

Furnaces and exhaust control as compulsory twins

By Dimitri Cordublas*

Today environmental consciousness and stringent regulations are widespread throughout the world. But until recently, suppliers of furnaces and suppliers of complete systems for exhaust filtration and pollutants control have been on two divergent paths that would only occasionally cross.

Industrial processes typically generate and exhaust fumes. Systems in place to protect the environment are more or less well known, yet each process has its idiosyncrasies and advantages.

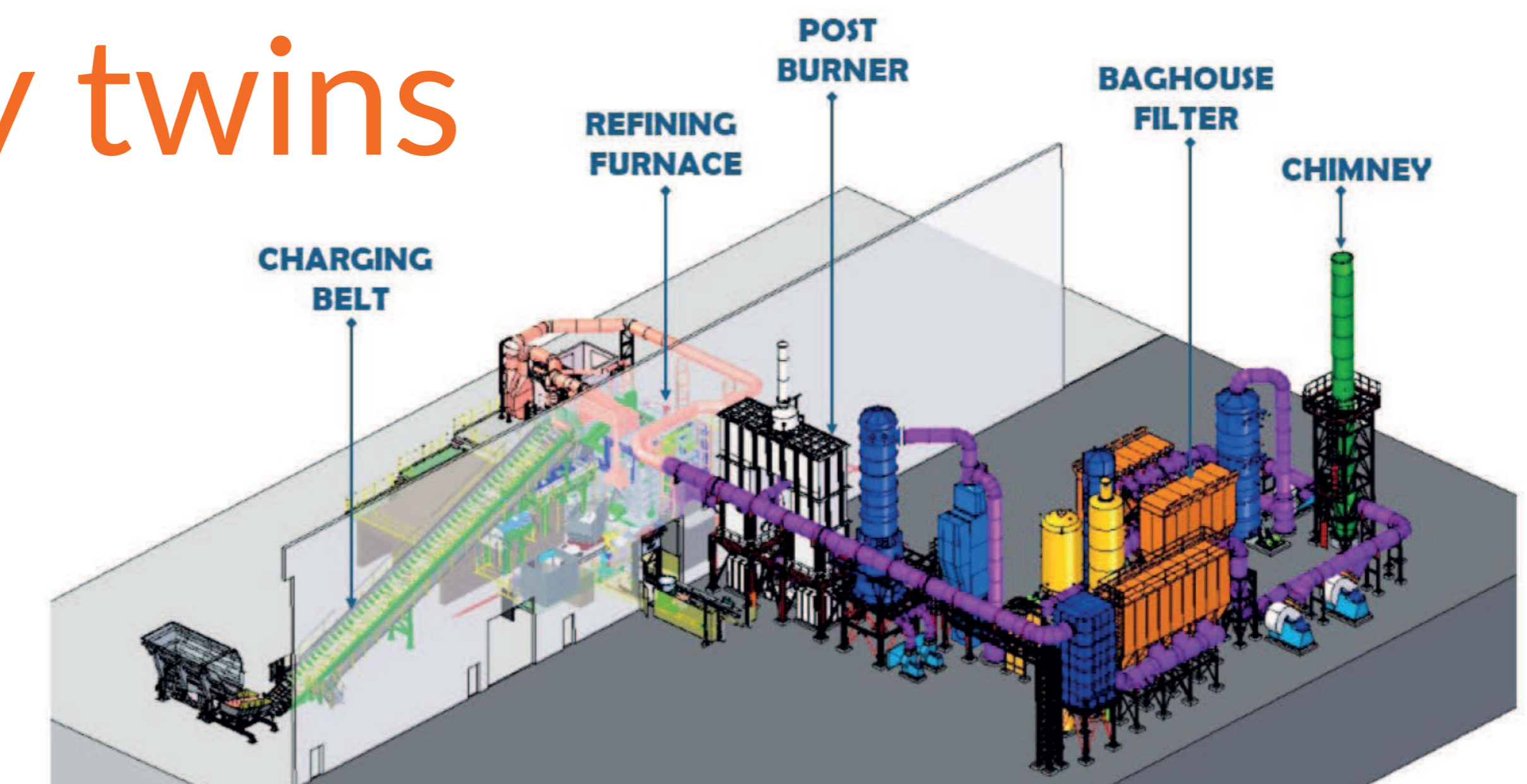
Over the last several decades, Continuus-Properti – as a supplier of technology for the refining of copper scrap and of aluminium melting furnaces - were faced with having to choose the best supplier of fumes filtration systems.

