# DEVELOPMENT OF A PROCESS SAFETY EVALUATION TOOL FOR DUST EXPLOSION IN PHARMACEUTICAL INDUSTRY

By

Aliya Dharaningtyas
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SWISS GERMAN UNIVERSITY
The Prominence Tower
Jalan Jalur Sutera Barat No. 15, Alam Sutera
Tangerang, Banten 15143 - Indonesia

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## STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

Aliya Dharaningtyas

Student _____ Date _____

Approved by:

Ir. Paulus Gunawan, MM.

Thesis Advisor _____ Date _____



Dr.-Ing. Diah Indriani Widiputri

Thesis Co-Advisor _____ Date _____

Dr. Dipl.-Ing. Samuel P. Kusumocahyo

Dean _____ Date _____

# ABSTRACT

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Aliya Dharaningtyas
Ir. Paulus Gunawan, MM., Advisor
Dr.-Ing. Diah Indriani Widiputri, Co-Advisor

SWISS GERMAN UNIVERSITY

Dust explosion considered as dangerous accident in process industry. However, in industry, safety while processing combustible dust is sometimes underestimated. In order to know how hazardous dust explosion might occur in a process, risk assessment needs to be conducted. Risk assessment is a combination of likelihood and severity level of the hazard. In the industry, conducting risk assessment is sometime inefficient and takes a lot of time and effort. Therefore, a semi-quantitative safety evaluation tool that estimate severity level of dust explosion is developed in this work. The safety evaluation tool consists of series of questions regarding material used, operating condition and environment of the process. By using the tool, severity level of dust explosion in a process can be estimated. After the evaluation tool has been developed, validation was done to ensure the tool acceptable and applicable in pharmaceutical industry. In order to complete risk assessment process, the validation was continued to combine the estimated severity level and the likelihood of a dust explosion occurrence that has been developed by previous study.

*Keywords: Dust Explosion, risk assessment, severity, safety.*

## DEDICATION

I dedicate this works to God and my family.

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