



ALD Vacuum Technologies

High Tech is our Business

ТИТАН

Вакуумное точное литье

The background of the lower half of the page is a close-up, high-temperature photograph of a molten metal being poured. The liquid is bright orange-yellow and has a highly textured, bubbly surface. The pouring stream is visible on the left side, creating a sense of dynamic movement.

TiAlloys

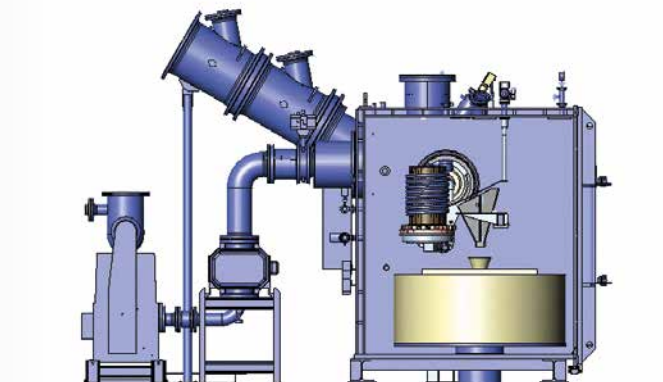
LEICOMELT

Индукционное плавление в водоохлаждаемом тигле

Преимущества системы LEICOMELT:

- Отличная химическая и термическая гомогенизация
- Расплав оборотного материала до 100%
- Возможны повторная загрузка и легирование
- Улучшенный контроль перегрева
- Плавление химически активных элементов (напр. Ti, Zr, Nb), а также сплавов на основе Ni и Co

LEICOMELT – Стандартная конструкция (прямоугольная камера с большой дверью для обслуживания и центрифугой)



- 1 LEICOMELT 12 – плавильная станция и центрифуга
- 2 LEICOMELT 5 – горизонтальная камера с двумя дверьми для лучшего доступа к тиглю с столу форм

Общая концепция печи

- Однокамерная печь с узлом центробежного литья
- Легкий доступ к водоохлаждаемому тиглю и индуктору, а также к столу форму благодаря нескольким дверям

Процесс плавления

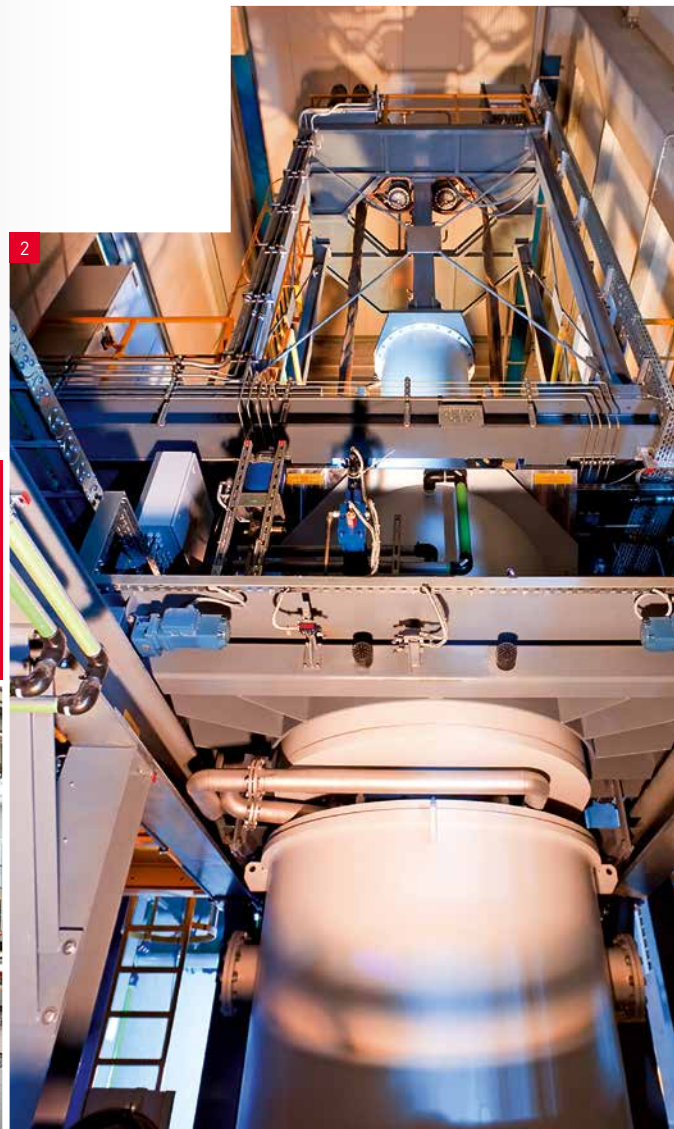
Тигель состоит из нескольких водоохлаждаемых медных сегментов, которые отделены друг от друга изоляционным материалом. В медном тигле возникает электромагнитное поле и проникает в загрузочный материал.

