

**DEVELOPING SIMULATION AND MODELLING SYSTEM IN ENERGY  
SUPPLY USING WEB BASED APPLICATION**

By

Mohammed El Faza  
11402015



SWISS GERMAN UNIVERSITY  
The Prominence Tower  
Jalan Jalur Sutera Barat No. 15, Alam Sutera  
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**Revision after the Thesis Defense on July 17<sup>th</sup> 2018**

## 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.

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## ABSTRACT

### DEVELOPING SIMULATION AND MODELLING SYSTEM IN ENERGY SUPPLY SYSTEM USING WEB BASED APPLICATION

By

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An energy supply system is a system of power plants that supplies electrical energy. To simulate the energy supply system, a detailed calculation is required. Currently, the system simulation was done in excel because the software that provide a calculation of the energy supply system is hard to find. The objective of this thesis is to design and to implement a web-based application for simulating energy supply systems using Laravel framework. This thesis focuses on six modules which are geothermal energy, solar energy, biopower, hydropower, storage, and fossil-based energy. The development of the software is divided into four steps which are the definition of the user requirements, the system design (activity, use case, system architecture, and ERD), the software development, and software testing (unit testing, functionality testing, validity testing, and user acceptance testing). The software is successfully implemented. All the features of the software work perfectly as it should be and the software is acceptable for doing the energy supply system simulation. Also, the software goes through validity testing using three different input data, to make sure the software is accurate. The result of the testing is 100% accurate.

*Keywords: Energy Supply System, System Analysis and Design, Software Engineering, Software Development, Software Testing, Web-Based Application.*



## DEDICATION

I dedicate this works for the future of the country I loved: Indonesia and my family.



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