

Lean Factory

The Lean Simulation Game

The rules and guidelines

World-Class Standards of Operational Excellence

WORLD CLASS

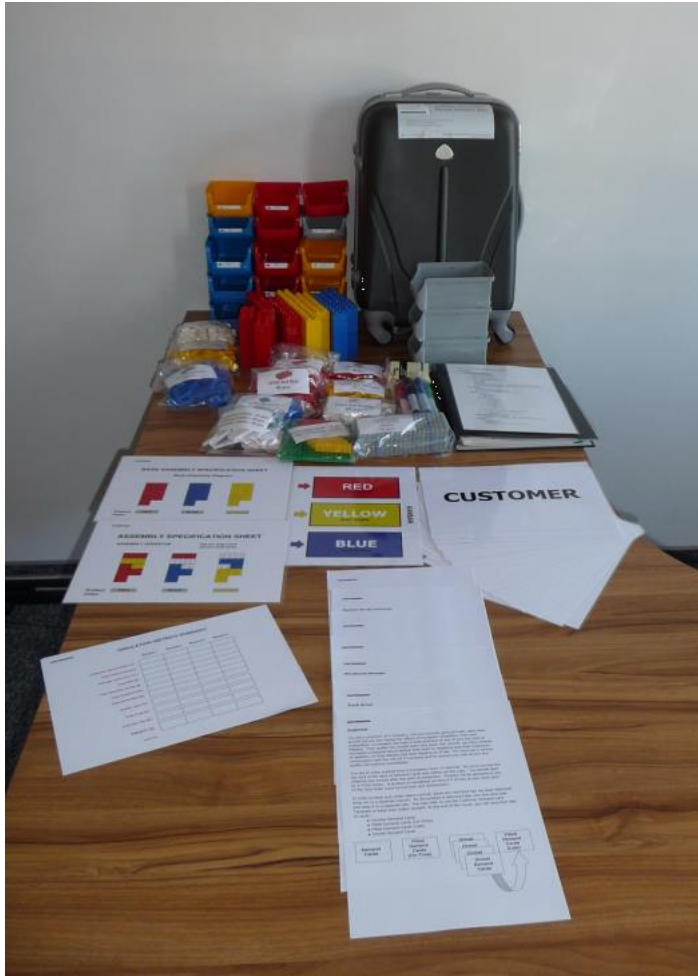
Lean Simulation Game

- This is the best way of getting started with the implementation of LEAN Philosophy and Culture.
- The game offers a lot of fun and fosters team working!
- This is a universal game, entirely reflecting real life production conditions.
- The simulation includes such processes like planning, manufacturing process, changeovers, materials flows, warehouse, shipping, supplier & customer issues, etc.
- The primary objective of the game is to lead a seamless transformation from a traditionally managed company to a LEAN factory.
- As a result of developing solutions for improvement and implementing LEAN techniques, participants will be directed towards the main goals of the game: achieving a **100% customer satisfaction** and making the company “rightsized” to obtain **operational profitability!**



Lean Simulation Game

Content of the set





LEAN MANAGEMENT ACADEMY



Welcome to ...

The rules of the game

World-Class Standards of Operational Excellence

Lean Simulation

The rules

Lean Simulation

The Widget Company



In this manufacturing simulation, you are to assume the role of a production team building various colored widgets for your customer. The object of the game is to best satisfy your customer with the lowest possible cost.

There are three main production processes in the simulation:

- Base Assembly
- Product Assembly
- Heat Treat

There are also 2 additional processes:

- Inspection
- Warehouse

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Lean Simulation *The Widget Company*



Your production team is composed of the following positions:

1. Plant Manager
 2. Process Improvement Engineer
 3. Warehouse Manager
 4. Quality Inspector
 5. Heat Treat Operator
 6. Assembly Operator
 7. Base Assembly Operator
 8. Machine Set-Up Technician
 9. Master Scheduler
 10. Buyer
 11. Material Handler
 12. Tool Crib Supervisor
 13. Truck Driver
- and:
14. Customer
 15. Supplier

**** Each position has its own set of directions that the team member MUST follow !**

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Lean Simulation *The Widget Company*



Game Directions:

The production flow follows only one route and all products are made on first in/first out basis. There are 3 products that your facility manufactures; RED, BLUE and YELLOW widgets. These are made from Duplo blocks and 2 different size Lego bricks with the color of the product referring to the color of the base Duplo block.

Your team will be permitted to make a few practice pieces before the simulation gets started. Each team will complete the game with one round in where there are no changes to the manufacturing system. This will establish the baseline by which to judge performance improvements over subsequent rounds.

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As the first round begins, there will be WIP in the system as follows:

Warehouse:

- 5 REDS, 3 BLUES, 3 YELLOWS of finished product
- 10 REDS, 5 BLUES, 5 YELLOWS of Base Block Duplos

Heat Treat:

- 1RED, 1 BLUE, 1 YELLOW; (waiting to be treated)

Base Assembly:

- 5 REDS, 3 YELLOWS, 3 BLUES

Assembly:

- 2 REDS, 2 BLUES, 2 YELLOWS, (not yet completed)

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Based on current market conditions, customer demand is forecasted at a product mix of 2:1:1 for RED, BLUE & YELLOW. However, the sequence of demand is not known. Actual customer requests will be simulated through the use of a deck of Customer Demand Cards. Customer will be demanding product at a rate equal to normal production. If the product is in stock, it is shipped immediately to the customer by the Truck Driver. If it is not in stock, it is supplied as soon as stock becomes available.

Each round will last 12 minutes.

All member of the Production Staff should work at a normal, steady pace throughout the rounds. You should not deliberately work faster in any one round. