

Melting shop loaders offer greater efficiency

Companies are consistently trying to find ways of reducing costs and increasing efficiency in their aluminium melting shops. Tailor-made vehicles maximise melting productivity and operator safety.

By Giovanni Magarotto*

Cutting costs, increasing productivity, enhancing safety and respecting the environment are some factors to make a modern aluminium melting shop competitive.

All manufacturers know that they must guarantee a quality product at competitive costs if they want to retain their market share.

To achieve these results, many melting shops are taking advantage of the global market slowdown to make investments aimed at improving the efficiency and productivity of their plants.

Analysis of operations that are subsidiary to the melting process, such as transport, logistics and furnace management, shows that historically, these have been performed by forklifts and wheeled pay loaders. While these are undoubtedly powerful and efficient vehicles, they are less suited to operating in front of aluminium melting furnaces where the heat impact may reach 1000°C.

The running costs of these loading vehicles and their structural design in particular undoubtedly make them unsuitable for such extreme operating conditions and they are less able to guarantee absolute safety for the operator in the cab.

TT Tomorrow Technology has always been committed to the design and construction of vehicles and rail-mounted systems for aluminium melting shops. Each product is tailor-made with a view to maximising the melting power and guaranteeing efficiency, safety, precision and low handling costs.

The main factors to be considered when evaluating the efficiency of a melting shop

are the quality of product and productivity of the melting furnaces.

There are many different types of melting furnace: rotary, tower, static, reverberatory, twin or triple chamber etc and these are further differentiated by type of alloy to be produced, scrap to be melted, power installed and hourly output.

The need to keep abreast of developments in the technologies used in the melting process is precisely why TT designs special multifunction vehicles capable of loading several tonnes of solid metal in a few seconds and distributing this load evenly in the melting chamber.

Apart from their loading power, these vehicles produce more efficiency gains because they are easy to operate and accurate in all aspects of performance, in addition to providing greater safety for the operator, who works in a closed, overhead cabin equipped with cameras and sensors to monitor the operating area.

The cabin ergonomics, the driving comfort and the safety systems of the vehicle play a fundamental role in the speed of furnace loading, drossing and cleaning operations.

The speed and accuracy of these ancillary operations translates into reduced energy consumption, lower metal loss due to oxidation and less dross formed.

Other positive factors are a longer life of the refractory furnace lining and consequently reduced maintenance costs and downtime.

Customers have confirmed that using the multifunction vehicles SL and SK



Large Volume 63m³ scarp transporter

manufactured by TT produced a return on their investment within or in little over one year. In most of the cases examined, it was possible to obtain one extra metal casting per day.

Where operating conditions permit, melting furnace loading, drossing and cleaning operations can be performed using fully automated systems.

TT also offers loaders with a charging capacity up to 10m³, rail-mounted and capable of loading several furnaces in succession, even when these are positioned in line but have different height sills.

These loaders are equipped with load cells to check the load weight and they can position the material on both the dry hearth or directly into the bath.

The loading box is fitted with a casing to seal the furnace door area during charging which prevents the emission of smoke or gas.

Safety of the operating area in front of the furnace is ensured by the scanlaser system installed onboard these automated loaders, which monitors access by persons or vehicles to the working area.

The company has also installed several automated radio-controlled systems for melting furnace drossing and cleaning.

These rail-mounted loaders are able to dross the cold chamber of a 100t melting furnace in less than three minutes. They remove the dross floating on the bath which would otherwise act as an insulator between the burners and the metal to be melted.

They are capable of independently checking the level of the liquid metal in the furnace and of drossing without hitting the refractory lining of the furnace.

This means an 80% reduction in drossing and cleaning times compared to the times for the same operations with a forklift. ■

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A multifunctional furnace tending vehicle



Automatic skimmer and cleaning equipment on rails