
APS1012 Management of Innovation – Final Team Projects, Fall 2011**S-Curves in the Cold Roll Forming Industry**

Innovation in the metal forming industry has been occurring since the day man discovered how to make steel from iron. The iron ore is inserted in a furnace and mixed with charcoal and a constant stream of oxygen. In our modern day economy, innovation is driven by technology, cost reduction, labour reduction and customer demand. Analyzing these drivers leads us to the hypothesis that there is a science to the use of S-curves that can accelerate innovation.

To investigate whether this hypothesis is plausible, the roll forming segment of the metal forming industry has been analyzed. A historical analysis of the industry has been used to model S-curves for each of its product line. Three criteria were evaluated; these were cost, quality, and productivity. The scores of each innovation were aggregated to show how the innovations of each decade scored relative to other decades.

The first product line, the roll forming line, is the heart of the mill. This is where the material is given its essential form. For many years roll forms has generally been designed to the same basic principles and concepts, however there have been some recent innovations in roll-form designs.

Unless roll forming lines are fed with pre-cut blanks, they require equipment with the ability to cut the strip or product to length. The cutting operation and line may be located before the product enters the rolling mill (pre-cut), in-between the mills, after the roll forming mill, or after the final “in-line” operation. The cutting line is currently the major bottleneck in the roll forming process, and there are significant developments underway involving rotary die cut off methods which should spur a flurry of innovations in the industry.

The third product line in our examination covers secondary roll forming operations. These processes have seen the most deployment of innovation and technology in the industry, utilizing computer software, fiber optics, standardized machine controls, etc.

After analysing S-curves for each of the product lines, the results were consolidated into one chart representing current and past states of innovation with respect to time. Inflection points were seen to coincide with times where innovation had slowed and spurred. The consolidated S-curve showed that today’s industry has much room for further growth through innovation, and that technical developments in software and cut-off systems will greatly increase competitiveness in terms of cost, quality and productivity.

For an executive making investment decisions about R&D, innovation S-curves provide valuable information that should greatly minimize the risk of sinking capital into lost causes. The slope of S-curves indicate which industry to focus on, and what segments of the industry offer the most “bang for the buck”.

The roll forming industry is an creative one that would benefit from an injection of capital to sustain its rate of innovation. The flow of investment has been squeezed because the recession has made financiers and corporations wary about advancing capital. Furthermore consumer demand, which has previously been a driver of innovation, has eased.