EFFECT OF TENSION ON STEEL STRIP IN THE FURNACE

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ABSTRACT

Physical defects produce on steel strip due to unsuitable tension applied were identified. The effect of line speed on defect produce were analyze and grades were recommended. To obtained the result, steel strip with same width of 1219 mm and manipulated thickness of 0.35 mm and 0.50 mm was run on the production line with selected tension and speed due to strip dimension. Effect of line speed applied would be observed. Defect would be identified once the strip exit the furnace. The defects were tension crease and heat crease. Both defects will cause the physical appearance of the strip damaged. An attempt to defect reducing, skin conditioning mill rolls and tension leveler machine would be applied on the strip. Then, the strip will be graded according to its quality produce after first attempt on reducing the defect were done. Also, root cause on tension crease and heat crease that occur on the strip were listed. Line speed did contribute in producing the defects where if the speed did not match the tension applied, creases would happen. On the other hand, if tension leveler and skin conditioning mill rolls were not applied, the strip will fluctuate. Low speed and fluctuate of speed on exit tower and entry tower will also contribute on creases formation. Finally the strip will be graded into four group which were down grade, second grade, hold and scrap.

CHAPTER 1

INTRODUCTION

1.1 Background

Steel is an alloy that consists mostly of iron and has carbon content between 0.2% and 2.1% by weight, depending on the grade. Carbon is the most common alloying material for iron, but various other alloying elements are used, such as manganese, chromium, vanadium, and tungsten (Jones, 1992).

Carbon and other elements act as a hardening agent, preventing dislocations in the iron atom crystal lattice from sliding past one another. Varying the amount of alloying elements and the form of their presence in the steel (solute elements, precipitated phase) controls qualities such as the hardness, ductility, and tensile strength of the resulting steel. Steel with increased carbon content can be made harder and stronger than iron, but such steel is also less ductile than iron. Alloys that have higher than 2.1% carbon content are known as cast iron because of their lower melting point and cast ability (Jones, 1992).

Steel is also distinguishable from wrought iron, which can contain a small amount of carbon, but it is included in the form of slag inclusions. Two distinguishing factors are steel's increased rust resistance and better weld ability.