

**TESIS**

**FAKTOR RISIKO KEJADIAN *COMPUTER VISION SYNDROME*  
PADA OPERATOR *RUBBER TYRED GANTRY*  
DI PT TERMINAL PETIKEMAS SURABAYA**



**UNIVERSITAS AIRLANGGA  
FAKULTAS KESEHATAN MASYARAKAT  
PROGRAM MAGISTER  
PROGRAM STUDI KESEHATAN DAN KESELAMATAN KERJA  
SURABAYA  
2015**

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**TESIS**

**Untuk memperoleh gelar Magister Kesehatan dan Keselamatan Kerja  
Program Studi Kesehatan dan Keselamatan Kerja  
Fakultas Kesehatan Masyarakat  
Universitas Airlangga**

**Oleh:**

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PROGRAM MAGISTER  
PROGRAM STUDI KESEHATAN DAN KESELAMATAN KERJA  
SURABAYA  
2015**

## **PENGESAHAN**

**Dipertahankan di depan Tim Penguji Tesis  
Program Studi Kesehatan dan Keselamatan Kerja  
Fakultas Kesehatan Masyarakat Universitas Airlangga  
dan diterima untuk memenuhi persyaratan guna memperoleh gelar  
Magister Kesehatan dan Keselamatan Kerja (M. KKK)  
Pada tanggal, 14 April 2015**

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**2. Dr. Diah Indriani, S. Si., M.Si**  
**3. Dr. Elyana Asnar Suhartono T.P., dr., M.S**  
**4. Dr. Ririh Yudhastuti, drh., M.Sc**  
**5. Sri Widodo PG. Dip., Sc. OHS., M.Kes**

**PERSETUJUAN**

**TESIS**

**Diajukan sebagai salah satu syarat untuk memperoleh gelar  
Magister Kesehatan dan Keselamatan Kerja (M. KKK)  
Program Studi Kesehatan dan Keselamatan Kerja  
Fakultas Kesehatan Masyarakat  
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## PERNYATAAN TENTANG ORISINALITAS

Yang bertanda tangan di bawah ini, saya:

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Menyatakan bahwa saya tidak melakukan kegiatan plagiat dalam penulisan tesis saya yang berjudul :

**FAKTOR RISIKO KEJADIAN *COMPUTER VISION SYNDROME* PADA OPERATOR *RUBBER TYRED GANTRY* DI PT TERMINAL PETIKEMAS SURABAYA**

Apabila suatu saat nanti terbukti saya melakukan tindakan plagiat, maka saya akan menerima sanksi yang telah ditetapkan.

Demikian surat pernyataan ini saya buat dengan sebenar-benarnya.

Surabaya, 14 April 2015

Arham Alam

## KATA PENGANTAR

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Tesis ini menganalisis besar risiko dan menganalisis faktor yang paling berpengaruh terhadap kejadian *Computer Vision Syndrome* pada operator *Rubber Tyred Gantry* di PT. Terminal Petikemas Surabaya.

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Surabaya, 14 April 2015

Penulis

**SUMMARY**  
**RISK FACTORS TO COMPUTER VISION SYNDROME INCIDENCE ON**  
**RUBBER TYRED GANTRY OPERATOR**  
**IN PT *TERMINAL PETIKEMAS SURABAYA***

PT *Terminal Petikemas Surabaya* (TPS) is a company that run in terminal facility supply for container delivery in efficient and timely manner both for domestic and international business actors in Eastern Indonesia. TPS location is very strategic since it is directly connected to Surabaya toll road and railroad. Geographically, TPS is located in the western side of *Tanjung Perak* at the end of navigation channel between Java island and Madura island of 25 miles length. Minimum length of channel is 80 meters with minimum depth when the tide was low is 9,5 meters. The navigation channel is marked well and provided with navigational service for 24 hours non stop.

PT TPS in it operation used many heavy equipment, one of them is Rubber Tyred Gantry (RTG), this tool is used to lift up container from dock transported by Head Truck to be stacked in container yard. The RTG operation used panel and display monitor known as Visual Display Terminal (VDT). The VDT is vital instrument used in container lifting process. All information about container were presented on the monitor display. VDT exposure duration on RTG operator is 4 to 8 hours per day even more. RTG operator working exposure on the VDT is not without trouble, many operators complained eyes symptoms or complaint related with VDT use.

Health complaint particularly eyes complaint on VDT use has recently known with Computer Vision Syndrome (CVS). According to The American Optometric Association (2006) CVS is complicated eyes problem related with individual's occupation and commonly with VDT use. Based on preliminary survey, many operators complained eyes fatigue, blurred vision, neck pain, back pain and even dizziness after exposed to VDT in cabin room. Non ergonomic environment condition and work station become risk factor that make health complaint severd according to RTG operator.

This research aimed to identify odds risk factor did relate with computer vision syndrome incidence on Rubber Tyred Gantry (RTG) in PT TPS. This research was observational study with using cross sectional design to analyze odds risk factor that related with computer vision syndrome incidence on Rubber Tyred Gantry (RTG) operator in PT TPS. This research was performed on December 2014 until January 2015.

This research population was all Group D RTG operators who worked on morning shift of 34 persons and sample to be used was total population. Variables of research were two: the dependent variable was CVS incidence and the independent variables were age, nutritional status, tenure, work hour per day, breaking period among VDT



uses, eyes distance to VDT, monitor height on eye horizontal line, glare and light intensity.

Result of research showed that CVS incidences on operator were following: 79% had eye fatigue, 11,8% had dry eyes, 67,6% had blurred vision, 73,5% had neck pain, 70,6% had back pain, 2,9% had double vision, 5,9% had dizziness and none had headache.

Analysis result odds risk of relationship between independent variables and dependent variables that influence computer vision syndrome on Ruber Tyred Gantry Operator in PT TPS was Statistical analysis result for odds risk relationship between CVS incidence on RTG operator in PT TPS showed ; age variable OR = 14, tenure variable OR = 11, break time among VDT use variable OR=7, eye distance to VDT variable OR = 16, monitor height on eye horizontal line variable OR = 4.

Based on research result it is expected that TPS management to take routine medical check up on RTG operator and it is expected that RTG operator should have proactive attitude and higher care on their health and safety in work place, particularly on eyes health when complaint or vision disturbance occurred. Also it is expected for TPS management issued regulations for usage of personal protective equipment and measurement of the physical work environment with continuously.

