DEVELOPING OBJECT-ORIENTED AND PETRI-NET MODELS FOR DISTRIBUTION AND TESTING STATIONS OF MODULAR PRODUCTION SYSTEM (MPS) OF THE SGU'S FESTO FMS 102

By

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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, not material which to a substantial extent has been accepted for the award of many other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

DEVELOPING OBJECT-ORIENTED AND PETRI-NET MODELS FOR DISTRIBUTION AND TESTING STATIONS OF MODULAR PRODUCTION SYSTEM (MPS) OF THE SGU'S FESTO FMS 102

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This thesis project is aimed for introducing software development technique for the existing Festo didactic Flexible Manufacturing System (FMS) 102 Automatic Storage and Retreival System (AS/RS) which is available in SGU and currently not working due to software expiration. System understanding and identification for the components in the system are needed in the creation for software design of which the design is structured as interaction of objects in the system.

Object Oriented Modeling, which can be created using UML modeling language, and Petri-Net Modeling are introduced and used for modeling the complex system from Distribution and Testing Station system of the Festo FMS 102 AS/RS. Approach to code generation capabilities will be reviewed as an introduction for further research on the application development.

This research will create design in the form of Flowchart model, Petri-Net model, use case diagram, class diagram, sequence diagram, activity diagram, and state diagram which represent the Distribution station and Test station systems. Results from this thesis work can be further studied and continued afterwards for modeling the whole station of the Festo FMS 102 AS/RS.

Keywords: Festo, FMS 102, Object Oriented, Petri-Net, UML Modeling

DEDICATION

I dedicate this thesis to my beloved parents, my grandparents, my brother, my thesis advisor and co-advisor, and my friends that have been very supportive every time.

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Lastly, the author offers regards and blessings to his family, friends from Industrial Engineering 2007 and to those who have supported the author in any way throughout the process of writing this thesis. Last but not least, the author's deepest gratitude goes to his family for their love and support throughout his life as this thesis is impossible to be finished without them.

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