

As a result, it is likely that no more small tonnage carbon steel plants will be built on a greenfield site except around a continuous casting machine. This has been true in the U.S. since 1964. In addition, any expansion of capacity in existing steel plants of less than 200,000 ton capacity will be by way of continuous casting. (Oregon Steel is an interesting exception. It soon will install pressure casting for carbon steel slabs which will be rolled into plates.) Thus, companies like Kentucky Electric Steel or Structural Metals will almost certainly install continuous casting machines as their production needs grow. Kentucky Electric with its second electric furnace on the line now has production capability of 140,000 tons/year. "We're talking to continuous casting engineering companies right now," says Sam Mansbach, sec.-treas. "We'll install a machine within the next year—if imported steel let's us," concludes Mansbach. Continuous casting could also be the way of modernizing the older plants with open hearths (Judson Steel in the West and Washburn Wire on the East Coast) as open hearths become more costly to operate especially in regard to air pollution.

As noted, continuous casting practice also makes it simpler for these smaller steel companies to upgrade their product mix. This is a prime reason Pollak Steel, for example, chose continuous casting. One of the most successful production records for continuous casting quality steels is held by Roblin Steel. Roblin has been making forging and cold-heading grades of steel since the company started new steelmaking in 1965. Making these grades of steel in a mill setup of less than 200,000 tons capacity with billet ingots would be very difficult. From a competitive commercial standpoint it would probably be impossible. But with its continuous casting machine Roblin has been able to successfully penetrate the high quality bar market.

Where do their machines come from?

The list of small steel plants shows the useful role these companies have played in development of continuous casting in the U.S. The engineering companies supplying machines to the small steel companies include all major promoters of the process now operating in the U.S. (except for newcomers like Dravo, Penn. Eng., Danieli etc.). Thus, the small steel companies have furnished the battle and breeding ground for production development of commercial casting machines in the U.S. Allegheny-Ludlum was a pioneer with its Watervliet continuous casting machine, going on stream in 1949. This installation was an example, however, of the hazards of being an early bird. Watervliet's specialty steel mix is still the kind of steelmaking least adaptable to continuous casting. Allegheny-Ludlum bowed out in the '50's and it's still standing on the sidelines. Another group which worked on continuous casting of specialty steels in the early 50s only to drop it, was a team from Bethlehem Steel's tool steel research.

Subsequent to the Watervliet installation it was to be the small companies who jumped into full scale production with continuous casting machines. This occurred in the late '50s and early '60s, as more small steel companies were formed or expanded their operations. In this period there were only a few engineering companies offering continuous casting know-how. Today, a decade later, these are a baker's dozen offering continuous casting know-how and machine building expertise. (There are also patent and licensing situations, especially regarding curved mold machines, creating an unpredictable future for straight vs curved mold machines.)

For those steel companies in the market for continuous casting machines—and 33 believes most steel companies are—there's a list of engineering (and machine builders) to call in along with some background on their experience in the field. (See table at end of article.)

There are several possible groupings of these engineering companies as related to continuous casting. Some are concerned with conceptual design, others with machine building, others with steel plant engineering and construction. Some offer combinations of capabilities. Continuous casting concept engineering has become one of the most international of activities in the steel industry. Several leading companies, particularly Concast, Inc. (but also including Demag in Germany and Olsson in Switzerland), have adopted the policy of being a central clearinghouse for patents and engineering know-how as the basis for their expertise. Continuous casting machine contracts are then let to machine builders and other contractors (either as affiliates or as sub-contractors) usually domestic to the country where the casting machine is being installed.