

Tomorrow's solution to improve casthouse management and the operator's working conditions

G. Magarotto, Due Carrare

The rising price trend for primary aluminium and the increasingly difficult scrap availability on both domestic and international markets, are squeezing the secondary aluminium industry. To optimise melting power the industry must invest in innovative solutions. It must also take into account the need to update and improve the working environment as well as the operators' working conditions following European and international rules.

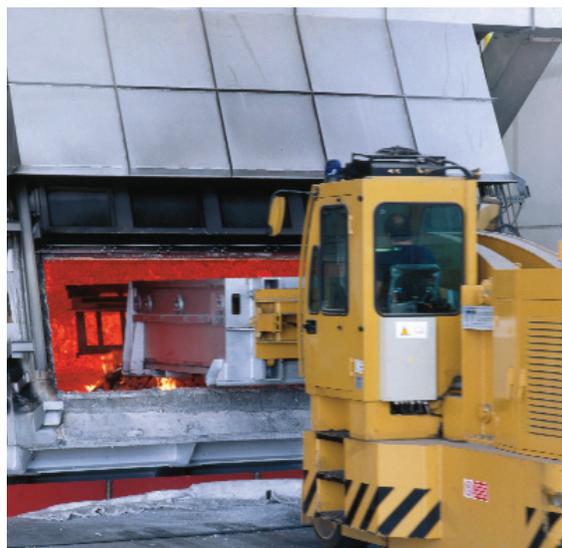
T.T. Tomorrow Technology S.p.A. is a manufacturing company based in Padua (Italy) and specialised in producing vehicles and plants for the metallurgical industry. It primarily pursues this business by offering a wide range of innovative and efficient solutions. The company, located in Due Carrare (PD), in the North East industrial area of Italy, has focussed its study on the melting process and subsidiary activities, and has thoroughly analysed the needs of both the primary and secondary aluminium foundries needs.

The overall picture emerging from this study is very complex. It reveals that producers having a similar melting capacity often obtain very different results in production and quantity depending



Unloading of about 4 tonnes of aluminium scrap into the liquid bath without producing splashes. From the driving lifting cab, the operator has complete visibility of this operation.

Loading of material to be melted into T.T. special vehicle unloading bin. This is the first step of the melting process.



on the site of their activity, on the foundry lay-out, on the staff's experience and the use on the subsidiary equipment. The company develops all these elements and many others specific to each plant, and includes them in drawing up a project whose main goal is to allow their customer to use its own plant to the utmost capacity but at the lowest possible cost. The marketing model is based on the following main hallmarks:

- ❑ Constant evolution and innovation of its products, (more than thirty types of multifunctional charging and de-drossing vehicles are available in five different sizes).
- ❑ Strong policy to develop customer loyalty through attentive after-sales activity and through training programs for the customers' drivers to operate and maintain the equipment and vehicles at peak performance.
- ❑ Around-the-clock service support: start-up, commissioning, emergency repair and on-call support maximize up-time and protect the customer's activity.
- ❑ Preventive maintenance pro-

gram to maximize the life of the vehicles and to minimize the downtime, reducing unplanned expenditures and component degradation. A reliable maintenance service improves the operating condition while monitoring the life cycle of the products.

The added value of their products and solutions resides in the ability to share their customers' targets. They offer a customized product, also anticipating future production needs. Product efficiency is completed by a timely after-sales service carried out by qualified technicians and assisted by an external team of experts.

This company's strategy has allowed to seal partnerships with the most important primary as well as secondary aluminium companies, representing the largest share in this sector on the Italian market, and a large portion on the European one. These companies have adopted the technical solutions offered. The special vehicles offered by T.T. Tomorrow Technology S.p.A. are also described as multifunctional vehicles, since they perform the three subsidiary operations of the melting process:

- ❑ load the melting furnaces,
- ❑ remove surface dross and stir bath,
- ❑ clean furnace bottom and side-walls.

The complete vehicle project is aimed at minimising the manpower needed to manage the furnaces and thus to greatly decrease massively the loading, de-drossing and cleaning times. Thanks to these vehicles' special characteristics as well as to the automatic controls aboard the driving cab, the furnaces loading activities have become a well-managed process since the metal unloading is more uniform.

The innovative loading bin system of these vehicles allows them to fill up the melting furnace in a regular manner with whatever the kind of scrap, be it extrusion, billets, ingots, T-bars or generic scrap. The unloading process of an 8-cbm bin is carried out in a few seconds, thus providing the metal immediate immersion without metal splash production and without any damage either to the refractory lining or to the furnace insulator. The advantage is evident.

The loading speed and the optimisation of the metal distribution inside the furnace allows optimum burner performance, since they can always operate under the best working conditions. This avoids remnants of unburnt gases



Cleaning. The cleaning of the furnace bottom side is performed by a tool flanged to the machine telescopic element.

inside the furnace and the related emission problems.

Another important advantage of T.T. multifunctional vehicles reach is their use during the de-drossing and cleaning process. Previously, this process was carried out either by fork-lift trucks or modified mechanical shovels with the following problems:

- ❑ long performance times,
- ❑ considerable damage to the furnace refractory lining,
- ❑ poor visibility for the operator,
- ❑ high heat exposure for vehicles not suited to this purpose,
- ❑ high heat exposure for the vehicle operator, who also risks metal splashes,
- ❑ considerable difficulty in controlling the dross to be removed,
- ❑ considerable difficulty in

cleaning of the furnace bottom.

The use of T.T. Tomorrow Technology S.p.A. special vehicles demonstrates many following advantages:

- ❑ de-drossing times reduced by 80%;
- ❑ no damage to the refractory lining;
- ❑ excellent visibility for the operator thanks to the lifting driving cab;
- ❑ a high level of safety for the operator and vehicle, since working conditions incorporate the necessary protection including the cab's case hardened safety glass protected by a metal grid;
- ❑ precise control of the dross to be removed;
- ❑ automatic control of the cleaning tool pressure on the refractory lining surface.



De-drossing. As smart alternative option to the use of fork-lift trucks or mechanical shovels, T.T. multifunctional vehicle has a structural stiffness allowing the metal surface de-drossing with the utmost precision as well as the removal of the only dross.

The special versatility feature of this type of vehicle is greatly appreciated by T.T. customers. According to their specific needs, they have requested to apply special adjustments for handling and transporting coils and T-bars as well as for transporting and unloading crucibles. No special knowledge is required to use T.T. multifunctional vehicles.

Author

Giovanni Magarotto is Managing Director of T.T. Tomorrow Technology SpA, based in Due Carrare, Padova, Italy.