

FACULTAD DE INGENIERÍA

Escuela Académico Profesional de Ingeniería Industrial

Tesis

**Optimization of the Stacking Process of Wire Mesh
Coils in Industrial Processors**

Pamela Stefany Carrion Miguel
Stefanny Pamela Inocente Hurtado
Renzo Andree Rojas Benito
Guillermo Anibal Bayona Carazas

Para optar el Título Profesional de
Ingeniero Industrial

Huancayo, 2024

INFORME DE CONFORMIDAD DE ORIGINALIDAD DE TRABAJO DE INVESTIGACIÓN

A : Decano de la Facultad de Ingeniería
DE : Mg. GUILLERMO ANIBAL BAYONA CARAZAS
Asesor de trabajo de investigación
ASUNTO : Remito resultado de evaluación de originalidad de trabajo de investigación
FECHA : 17 de Mayo de 2024

Con sumo agrado me dirijo a vuestro despacho para informar que, en mi condición de asesor del trabajo de investigación:

Título:

OPTIMIZATION OF THE STACKING PROCESS OF WIRE MESH COILS IN INDUSTRIAL PROCESSORS

URL / DOI:

<https://www.scopus.com/record/display.uri?eid=2-s2.0-85189542247&origin=resultlist&sort=plf-f&src=s&sid=0861334d540cf4a6fe8cf4aa703345f3&sof=b&sdt=b&s=CONF%28ieim%29&sl=10&sessionSearchId=0861334d540cf4a6fe8cf4aa703345f3&relpos=1> / DOI 10.1007/978-3-031-56373-7_9

Autores:

1. CARRION MIGUEL PAMELA STEFANY – EAP. Ingeniería Industrial
2. INOCENTE HURTADO STEFANNY PAMELA – EAP. Ingeniería Industrial
3. ROJAS BENITO RENZO ANDREE – EAP. Ingeniería Industrial
4. BAYONA CARAZAS GUILLERMO ANIBAL - EAP. Ingeniería Industrial

Se procedió con la carga del documento a la plataforma "Turnitin" y se realizó la verificación completa de las coincidencias resaltadas por el software dando por resultado 11 % de similitud sin encontrarse hallazgos relacionados a plagio. Se utilizaron los siguientes filtros:

- Filtro de exclusión de bibliografía SI NO
- Filtro de exclusión de grupos de palabras menores SI NO
Nº de palabras excluidas (en caso de elegir "SI"):
- Exclusión de fuente por trabajo anterior del mismo estudiante SI NO

En consecuencia, se determina que el trabajo de investigación constituye un documento original al presentar similitud de otros autores (citas) por debajo del porcentaje establecido por la Universidad Continental.

Recae toda responsabilidad del contenido del trabajo de investigación sobre el autor y asesor, en concordancia a los principios expresados en el Reglamento del Registro Nacional de Trabajos conducentes a Grados y Títulos – RENATI y en la normativa de la Universidad Continental.

Atentamente,

La firma del asesor obra en el archivo original
(No se muestra en este documento por estar expuesto a publicación)

Optimization of the stacking process of wire mesh coils in industrial processors

RENZO ANDREE ROJAS BENITO

Department of Industrial Engineering, Faculty of Engineering, Universidad Continental, Huancayo, Peru

STEFANNY PAMELA INOCENTE HURTADO

Department of Industrial Engineering, Faculty of Engineering, Universidad Continental, Huancayo, Peru

PAMELA STEFANY CARRION MIGUEL

Department of Industrial Engineering, Faculty of Engineering, Universidad Continental, Huancayo, Peru

GUILLERMO ANIBAL BAYONA CARAZAS

Department of Industrial Engineering, Faculty of Engineering, Universidad Continental, Huancayo, Peru

ABSTRACT

This study proposes to optimise the post-production and storage process of electro-welded mesh rolls in companies in the city of Lima, for which this study has taken into account the entire production line and production of electro-welded mesh up to its storage, where the bottlenecks encountered occur when the final product is removed from the production line and taken to the warehouse. The forklift operator has to come constantly from time to time to lift the rolls two by two onto a rack and then take them to the warehouse with a total of 15 rolls, and this process is repeated every day. In the warehouse, the rolls are stacked two by two, all of which takes time and delays productivity. That is why the aim of this study is to analyse production, post-production and storage and to optimise to improve time, production and resource management. All this is achieved by using mathematical calculations, analysis software and finally an automatic machine is proposed, so that when the roll comes out of the winding machine, it is automatically stacked in the rack, once the 15 rolls are stacked, the conveyor belt moves the entire rack and only the forklift moves to the warehouse, being more productive since the racks will also be stackable. The results obtained in the analysis show that by implementing an automatic post-production and storage machine, the transfer and stacking times decrease significantly up to 76.76 % and the operational efficiency of the machine improves up to 79.35%, which benefits greatly and in the long term the entire production of this industrial line.

CCS CONCEPTS • Hardware - Software - Design - Optimization

Keywords and Phrases: livestock netting, wire drawing, pickling, electro welding, machine, postproduction.

1 INTRODUCTION

Nowadays, at an international level, companies have a constant objective, one of the most important interests for any company is productivity, so that the higher the performance, the higher the profits and the greater the growth. For it, they determine factors that limit and favour the efficiency with the purpose of taking measures and strategies to direct the production adequately [1], In the production line of any company, frequent problems exist that obstruct the fulfilment of the proposed goal, one of the most well-known are the "bottlenecks", characterized for being the causative one in diminishing or affecting the production process [2], leading to a considerable decline in line capacity. Therefore, in order to reduce the problem and increase production, many companies explore new technologies [3], new organisational structural models and time management, so that everything is favourable and costs are reduced [4].

Many companies bet on the development and exponential growth of their products, today we see a lot of industrial companies with countless products and their derivatives, where they are processed and marketed. One of the most common industrial products is wire, whose product is crucial for its diverse applications in various sectors such as construction, agriculture, engineering, among others [5]. However, there are times when a production imbalance is generated, as there are tight and limiting production practices [6], due to different factors, such as: environmental conditions, manufacturing processes, type of machinery, lack of innovation, constant machinery failures, among others [7]. Although there are currently technologies to improve the production of wire (Pd - 5Ni alloy), new intelligent predictive models to improve productivity, this production imbalance is still evident [8].