Particularly, Continuus-Properti has been developing a special technique for the refining of copper scrap in both tilting reverberatory furnaces and in vertical continuous melting and refining furnaces. At this time, dozens of these systems have been installed. Our systems safeguard our customer's profitability while meeting the requirements and potentials of a circular economy.

The range of possibilities is vast.

Reverberatory tilting furnaces have been developed to refine a mix of copper scrap having a medium copper content > 94% and even lower. Production per day can range from 40 ton up to a maximum of 300 ton. For larger furnaces, a new charging system was developed and patented in many countries. For cleaner scrap, with a minimum copper content of 97%, it is possible to use a continuous vertical furnace; different sizes have been sold and installed from 5 ton/hour up to 20 ton/hour targeting the remarkable production of 100.000 ton/year. These furnaces are suitable to produce downstream rod or ingot, billet or slab.

The exhaust volume, at the furnace outlet flange, ranges between 3000 and 12500Nm³/h and the contained pollut-



ants can vary due to the non-constant quality of the initial scrap. It must also be noted that while the reverberatory furnaces work in a batch mode with different emission during the 24-hour cycle, the vertical melter produces a constant emission at a lower temperature throughout its operation.

This results in two very different approaches when designing an optimised fume treatment system. It must be emphasised that the fume filtration system is not a minor entity as it involves a considerable CAPEX and tremendous responsibility on behalf of the User.

In the past, the Buyer was mainly focused on the selection of the best furnace(s) for the project; volumes from 10.000 ton/year up to 70 ÷ 100.000 ton/year are typically requested by market participants. Then attention was diverted towards the control of emissions; and thus began the relationship between the three players: the new investor, the fumes specialist, and Continuus-Properti.

Buyers were engaging local suppliers of fumes treatment equipment. Often these suppliers lacked experience in the refining of copper scrap. Therefore, their fumes treatment equipment lacked the flexibility to handle the specific requirements posed by the daily variations in copper scrap since it is not a commodity. Unfortunately, this resulted in buyers not always achieving effective and efficient investment goals.

This is the reason why Giulio Properti decided to initiate a joint venture – called Exus Company - with an experienced Italian specialist to provide the customers of Continuus-Properti a one-stop-shop/

supplier of complete Refining and Fume Filtration Systems. Having knowledge of every detail of the copper scrap refining process is what determines the best consultant to place in charge of an optimised exhaust treatment system. Today Continuus-Properti's strategy is to propose not only a furnace or a set of furnaces but a complete package including: furnaces, exhaust control and the casting line, meaning a Properti rod Line or a Properti ingot Line, but also equipment in partnership with other companies to produce billet and/or granules.

Through Exus, the new subsidiary of the Continuus-Properti Group, we are prepared to meet the market's demands for a complete project supplier.

To summarise, a typical Exus system may include: the post combustion chamber (where fumes are kept at a specific temperature for a specific amount of time while appropriately mixed with Oxygen to address issues of VOCs, dioxin, and furans), followed by the quencher (with optional air cooler or waste heat boiler), a fumes purification dry section (for Dioxins, furans and acids removal), and lastly a bag house filter (that collects powders and fumes and directs them to an exhaust fan before being expelled by the chimney).

Exus does not cater to just copper scrap refining furnaces but can also supply fumes treatment systems for aluminium furnaces as well as other general nonferrous production applications.

The first system supplied by Exus is currently being installed for an important copper scrap recycling project in the USA.

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We supply... FUMES TREATMENT SYSTEMS
for CU and AL Continuous Casting and Rolling Lines,
equipped with Properzi Furnaces

