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ESY-10 S

LPE EQUIPMENT FOR II-VI TECHNOLGIES

The SOF Optoelectronics ESY-10 S concept was developed for the special requirements of LPE-growth of II-VI compound semiconductors. Its high capacity of 100cm^2 per epitaxial process combined with its unique crucible material and design for melt homogenization are the leading features of this equipment, which is operating successfully worldwide in various applications.

In addition to the standard ESY-10 S equipment for industrial and R&D use, customer designed solutions with plenty of options can be realised. The ESY-10 S can be supplemented perfectly with an integrated independent annealing furnace system. A sealed Nitrogen loading glove-box enables the operator to load and unload the furnace tubes under protective atmosphere.

ESY-10 S DOUBLE TUBE SYSTEM

TECHNICAL HIGHLIGHTS

- Single or 2-Tube Combination-Furnace with Vertical LPE and Annealing Quartz Tube
- 3 Heating Zones for epitaxy and 1 independent heating Zone for Hg-source
- Hg-Vapor-Source inside Furnace Tube
- Temperatures up to 750°C
- Temperature Regulation Accuracy: ± 0.5 °C
- Suitable for Wafers up to 25 cm^2
- 4 Wafers per Epitaxial Process
- Perfect Layer Growth
- Easy removing of Solid Melt after Process
- Wafer Surface Protection before and after Epi-Growth
- Fully automatic Computer-Controlled Processing
- Data-Logging of all Process-Parameters
- Closed loading glove box with N_2-atmosphere

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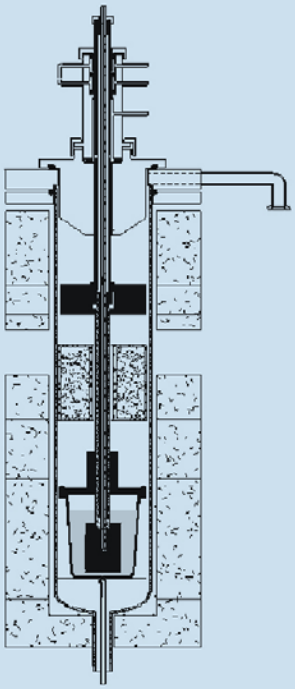

ESY-10 S CROSS SECTION

MELT CRUCIBLE

THE WORKING PRINCIPLE

The working principle of the LPE-equipment unit is the technology of liquid phase epitaxy (LPE) utilizing a rotating-dipping boat technique. The substrates, positioned at the 4 outside surfaces of a cubic graphite block (substrate holder), are dipped into the melt at high temperatures < 600°C.

The substrate holder can be rotated during deposition of the layer, which is realized by controlled cooling of the whole crucible system with substrates and melt. The inner graphite crucible is almost sealed against outer tube atmosphere to minimize loss of vaporized mercury. This remaining loss can be compensated by using an independently heated built-in Hg-source.

Unique crucible design and material lead to perfect wafer surface protection, layer growth and easy removing of solid melt after epitaxial growth.

AVAILABLE LPE PRODUCTION TECHNOLOGIES

Technology Type	No. of Melts	Max. Capacity (cm^2)	Process Duration (hrs)
Far-infrared detectors Wide band-gap detectors Wide band-gap emitters (LEDs)	1	100	6 –10