

**IMPROVING DUST CLEANING SYSTEM TO DECREASE
DUST LEVEL IN THE AIR AT THE SPINNING WORK
CENTER IN PT KUSUMAPUTRA SANTOSA**

A THESIS

**Submitted in Partial Fulfillment of the Requirement for the Degree of
Bachelor of Engineering in Industrial Engineering**



ARDIAN FIRMANSYAH

10 14 06350

**INTERNATIONAL INDUSTRIAL ENGINEERING PROGRAM
DEPARTMENT OF INDUSTRIAL ENGINEERING
FACULTY OF INDUSTRIAL TECHNOLOGY
UNIVERSITAS ATMA JAYA YOGYAKARTA
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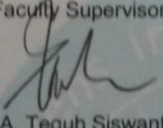
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SANTOSA

submitted by
Ardian Firmansyah

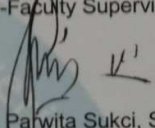
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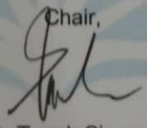

Dr. A. Teguh Siswanto

Co-Faculty Supervisor,

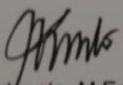

L. Bening Parwita Sukci, S.pd.,
M.Hum.

Board of Examiners,

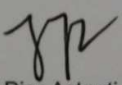
Chair,


Dr. A. Teguh Siswanto

Member,

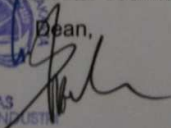

Ir. B. Kristyanto, M.Eng., Ph.D.

Member,


Ririn Diar Astanti, D.Eng.

Yogyakarta, October 21st, 2014
Universitas Atma Jaya Yogyakarta,
Faculty of Industrial Technology,

Dean,


Dr. A. Teguh Siswanto

DECLARATION OF ORIGINALITY OF RESEARCH

I certify that the research entitled "Improving Dust Cleaning System to Decrease Dust Level in The Air at The Spinning Work Center in PT Kusumaputra Santosa" in this thesis has not already been submitted for any other degree.

I certify that to the best of my knowledge and belief, this thesis which I wrote does not contain the works of parts of the works of other people, except those cited in the quotations and bibliography, as a scientific paper should.

In addition, I certify that I understand and abide the rule stated by the Ministry of Education and Culture The Republic of Indonesia, subject to the provisions of Peraturan Menteri Pendidikan Nasional Republik Indonesia Nomor 17 Tahun 2010 tentang Pencegahan dan Penanggulangan Plagiat di PerguruanTinggi.

Signature

:



Student name

: Ardian Firmansyah

Student ID

: 10 14 06350

Date

: October 1st, 2014



SURAT - KETERANGAN
No. : 0213/KPS-UM/PERS/X/2014

Yang bertanda tangan dibawah pimpinan PT. Kusumaputra Santosa menerangkan bahwa :

Nama : **ARDIAN FIRMANSYAH**
NPM : 101406350
Perguruan Tinggi : Universitas Atma Jaya Yogyakarta
Jurusan : Teknik Industri

Benar benar telah melaksanakan Penelitian/Pengambilan Data di PT. Kusumaputra Santosa, alamat Jl. Raya Jaten Km 9,4 Jaten-Karanganyar terhitung mulai tanggal 1 Pebruari s/d 16 Mei 2014 di Dept. Spinning dengan topik : *Improving Dust Cleaning System to Decrease Dust Level in the Air at the Spinning Work Center.*

Demikian Surat Keterangan ini dibuat untuk dapat dipergunakan sebagaimana mestinya.

Karanganyar, 4 Oktober 2014
PT. KUSUMAPUTRA SANTOSA

pt. KusumaPutra Santosa
JAYATI, KARANGANYAR, SUKOHARJO

Wahyu Cahyo Wibowo, SE,SH
Manager Umum & Personalia

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ABSTRACT

Clean air is one of the key factors needed by yarn companies. This factor influences the quality of yarn, clean air helps produce good quality of yarn. On the other hand, recently many of yarn companies do not consider that factor as important and that can cause several problems.

This research is conducted at a yarn company named PT Kusumaputra Santosa located at Jl. Raya Jaten Km 9, Karanganyar. The air around ring frame machine is dusty and that causes the surfaces of yarn produced by this machine defected (not aligned). The defect product must be cut at the finishing work center; this prolongs production processes, creating a bottleneck at this work center. Finally the main problem is that the real production does not reach the production target (late of production) that causes profit loss. The root problem is the dust cleaner machine cannot absorb dust optimally, because lack of hole at exhaust arm.

Based on those problems, this research tries to propose a design improvement of dust cleaner machine by adding 10 exhaust holes at exhaust arm, to maximize the ability of absorbing dust in the air, in order to help PT. Kusumaputra Santosa clean the air condition in the spinning work center. The research employs Rational Method developed by Cross, 1994, to appropriate the design of dust cleaner machine. The research also employs Gravimetric Method to measure the level of dust in the air. There are literature reviews about the product design and improvement methods to help make a good design.

Finally, with the design improvement, the dust cleaner machine can reduce the dust level in the air from 0.91 mg/m^3 to 0.52 mg/m^3 , so there will be decreasing the defect product, reduce the number cut and join done by winding machine from 10.3/spindle to 7.8/spindle, fast production process, no bottleneck, so that the production rate is increase from 0.38 bale/day to 0.447 bale/day for yarn type 32CD, and then increase from 0.25 bale/day to 0.3 bale/day for yarn type 30 CD.

Keywords: dusty air; bottleneck; design improvement; rational method