UNIVERSITI TEKNOLOGI MARA

DEVELOPMENT OF VIRTUAL ASSEMBLY LAYOUT WITH MODELING LANGUAGES APPROACH AND SIMULATION USING DELMIA™ QUEST®

NORHIDAYAH BINTI MOHAMAD

Thesis submitted in fulfillment of the requirements for
the degree of
Master of Science

Faculty of Mechanical Engineering

December 2011

AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any other degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research,

Name of Candidate   :   Norhidayah Binti Mohamad

Candidate's ID No.   :   2007131345

Program   :   Master of Science Mechanical Engineering

Faculty   :   Faculty of Mechanical Engineering

Thesis Title   :   Development of Virtual Assembly Layout with

Modeling Languages Approach and Simulation Using

Delmia™ Quest®

Signature of Student :   ....

Date :   22nd December 2011

ABSTRACT

The development of virtual model fabrication in this thesis is focusing on manufacturing assembly layout model using modeling languages approach, which are Simulation Control Language (SCL) and Batch Control Language (BCL). SCL is a procedural language in files logic program outlining the development structure of manufacturing layout while the BCL supports the layout by reading the modified model parameters, running the simulation, and providing visual control. This thesis also explores the flexibility of the Layout Data file developed using SCL and BCL approach to drive the Virtual Assembly Layout (VAL) model configurations through simulation and the development process of database for storing and representing the VAL model. The concept and mechanisms of Manufacturing Information (MI) development involves the use of eXtensible Markup Language (XML). The objectives of the research are therefore to obtain a basic understanding on how these modeling languages are used to develop virtual model and demonstrate the model capability of representing the simulation by using Delmia™ QUEST®. Therefore, it can be concludes that the generated simulation demonstrates the feasibility of interchanging models using modeling language approach as an intermediate representation and provides an opportunity to improve simulation quality.

ACKNOWLEDGEMENT

TABLE OF CONTENTS

CHAPTER ONE: INTRODUCTION

CHAPTER TWO: REVIEW OF THE LITERATURE