

COMPLETE PLANTS FOR PRODUCING ETP COPPER ROD

6 Technology

The history of Properzi and copper began sometime during the 50s when Mr. Ilario Properzi started experimenting the application of the continuous casting and direct rolling technology, so successful for aluminium rod, for the production of copper rod.

Several papers, articles, magazines, books, Italian and international court verdicts have illustrated in detail how difficult and painful was for the Italian inventor to promote and defend his idea and his technology; therefore we will not touch this topic again.

We will only mention, as a starting point, that the pioneer Ilario Properzi sold the first copper rod mill in 1962 to the American Company Southwire and one year later to a company based in Uzbekistan, in the former U.S.S.R. This event is certainly a milestone in future development of copper based cable industry. This event took place in a world that was looking for new equilibrium in the post-world era; this was the time of John Fitzgerald Kennedy, Mao Tse-Tung and Leonid Brezhnev, the iron curtain and the cold war, the Hellfire missile of Cuba and American dream.

This idea of Mr. Properzi was really disruptive since it made almost immediately obsolete the previous technology of rolling the wire bars into the rolling mills known as “Belgian Loop”. Thanks to the quality of the rod produced on continuous basis - we can refer to this rod as “Properzi Rod” - the drawing operations became faster and the final diameter of the copper wire could become thinner. The rigid conductors of the building wires left the podium to the flexible wires sometimes during the 80s when the manufacturer of the drawing machines put on the market the multiwire drawing machines.

This circumstance made a kind of industrial revolution in the rod market since the old criteria to produce rod based only on large volumes was no longer sufficient. In fact, on one hand



Cathodes Charging System –
By courtesy of Gil Rod Shomal (Iran)

the multiwire drawing machines can ensure a high degree of productivity, but on the other hand, it is equally true that serious production losses arise if even one wire breaks during the drawing operation. In fact, the breaking of just one wire during the drawing operation causes the entire multiwire line to stop and therefore the loss of production becomes proportional to the total number of wires being drawn on the multiwire line.

When copper rod is drawn down to 0.1 mm or 0.08 mm any micro porosity or macro porosity or inclusion or other surface defects might be the cause of a wire break and ... more are the wire basted on the drawing machine longer is the time to restart. The improvement of the continuous casting process was slow but steady. By the early 90s the continuous casting and rolling process was finally able to provide wire rod with a level of quality that facilitated optimal performance in both productivity and reliability during multiwire drawing processes. This period was technically challenging for wire rod mills and today's results would have never been achieved without the



CCR Cu Line –
By courtesy of
IBR-LAM (Brazil)



Casting Machine –
By courtesy of Fujairah Gold FZE (U.A.E.)

continuous and fruitful collaboration with our clients and the clients of our clients.

Our experience in making copper rod spans more than fifty years if we do not consider the time of the trials made in loneliness by Ilario Properzi.

Today, through the synergic collaboration with Anglia Metal UK, 100% owned by Continuus-Properzi, we have the opportunity of having a continuous feedback of the performances of the Properzi rod when subjected to the drawing operation at fine and ultra fine wire.

Properzi CCR copper lines are tailored to meet requirements of not only large producers but also medium and small always backed by our technical assistance, including the transfer of melting, casting and rolling know-how and, far more important, the tailoring of the GMPs (Good Manufacturing Practices).

In fact, when looking at the top performances – ultra fine wire and magnet wire – the system intended as machinery + team + GMPs must be perfectly set.

The table A displays the various capacity of plants and the expected yearly output based either on five or seven days per week operation.

TABLE A

Output rate	tph	Expected output 5 days/ week	Expected output 7 days/ week
SMALL	5.0	25,000	33,000
SMALL	7.0	34,500	46,000
SMALL	10.0	49,000	66,000
MEDIUM	12.0	61,500	82,000
MEDIUM	16.5	81,000	108,000
MEDIUM	20.0	98,000	131,000
LARGE	25.0	123,000	164,000
LARGE	30.0	147,000	196,000
EXTRA LARGE	40.0	196,000	262,000
EXTRA LARGE	45.0	220,000	295,000

Entering our family gives many many benefits and we would like to list the most important:

- >> Specialized engineering for layouts, foundation drawings, etc., and for tailoring special technical solutions, if requested
- >> Machinery tailor made and designed for life
- >> Lowest OpEx (Operational Expenditures)
- >> Highest OEE (Overall Equipment Efficiency)
- >> First class components (hydraulic, pneumatic, electrics etc.) and friendly use control system
- >> High rod quality and high grade of reparability of the quality
- >> Flexible machinery
- >> Unparalleled technical assistance for training, commissioning and start-up and ... many other advantages that you can experiment joining our large family

Properzi is available to supply such plants on EPC (Engineering, Procurement, Construction) basis so that the Buyer is only minimally involved with the installation of the plant.

By C.M.B.

Coils ready for shipment

