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YIELD IMPROVEMENT OF THE HOT ROLLED STEEL COIL INDUSTRY

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for the Degree of Master of Engineering in Engineering Management

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วิทยานิพนธ์ฉบับนี้ เป็นงานวิจัยเพื่อพัฒนาและปรับปรุงอัตราผลผลิตของอุตสาหกรรมเหล็กแผ่นม้วนรีดร้อน โดยทำการลดข้อผิดพลาดที่เกิดขึ้นในการทำงานที่ผ่านมา เช่น การจัดการเศษเหล็กที่ขาดประสิทธิภาพ และทำการปรับปรุงประสิทธิภาพการทำงานเดิมให้ดีขึ้น ทั้งนี้ได้จำกัดขอบเขตการวิจัยเฉพาะในการปรับปรุงอัตราผลผลิตในส่วนของขบวนการหลอมเศษเหล็กของผลิตภัณฑ์เหล็กม้วนรีดร้อน Ms code 00001 การวิจัยเริ่มจากการศึกษาระบบงานผลิตในกระบวนการหลอมเศษเหล็ก รวมไปถึงการจัดการเศษเหล็กก่อนทำการหลอม จากการศึกษาพบว่า ในเรื่องของการจัดการรูปแบบการจัดส่วนผสมของเศษเหล็กแบบที่ใช้อยู่ก่อนนำไปหลอมยังให้อัตราผลผลิตที่ต่ำ และนอกจากนี้ในเรื่องของการจัดการเศษเหล็กทางผู้จัดทำยังขาดความชำนาญในด้านการจัดการกับเศษเหล็กที่มีอยู่ซึ่งส่งผลให้คุณภาพของเศษเหล็กที่ได้รับก่อนการนำไปหลอมมีคุณภาพต่ำ

กระบวนการแก้ไขปัญหาของการวิจัยแบ่งออกเป็น 2 ส่วน คือ การแก้ปัญหาในเรื่องของการจัดการเศษเหล็กโดยมีการจัดทำประเภทของเศษเหล็กที่มีความละเอียดขึ้นและได้มีการว่าจ้างผู้รับจ้างช่วงทำการจัดการเศษเหล็ก และในส่วนของกระบวนการแก้ปัญหาในเรื่องของการจัดรูปแบบการผสมเศษเหล็กสำหรับการหลอม โดยทำการเปลี่ยนแปลงรูปแบบการจัดเศษเหล็กก่อนนำไปหลอมจากเดิมใช้ 4 ถัง ให้เป็น 2 ถัง สำหรับการหลอม เพื่อให้ได้ค่าความหนาแน่นรวมของเศษเหล็กที่เหมาะสม

ผลจากการปรับปรุงอัตราผลผลิตก่อนการปรับปรุงและหลังการปรับปรุงพบว่า 1) อัตราผลผลิตจากเดิม 75% เป็น 85 % 2) ลดการใช้ฟลักซ์ลงจาก 7200 กก/เตา ลงเหลือ 5200 กก/เตา 3) ลดเวลาในการหลอม(T-T) จาก 83 นาที/เตา ลงเหลือ 74.2 นาที/เตา 4) ลดค่าไฟฟ้าลงจาก 517 Kwh/ton ลงเหลือ 430.39 Kwh/tons และ 5) เพิ่มผลผลิตขึ้นจากเดิมอีก 20.4 % ต่อเดือน

ศูนย์ระดับภูมิภาคทางวิศวกรรมระบบการผลิต
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The objective of the thesis is to develop and and improve the yield of the hot rolled steel product by reducing and improve the failure from inefficient managing the scraps. The scope of the research is limited to the improving yield for the product MScore001 in the melting process

The research starts from the study the melting production system include scraps handling system. It was found that the original mixing the scrap lead to low yield as well as handling the material that is lack of the experience result in receiving the low quality of the scrap mixing lead to low quality of the molten steel

The problemsdivided into two parts, 1) Hiring the subcontractor to handling the raw material especially scrap and 2) Improving the pattern of mixing the scrap from 4-basket pattern to 2-basket pattern for receiving the suitable density

Results from comparison between before and after improvement showed that 1) the yield increased from 75 percent to 85 percent 2) flux utilization decreased from 7200 kg/heat to 5200 kg/heat 3) T-T-T time reduced from 83 minutes/heat to 74.24 minutes/heat 4) Electrical energy used reduced from 517 Kwh/ton to 430.39 Kwh/ton and 5)Production per month increased by 20.41 percent from the past.

The Regional Centre for Manufacturing Systems Engineering

Field of study Engineering Management

Academic year 2002

Student's signature.....

Advisor's signature.....

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