RENOVATION AND CONSTRUCTION OF

MELTING & HOLDING FURNACES

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iso-9001 + ohsas-18001
upgrade & renovation
in-house simulations
furnace pressure regulation
combustion systems
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About us

Since 1985, DE WINTER ENGINEERING designs, constructs and renovates aluminium melting and casting furnaces and related equipment.

Our experience, our technical know how in aluminium furnace technology and our innovative state of mind form the basis of our high-quality solutions. Thanks to our dedicated team, contacts with clients, as well as suppliers, are direct and personal and each project is customized to the specific wishes of our clients.

DE WINTER ENGINEERING offers following services: advice, technical design, realization of projects, everything according to our structural and precise manner of working.

In this brochure you will find several examples of projects we implemented.

We will gladly provide you with additional references.

References

DE WINTER ENGINEERING has accomplished projects for:

- Alcoa Amorebieta (ES)
- Alcoa Trasformazioni (I)
- Alcoa Metallurg (RUS)
- Aleris Rolled Products Koblenz (D)
- Aleris Rolled Products Voerde (D)
- Aluminium Delfzijl (NL)
- Aluminium GmbH Nachrodt (D)
- Aluminium Martigny (CH)
- Bridgnorth Aluminium (UK)
- Boxal Suisse (CH)
- Constellium Issoire (F)
- Constellium Neuf Brisach (F)
- Constellium Singen (D)
- Constellium Valais - Chippis (CH)
- Constellium Valais - Steg (CH)
- Eckart Wackersdorf (D)
- E-Max (former Alcoa) Kerkrade (NL)
- Eurofoil (former Novelis) Dudelange (L)
- Hunter Douglas Rotterdam (NL)
- Hydro Aluminium Clervaux (L)
- Icelandic Aluminium (IS)
- NedZink (NL)
- Rheinfelden Alloys (D)
- Sapa Lichtervelde (B)
- Sapa Drunen (NL)
- Sapa Ghlin (B)
- Trimet Essen (D)
- Umicore Angleur (B)

Our offices in Elst (U), Holland
upgrade & renovation

- bath content increased from 27 to 32T
- charging door increased
- burners moved to back wall
- fume aspiration moved to front side
- installation of a furnace pressure control system using an air screen at the fume outlet, causing a proven
1. by enlarging the furnace -situation before and after

2. by relocation of the tilting axis -situation before and after -positioning of new tilting pivots

Increasing of bath content of casting furnaces
upgrade & renovation

- enlargement of both door openings
- extension of both sides of double chamber furnace
- replacement of electrical drive system by a hydraulic drive system
- improvement of fume extraction above both doors
transformation of an existing regular melting furnace to a melting furnace to melt aluminium chips. In the added well with electromagnetic induction pump, a vortex is created in which chips can be melted under metal with minimal burn losses. Besides this effect, the recirculation of the metal also guarantees the homogeneity of metal composition.
upgrade & renovation

mobile gas treatment system and furnace covers with gas exhaust

charging system
DE WINTER ENGINEERING has in-house mechanical and flow and heat simulation specialists to test possible technical solutions.

**Mechanical simulations** are used to verify mechanical strength of both existing furnaces that are enlarged or modified and new furnace designs.

**Flow and heat simulations**, so called CFD (Computational Fluid Dynamics simulations) are used to obtain insight in 3D in heat flow, flow of liquids and gases and radiation. Applications include: optimizing flue gas ducts, pressure regulation systems.
economizing on fuel with a furnace pressure control system

cold air infiltrations caused by underpressure inside the furnace (natural draught)

elimination of cold air infiltrations thanks to the furnace pressure control system
renovation and optimization of combustion systems
uncooled door frames & self adjusting door seals

- no explosion risk
- low maintenance costs
- low heat losses
- easy exchangeability

uncooled doorframe with integrated dross deflectors

uncooled doorframe with wedge fasteners
uncooled door frames & self adjusting door seals

Furnace front renovation - combined with pressure regulation

before

after
uncooled door frames & self adjusting door seals

Furnace front renovation

before

after
uncooled door frames & self adjusting door seals

Day 1

all doorframes we delivered, were installed during normal maintenance shutdown

Day 4

arrival and mounting of a new furnace door frame

mounting of fast exchangeable prefab lintel blocks
Is your furnace door always completely closed? - Most doors remain open!

A regular cleaning of aluminium melting or holding furnace door frames prevents accumulation of dross and solidified aluminium. This enables an optimal furnace door sealing with benefits as correct furnace pressure, reduced metal oxidation, shorter melting time and lower fuel consumption.

However, in daily practice, there is no time or attention for sufficient cleaning. This results in an incomplete sealing of the door because the door remains open a little bit.

To improve this situation, De Winter Engineering has developed a heat-

Advantages of our Self-Adjusting Door Seal system:

Reduce energy consumption and dross formation.
With conventional door seal systems, the door remains a bit open if there is dross accumulation at one point between the door and the doorframe. The Self-Adjusting Door Seal system will close this gap and minimize the loss of energy.

The Self-Adjusting Door Seal system is designed to operate in the harsh environment of aluminium casthouses with liquid metal, dust, high temperatures and heavy mechanical impacts.
new furnace constructions

new stationary 75-tons two-chamber furnace for melting both thin and block aluminium scrap with ultra low energy and maintenance costs
new furnace constructions

during construction, commissioning planned End of 2014
new furnace constructions

new tiltable 30-tons melting furnace with EM-stirrer. Existing burner installation reused and increased. Furnace built next to the furnace that was to be replaced and lifted in its place to minimize production standstill combined with renovation and enlargement of holding furnace
new furnace constructions
new furnace constructions

new tiltable 32-tons melting furnace

with regenerative burner system
new furnace constructions
new furnace constructions

new gasheated double chamber melting furnace for zinc cathodes—with drying tunnel
capacity 15T / hr - bath content 180T
new furnace constructions

- new tiltable 14-tons furnace for melting aluminium scrap and ingots with regenerative burner system for butane

- new tiltable combined aluminium chip and ingot melting furnace with mechanical pump for liquid metal recirculation and chip melting
auxiliary equipment

- New installation for recovery of zinc or lead from dross (Designed for: Pyrotek / Metaullics)
- Furnace bath temperature measuring device
- Electrical filter unit
- Preheating furnace
- Charging trough
- Fume incinerator for post-combustion of polluted gases
- Pneumatic or hydraulic controlled tap device
for additional information,

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