

PRESS RELEASE

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Hydro Extrusion Lichtervelde NV starts operation of Hertwich Ecomelt Melting Furnace

Hydro Extrusion Lichtervelde NV has installed a modern Aluminium Multi-Chamber Melting Furnace Type Ecomelt-PS200 including a rail-guided skimming machine in its casthouse in Ghlin, Belgium. The plant with a melting capacity of 60,000 tons per year was successfully supplied and commissioned in May 2019 by Hertwich Engineering, a company of the SMS group.



Hertwich Ecomelt-PS200 with rail-guided skimming machine at Hydro Ghlin

With this investment Hydro takes into account, that recycling of manufacturing and turnaround scrap gets more and more important within the extrusion industry.

As one of the worldwide leading extruders, Hydro currently supplies more than 30,000 local and global customers in more than 40 countries all over the world. Today, Hydro extrusion plants are already processing recycling material for more than half of their production. By the end of 2019, the Hydro Group intends to have a total of 20 extrusion plants certified by the Aluminium Stewardship Initiative (ASI).

As part of the global Hydro network, the Belgian remelt plant in Ghlin is responsible for the supply of extrusion billets. There is a wide range of different scrap types used as input material: vehicle license plates, wires, machining chips, cables, litho sheets, profiles, UBC, aerosol cans and others – partially loose in bulk, partially shredded, partially briquetted or packed. The degree of contamination ranges from “clean” all the way up to heavily contaminated with paint and lacquers, rubber and plastic parts, oils, greases etc. Furthermore, also solid shapes such as sows, T-bars or ingot stacks are charged. For this complex requirement it was decided to use an Ecomelt-PS200 melting furnace with preheat shaft, which is particularly suitable for such scrap types.

From an economic point of view, it is initially important that all processing steps starting from the scrap supply all the way down to molten metal tapping are integrated in one compact and fully automated system. As a particular advantage, the entire process is monitored and controlled with respect to the metal quality by appropriate control instruments.

During operation scrap is loaded into a container, which is lifted onto a platform above the preheat shaft. According to the filling level in the shaft and the melt level in the furnace, scrap is charged into the shaft as required.

Charged material passes the vertically arranged preheat shaft downwards, while hot gases with a maximum temperature of 650°C are circulated through the scrap in upward direction. Thereby, the scrap is preheated to approx. 500°C. Within this temperature range, partial melting is ruled out. The retention time of scrap inside the preheat shaft is designed such as to ensure

thorough gasification of organic compounds. Generated pyrolysis gases are fed into the main chamber to reduce energy consumption by supporting the gas heating system. Hot air flows from the main chamber to the melting chamber and preheat shaft to supply energy for scrap preheating.

To minimize metal loss, charged material may not be melted in the oxidizing atmosphere. The thinner the material, the more important this rule is. Therefore, with the Hertwich Ecomelt-PS furnace the decoated and preheated material directly immerses into the melt flow at the bottom end of the preheating shaft and melting of scrap is exclusively by contact with liquid melt. Thus, metal losses are limited to a range of 0,3 to a maximum of 3 percent, subject to scrap condition and degree of contamination. In conventional melting furnaces – if at all technically qualified for these scrap types – metal losses between 0,5 and easily more than 10 percent are possible. The required melt level and melt flow over the preheat shaft floor for the submerge melting process are maintained by electromagnetic liquid metal pumps, which also provide the melt circulation between melting chamber and main chamber. Tapping and transport of molten metal to the downstream holding furnace via a transfer launder is done by a pneumatically actuated double plug and cone tapping system. Thereby the melting process is not interrupted.

Hertwich has determined an energy consumption between 300 and 600 kWh/t for this furnace type, depending on scrap condition and degree of contamination. Hence, this value still remains considerably below the 5 percent (compared to primary production) which are usually estimated for the recycling of aluminium.

In addition to the economic advantage of reduced energy consumption, this process is environmentally beneficial due to low CO₂ output. Minimum emissions (NO_x, VOC, no salt usage) contribute to and environmentally friendly furnace operation as well.



Container Charging System

Hertwich Engineering, a company of the SMS group is renowned for its future-oriented, energy saving technologies and outstanding service in aluminium casthouse. The company is active worldwide with design, supply, construction and commissioning of special machinery and equipment for the Aluminium industry. Hertwich is competent for supplying complete Al-casthouse on a turnkey basis (one-stop-shopping). The product range comprises melting equipment for aluminium scrap, conti and batch homogenizing plants, sawing plants, horizontal and vertical casting machines and quality inspection stations, etc. To stay ahead Hertwich relies on its own R&D and proprietary know-how. For 50 years, the advanced technology has revolutionized the industry and the company maintains its worldwide lead.