

## Molecular Beam Epitaxy III-V

Molecular beam epitaxy takes place in high vacuum or ultra-high vacuum ( $10^{-8}$  Pa). The most important aspect of MBE is the slow deposition rate (typically less than 1000 nm per hour), which allows the films to grow epitaxially. The slow deposition rates require proportionally better vacuum to achieve the same impurity levels as other deposition techniques.

### MAINS

- **Operating voltage:** 3 phases 400 V AC +6 %-10 % 5 wires ( 3 phases + 1 neutral + 1 ground )
- **Current:** 400 V  $\geq$  63 A for each phase
- **Liquid Nitrogen**

Liquid Nitrogen shall be used on the system at several recommended described bellow:

- Growth chamber main cryo panels ( two separate cryo panels )
- Growth chamber sublimation well cryo panel
- Cold trap on the pumping well
- Buffer chamber : sublimator on PEG combined ion / sublimation pump

- **Compressed air**

- Compressed air has to be provided to operate the pneumatic Gate Valves if applicable
- A facility connection plate ( for water , compressed air and technical Nitrogen ) is located on the frame of the system ( see relevant drawing )
- Distribution lines from this panel to the system components are supplied by Riber. Requirements : 0.5 Mpa  $\leq$  pressure  $\leq$  0.6 Mpa. The interface is described by the drawing Appendix 6



### Nitrogen Gas

- One supply of dry Nitrogen should be provided for system venting , with these following requirements :  
  
0.15 Mpa  $\leq$  relative pressure  $\leq$  0.7 Mpa.  
Purity  $\leq$  99.999% ( purer is better )  
Filtered to eliminate particulates  
The interface is described by the drawing Appendix 6

### Exhaust requirements

This exclude exhausts from the primary pumping systems exhaust from cryo pump regeneration systems and from every pneumatic actuator ( gates valves ) .