

Properzi Focuses on 'Green' Economy



Since the 1980s, Properzi has been applying a 'circular' economy model, systematically reusing resources and eliminating waste. Here is the latest update on its new products and technologies.

Environmental sustainability has been a subject of world discussion for over half a century, from the first environmental movements to the definition of the 17 sustainable development goals of the UN 2030 agenda. The concept of sustainability is intrinsically linked to environmental protection, but in recent years it has undergone profound changes, starting from a vision centred almost exclusively on ecological aspects and arriving at a broader meaning that considers, in addition to the environmental dimension, the economic and social ones. Continuus-Properzi focuses on green economy i.e. environmental sustainability at an economic level. Since the 1980s, Properzi has been applying a 'circular' economy model, systematically reusing resources and eliminating waste.

In that era, the process fluids used in the first Properzi casting and rolling lines for the production of lead strips were, and continue to be, closed-loop circuits to prevent en-

vironmental pollution. Moreover, production waste, namely lead strip trimmings, was and continues to be directly returned to the furnaces for re-melting, thereby avoiding any process scrap and waste. Nowadays, Continuus-Properzi is a furnace manufacturer with its Furnaces and Combustion Division dedicated entirely to the engineering, design, construction and shipment of furnaces that serve CCR (continuous casting and rolling) lines for the production of aluminium and copper wire rod.

Let's focus our attention for a moment on the 'recycling' concept and therefore on the production of copper wire rods starting from scrap. Recycling copper scrap is one of the best examples of a circular economy. Melting, refining and casting the desired final product according to Properzi know-how, acquired during 30+ years of experience, allows considerable economic savings and avoids additional exploitation of the mines. Properzi's scrap recycling technology fits perfectly

into this context, allowing greater energy efficiency as the production phases are significantly reduced in number.

One furnace in particular benefits from energy efficiency, the Properzi scrap refining furnace for the production of copper wire rod. With a top-loading configuration, this furnace can accommodate larger quantities of scrap and requires fewer door openings during the loading process, which further improves its efficiency. The furnace features a new geometrical configuration with a large door placed in an elevated position and fed by an inexpensive skip-charging machine — patented by Giulio Properzi, inventor of several new solutions for the nonferrous industry.

This allows better thermal efficiency thanks to the enormous quantity of Cu scrap loaded through the door. The first furnace with a capacity of 250 tons per day was produced in 2012. Energy efficiency is also exemplified by another type of Properzi melting furnace, which is part of the plants for the production of aluminium wire rod, called the Properzi Vert-Melt (vertical melting) Furnace. The Vert-Melt Furnace is a combination of a vertical melting furnace (shaft) with a static receiving or holding chamber. It offers several advantages including much higher energy efficiency compared with any type of reverberatory furnace (1-1.5% versus 3-5%), lower emissions and 25% less gas consumption.

Moreover, the furnace efficiency is significantly increased, thanks to the recycling of the heat absorbed by the molten

metal from the combustion of the main burners, as well as from the fumes coming from the receiving chamber. Another aspect of sustainability that has a considerable weight is the investment in machine tools for the in-house production of spare parts. To date, Properzi has invested large sums of capital in the purchase of latest generation machine tools, which make use of energy recovery systems and optimally sized refrigerant systems. These factors, along with energy-saving control techniques — such as evening deactivation and minimised heating phase — guarantee the reduction of energy requirements and integrated efficiency.

The company's latest acquisition is a Flexible Manufacturing Cell, a 4.0 tool machine that releases fewer emissions and reduces the consumption of chemical water, which is handled in a closed circuit, recovered and filtered several times! The steam emitted is captured by a filter that cleans it, thus avoiding emissions. Furthermore, the refill of chemical water takes place automatically, expelling the waste produced with a manual filling. Last but not least, the machine features maximum energy efficiency. Once again, sustainability is supported by significant investment and is strongly linked to the economic field. Now, Properzi is about to develop a sustainable project to 'support' the wellbeing of its team by installing electric charging stations for electric cars (arguably the most sustainable means of transportation)... but that's another story!

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