

# Set up, model and run of a test bed production site in the Transfact ERP-System, with a subsequent simulation in AnyLogic

## Introduction

In the current era and with the outbreak of the Industry 4.0, the implantation of a test bed plant has changed. To analyze and evaluate a test bed plant different tools can be used, in this case the Transfact ERP system and the AnyLogic software. Thanks to the Transfact ERP one can prove that the planning and the management of the test bed can be possible, and thanks to the AnyLogic software a simulation, to prove that the products can be build in the test bed plant, can be build. Moreover, the simulation will provide the ability to accept, change or eliminate some sequences in order to decrease the production costs of the produced products.



## General information

The test bed plant, already build, has three production areas with three different robots, one automated warehouse, one Input/outcome zone and the quality check point. It can produce three kind of products, and each of those requires different processes to be build. The products are:

- **Lighthouse.** Requires six stones and three robots to be build.
- **Small Tower.** Requires three stones and two robots to be build.
- **Crane.** Requires five stones and two robots to be build. It is worked two times in the robot 1.

	Base Material	Robot 1	Robot 2	Robot 3
Product 1: Lighthouse		3 → 2 → 1		
Product 2: Small Tower		2 → 1		
Product 3: Crane		1 → 3		2

PRODUCTS	NUMBER PIECES MOVED	TIME PER PIECE (S)	NUMBER PROCESSES REQUIRED	TIME FOR SET UP (S)	VARIABLE TIME FOR EXTRA OPERATIONS (S)	TOTAL TIME (S)	TOTAL TIME
LIGHTHOUSE	6	30	3	30	45	315	5.15
SMALL TOWER	3	30	2	30	45	195	3.30
CRANE	5	30	3	30	45	285	4.45
AVERAGE	4,67	30	2,67	30	45	265	4.30

## Transfact ERP-System

Nowadays ERP Systems are an essential tool to define and organize a business. It helps to control and effectively plan an organization. It can be applied in several areas: financial, project management or even human resources.

Resources	Articles

Production areas	Routing steps	BOMS

## AnyLogic

The AnyLogic program is a powerful program capable to simulate a huge range of events and environments. In this project, the method used is called **“Discrete event modelling”**.

The discrete event modeling method allows us to represent continuous changes by dividing this changes in a sequence of little changes that can be modeled more easily.

## Conclusion

- The different product sequences to build the different products can be applied in the test bed.
- A general planning and management of the test bed has been possible thanks to the Transfact ERP-system.
- The simulation in the AnyLogic system has proven that the different products, which have their owns sequences, can be build in the test bed plant.
- The possibility to eliminate the warehouse, to reduce the costs of storage, could be a possible routing optimization.

## Bachelor Thesis

Author: Pol Navarro Monterde (7008352)  
 Date: Summer Semester 2016  
 Study course: Bachelor in Industrial Technologies  
 First supervisor: Prof. Dr.-Ing. Agnes Pechmann  
 Second supervisor: Prof. Dr. Armando Walter Colombo

## References

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