

Zone Refining Unit

Zone refining is a technique used to purify material with sharp melting points from 99.95% to 99.9999+% and above. It is being widely used in the semiconductor industry for refining of germanium and silicon to purity levels of 9N and above (i.e. $\geq 99.9999999\%$) also for organic compounds having sharp melting points.

The zone refining technique involves melting a narrow zone of long ingot of the material to be processed. This molten zone is then slowly moved by moving the heater gradually along the length of the ingot in one direction. This process is repeated multiple times till the required purity level is reached. In this process difference between solubility of impurities in the molten and solid phases is used to concentrate impurities at the end section of the ingots.



Specifications

- Built with SS 304
- Variable forward settable speed: 1 mm/h to 999 mm/h
- Variable reverse settable speed: 10 mm/hour to 12000 mm/hour.
- Usable length: 1 m
- Tube diameter: continuously variable 10 mm to 90 mm
- Fixed speed axial rotation in both forward and reverse direction

Salient Features

- Built from indigenous available components
- Fully customizable for zone refining, leveling and other applications
- Easy to use Man Machine interface (MMI)
- Fail safe shut-down mechanism
- PLC controlled
- Arrangement for zone refining in vertical position
- The unit can be used with resistance heaters (RT to 800°C) or induction heater (RT to 2800°C)