Three High roll Mill

The rolling direction can be changed by changing the direction of rotation of the rolls. The center distance between the rolls (C) can be changed to change the roll gap to vary the thickness of the product. This is mainly used for producing blooms and billets.

Four high mill

Here four rolls are used. Two smaller form the main rolls and come in contact with the work piece and cause deformation. These rolls are backed up by larger diameter rolls. Thus the mill is more rigid and can be used for higher reductions in the work. Back up rolls prevent roll deflection.

Four high mill
Cluster Mill

Here the main rolls are small and are backed up by two sets of rolls on each side. Higher rigidity and stability is imparted to the mill. Higher reductions are possible. Better deformation will take place.

Planetary Mill

Here the large roll has very small rolls located along the circumference. A number of them will be arranged on each roll of a virtually two high roll mill. The arrangement looks like planets on the rolls. Hence, the name planetary mill. In fact the small rolls come in contact with the work piece and the big roll act as back up roll. Higher reduction of the order 25:1 is possible in one pass. The mill provides forging action as well as rolling action at the same time. There will be two high mill at the beginning feeding the work piece to the planetary mill. At the outlet end there will be another set of two high mill to take the outgoing work. This arrangement provides roll tension at the beginning and at the outlet. The mill is mainly used for converting slab to sheet or strip.

Tandem Mill

A series of four high mills are used one after the other. The work piece passes through each one of them. Reduction in the thickness will take place at each point. Each one of the mill is referred to as stand. There may be as many stands as necessary. This arrangement is referred to as “Tandem Mill”. Continuous reduction will take place at each stand. There will be coiler and uncoiler which provides winding up of the work at the outlet end and act as feed roll by releasing the work piece. Normally this arrangement is used for converting thick sheet to very thin sheet and is a cold roll mill. Coiler and uncoiler
provide the necessary tension in the work piece. Very smooth and good surface is obtained in the work piece.

**Sendizmer Mill**

It is basically a cluster mill. It is used to produce thin sheets and foils. Very strong metals can be rolled very easily. Basically a cold rolling mill. Stainless steels, Alloy steels etc., can be rolled easily. Very high reduction ratio is obtained.

![Sendizmer Mill Diagram](http://elearningatria.files.wordpress.com/2013/10/vtu-e-notes-mpiii-18.pdf)