epitaxy GaN : Buffer 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 : N 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% |
| Osram GaN on SiC Blue LED : Front end | | | | | | | | | | | |
| 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% |
| Etching | Wet Etching Oxide (BHF) | Wet Etch Bench | 99.90% | 0.16 | 0.40 | 1.20 | 0.01 | 1.76 | 0.454 | 0.567 | 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 Lift-off | Single side stepper | 99.90% | 0.70 | 0.09 | 0.43 | 0.57 | 1.79 | 0.100 | 0.125 | 80% |
| Deposition | PVD-Gold (Au) | PVD Sputter Reactor | 99.90% | 2.01 | 0.40 | 1.20 | 6.16 | 9.77 | 0.573 | 0.717 | 80% |
| Etching | Lift-off removing | Equinox | 100.00% | 0.38 | 0.19 | 0.90 | 0.48 | 1.95 | 0.544 | 0.680 | 80% |
| Removal | Phobresist Ashing | PR Removal | 99.90% | 0.28 | 0.14 | 0.78 | 0.03 | 1.23 | 0.200 | 0.249 | 80% |

PRIC

Buy LED COSTING TOOL

Site licence (one location) –9,790€*

Corporate licence (worldwide) – 14,630€*

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 - 2,200€ / corporate - 3,300€

*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:

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