Steel is an alloy made by combining iron and another element, usually carbon; other alloying elements include manganese, chromium, vanadium, nickel, and tungsten. When carbon is used, its content in the steel ranges between 0.2% and 2.1% by weight. There are several different processes and methods to make steel which include the Bessemer process, Basic oxygen steelmaking (BOS), and Electric arc furnaces (EAF). When going through these processes there are many different stages of steel being produced. Some of these stages include austenite, hypoeutectoid steel, ferrite, cementite, pearlite, martensite, and spherodite. The differences between these stages are due to several things like either being heated or cooled, or having a different percentage of carbon or iron in the steel. When either nickel or manganese is added to steel they add to its tensile strength and make austenite more chemically stable. If chromium is added the hardness of the steel will increase as well as the melting temperature. Vanadium has very similar effects as chromium when the hardness increases the effects of metal fatigue are reduced. Finally, to prevent corrosion at least 11% chromium is added to steel so that a hard oxide form on the metal surface, this is known as stainless steel.
The US produces around 100 million tons of steel per year.
Iron and steel make up approximately 90% of metal produced in the world.

When going through the recycling process of steel we found one major problem with how this was being done. We saw that after separating the steel from all other metals and it went to the melting process, that the steel itself still had other alloys in it. When this would be melted you would be left with not pure steel but steel mixed with alloys such as nickel, chromium, vanadium and much more. To solve this problem we decided to melt the steel by the melting point of the alloys, rather than let them all mix together. By melting the steel by melting point you will be able to collect the individual alloys as well as the pure steel and/or pig iron. This new process of recycling would allow us to reuse the recycled steel or pig iron and create new products such as automobiles, buildings, cables, and much more. Some drawbacks of this process are that you would have to stop the melting precisely at each temperature, and pour out the alloys. If there is more than one alloy in the steel then this could become a very timely and expensive procedure.