

In developing countries with a lower demand for copper rod, Upcast plants are also used for normal wire applications. Especially in China there exist a lot of similar plants, although more and more Southwire®, Properzi® or Contirod® plants are erected.

Dip Forming technology Dip Forming is another technology to produce oxygen free (or at least oxygen poor) copper rod. In the last years there have not been any new installations of the dip forming process, but there are still some plants in operation. The principle of dip forming is also different from all the other process. A copper wire of about 2 mm with a clean shaved surface is passed at high speed through a molten copper bath, then the copper solidifies around the cold wire (called mother rod) and emerges from the bath with a larger diameter of 2.5 times the cross section of the mother rod. This rod is hot rolled in a controlled atmosphere. After rolling about 40 % of the rolled wire is recycled for the next solidification. With capacities of about 50,000 tons, the capacities of dip forming plants are in between of the Upcast® and the Southwire®/Contirod® technology.

8.1.2.3 Economics of wire rod production

The specific production cost of rod are relatively low compared to cathode production, as the big plants are running at high capacities and fully automated. Nevertheless, the biggest cost factor in rod production is energy, mainly for the melting of cathodes and for the rolling of the cast bar, although the processes have optimized in the last years to lowest energy consumption. As there are no big steps in new technologies expected and cathodes have to be melted as the first step, the rising energy costs are an important factor for the global competition. Wire rod is a commodity, which is traded globally. Nevertheless it has advantages to sell copper rod in short distances to the customers as transport costs may play an important role.

The price of copper rod consists of the price of cathodes according to LME and the cathode premium and the surcharge for converting copper cathodes into rod. The surcharges for copper rod are only about 2-5 % of the copper price depending on the actual quotations. With the increase of the copper price, financing costs have become very important. Especially, if the rod plant is a stand alone plant, cathodes have to be bought and financed over a long time. With a yearly interest rate for the copper, which is higher than the surcharge for wire rod, the duration of financing the copper becomes more and more an important issue. Beside stand alone rod plants, there are also a lot of rod plants, which are integrated into a smelter and refinery. This is an advantage,