



## Technical Specification of CVD Machines— IVA2736TL

### Isobaric Vapour Aluminising

The IVA2736TL is designed for the vapour aluminising of nickel based gas turbine components. The out of pack process results in uniform and defect free coatings over the most complex shapes. The maximum weight of work and fixturing is 500kg.



#### Overview

Vapour aluminising (IVA) is a form of out-of-pack aluminising operated at a low constant pressure to achieve good throwing power and uniformity of layer thickness. The process operates at temperatures between 900 and 1050oC and at pressures in the range 1 to 50 mbar. The aluminium content of the resulting layer can be adjusted by the process conditions and also by the subsequent heat treatment which can be carried out in the same furnace.

IVA has a number of advantages over pack aluminising:

1. More rapid cycle time because the parts are not surrounded by pack.
2. Better coating uniformity on each part.
3. Less variation in coating thickness from one place in the retort to another.
4. No coating defects caused by pack inclusions.
5. Lower cost of operation because less pack material is used.
6. Less pack material to be dumped safely.

The IVA2736TL Top Loading Type consists of a double pumped vacuum furnace and retort. The normal operating temperature range is 900 to 1150oC. The normal operating pressure range is 1 to 50 mbar. The double pumping arrangement is necessary to ensure that the inner hot retort wall does not collapse.

The furnace is stationary and the retort is moved via an overhead crane. The furnace is kept permanently heated in order to decrease the heat-up time. The retort can be removed whilst it is still hot in order to reduce cycle times.

The retort is parked in a cooling station from where it can be loaded and unloaded. The work is supported on a series of trays. The spacing between the trays can be adjusted to fit the parts to be coated



# ATL

Advanced Coating Solutions

## Specification

Criteria	Specification
Reactor Overall Dimensions	750mm x 2000mm
Reactor Working Zone	700mm x 900mm
Footprint	10 x 6.5 x 6 M ( 32 x 21 x 20 feet )
Temperature Range	900-1150°C
Temperature Measurement	5-Type Pt/Rh thermocouples in each zone
Temperature Control	3 zones with PID control
Pressure Range	1-50mBar (standard control range) Lowest operating pressure: 1mBar Highest operating pressure: 1000mBar
Pressure Measurement	Absolute pressure transducer
Pressure Control	Motorised line valve
Vacuum Pump	Rotary Oil Piston Pump Capacity: 250m <sup>3</sup> /Hr (150 cfm) approx.
Gas Control	Argon purge controlled by mass flow controller
Materials of Construction	Furnace shell: Carbon steel Retort: Inconel 601 Heaters: Kanthal Vacuum lines: Stainless steel
Electricity	100KVA
Cooling Water	15litre/min

