ALD Vacuum Technologies

High Tech is our Business

METAL ADDITIVE MANUFACTURING

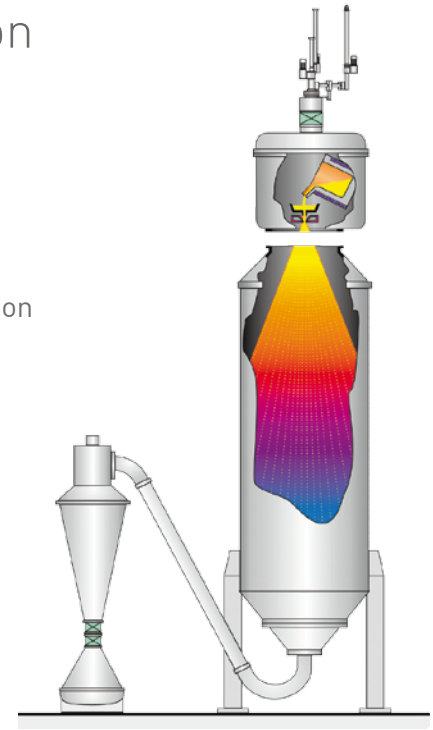
EIGA and VIGA: Metal Powder Inert Gas Atomization Equipment

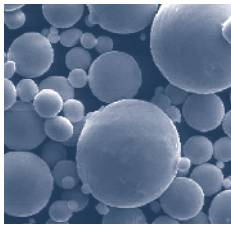
Courtesy of SLM Solutions

VIGA

Vacuum Induction-melting Inert Gas Atomization

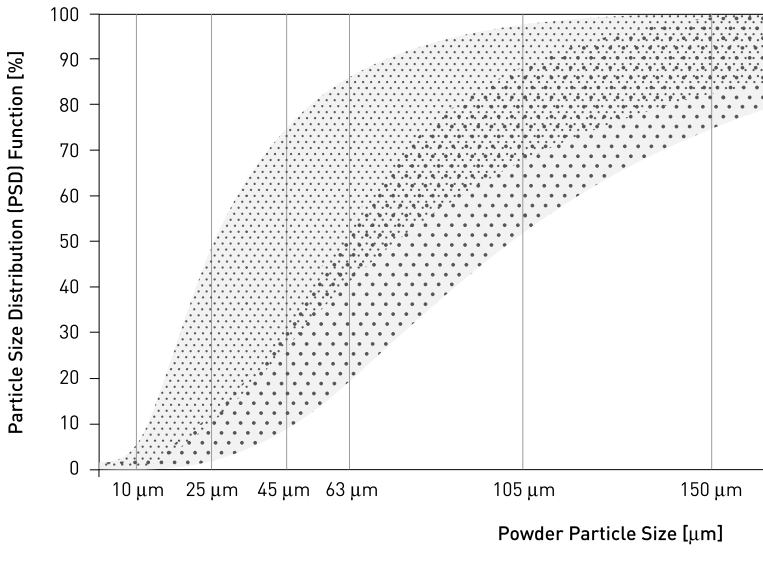
- **Leading process** for production of powder feedstock for Metal Additive Manufacturing of superalloys and dental alloys such as **In738, In718, In625, CoCr**
- **Superclean powder** due to melting under vacuum/inert conditions
- **Spherical powder morphology** with high tap density due to inert gas atomization
- **Plant sizes from 20 t up to 2000 t p.a.**
- **Repeatable product quality and particle size distribution**





Dental part CoCr alloy*

Turbine blade Inconel 718*

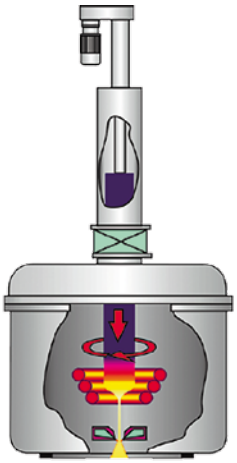


Particle Size Distribution

* Courtesy of SLM Solutions

EIGA

Electrode Induction-melting Inert Gas Atomization



- **Leading process** for production of powder feedstock for Metal Additive Manufacturing of refractory and reactive alloys such as **CP-Ti, TiAl6V4, TiAl, Zr702** and precious metals
- **Superclean powder** due to induction ceramic-free melting
- **Spherical powder morphology** with high tap density due to inert gas atomization
- Melting and atomization without refractory consumable crucible
- **Robust, repeatable process**

Medical implant TiAl6V4 alloy *

250 µm

EIGA

High Quality Titanium Powder for Metal Additive Manufacturing

- An alloy barstick is fed at constant speed vertically from the top into a conical induction coil.
- A high-frequency electromagnetic field induces Eddy-currents in the barstick which starts to form a melt film at the conical surface.
- The melt film flows to the cone tip and melt drops separate. A constant melt flow evolves after start-up and flows vertically into the inert gas nozzle.
- The process enables melting and inert gas atomizing of refractory and/or reactive alloys without a ceramic liner or cold wall.

ALD

High value and high standards

- Many years of experience in design and manufacturing of vacuum inert gas atomizers in the superalloys, thermal spray, titanium, precious metals and electronics industries
- Worldwide sales and service network
- Testing facilities for powder production available in Germany

Technical Data **ATOMIZER EQUIPMENT**	VIGA	EIGA
Equipment Overall Height	9 - 16 m	7 - 10 m
Equipment Footprint	8 x 8 m	5 x 5 m
Connected Power	80 - 1500 kVA	80 - 300 kVA
Ultimate Vacuum	5 Pa	5 Pa
Leak Rate	5 Pa l/s	5 Pa l/s

Technical Data **ATOMIZATION PROCESS**	VIGA	EIGA
Annual Powder Production Capacity	50 - 2000 MT	50 - 250 MT
Atomization Gas	N_2 or Ar	Ar or N_2
Atomization Gas Pressure	20 - 60 bar	15 - 35 bar
Atomization Gas Flowrate	15 - 40 m^3/min (STP)	8 - 18 m^3/min (STP)
Min. Batch Size	5 - 2000 kg	5 - 100 kg

Technical Data **METAL POWDER**	VIGA	EIGA
Typical Powder Alloys for Metal AM	CoCrMo(W), In625, In718, In738	CP-Ti, TiAl6V4, TiAl, Zr702, precious metals
Powder Morphology	spherical	spherical
d_{50} (PSD Mass Median)	35 - 70 µm	60 - 100 µm
Typical/ Available Size Classes for Metal AM	- 45 µm +10 - 45 µm +25 - 45 µm +45 - 63 µm +45 - 105 µm	- 45 µm +10 - 45 µm +25 - 45 µm +45 - 63 µm +45 - 105 µm

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