Гарнисажная печь VAR

От лаборатории до производства

Преимущества гарнисажной печи VAR:

- Compact, space-saving and service-friendly furnace concept
- Reliable, easy to control process
- High productivity
- Melting of revert possible (up to 50 %)
- Suitable for high pouring weights



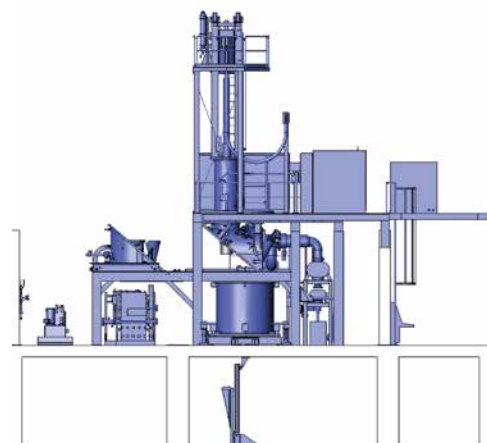
General Furnace Design

- Single-chamber design with a centrifugal casting unit
- Large charging door to provide easy accessibility for cleaning and maintenance

Melting Process

A consumable Titanium electrode melted by an arc into a water-cooled tiltable crucible. When the desired melt level is reached the electrode is automatically raised and the liquid titanium is poured into a mold. The consumable electrode can be dimensioned for multiple pours.

- 1 VAR L250SM
- 2 VAR L500SM



VAR Skull Melter – Typical Design

TiAl

Benefits of Titanium Aluminides

- Excellent mechanical properties at elevated temperatures
- Additional weight savings as compared to Titanium

Intermetallic TiAl alloys are gaining importance in high-tech applications, e.g. aviation and automotive engine technologies



- 1 Double-chamber LEICOMELT 2 for TiAl automotive valves
- 2 Double-chamber LEICOMELT 5 for TiAl turbine blades
- 3 Environment: Automotive valves
- 4 Energy Savings: Turbine blades
- 5 Better Performance: Turbowheels

TiAl Furnace Design

For industrial use either double-chamber or single-chamber furnaces with mold heater are available



Comparison

VAR Skull Melter

- Easy process control
- High reliability/reproducibility
- Electrode needn't be recharged prior each melt

- Feedstock: Electrodes and limited revert
- Energy consumption for melting: ~ 1 kWh/kg
- High melt rates and pouring capacities

LEICOMELT

- Excellent thermal and chemical homogenization
- Better control of superheat
- Recharging and alloying possible

- Feedstock: Ingots and up to 100 % revert
- Energy consumption for melting: ~ 3 - 5 kWh/kg
- Medium melt rates and capacities

Technical Data LEICOMELT

		LEICOMELT 2	LEICOMELT 5	LEICOMELT 12	LEICOMELT 26	TiAl Furnace
Crucible Volume	[l]	2	5	12	26	5
Max. Melt Weight (Ti6Al4V)	[kg]	8	20	48	104	20
Melt Power Supply	[kW]	400	600	900	1300	600
Max. Mold Dimensions (dxh)	[mm]	500 x 500	500 x 500	1000 x 800	1500 x 1000	1200 x 800
Typical Floor Space (LxWxH)	[m]	10 x 5 x 3.5	12 x 7 x 4	9.5 x 8 x 4	10 x 10 x 6	12.5 x 6.5 x 5

Technical Data VAR Skull Melter

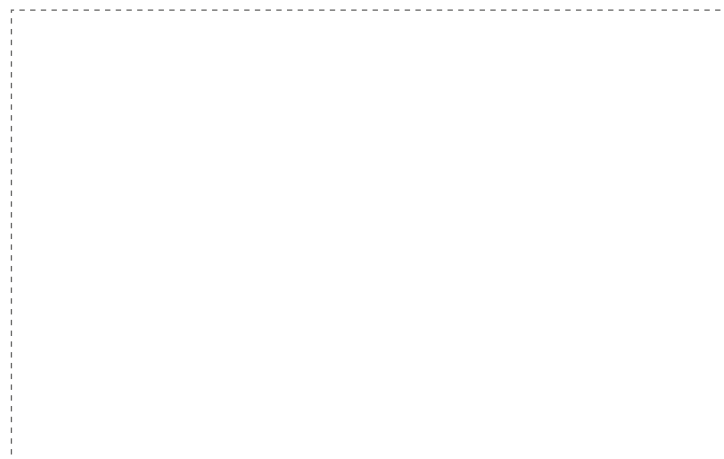
		L50SM	L150SM	L500SM	L1000SM
Max. Casting Weight (Ti6Al4V)	[kg]	50	150	500	1000
Melt Power Supply Current	[kA]	12	20	40	50
Max. Electrode Diameter	[mm]	200	250	350	450
Typical Floor Space (LxWxH)	[m]	10 x 8 x 7	13 x 11 x 12	14 x 11 x 11	16 x 15 x 12

ALD is a leader in developing and optimizing suitable Vacuum Melting and Casting Processes according to customer requirements.

ALD offers all relevant Vacuum Metallurgy Processes from Vacuum Induction, Electron Beam, Electro Slag and Vacuum Arc Melting through Vacuum Precision Casting and Powder Production.

ALD Vacuum Technologies GmbH

Otto-von-Guericke-Platz 1
 D-63457 Hanau, Germany
 Phone +49 (0) 6181 307-0
 Fax +49 (0) 6181 307-3290
 E-Mail info@dald-vt.de
 Internet www.ald-vt.com



You can find the addresses of all our sales partners and subsidiaries on www.ald-vt.com.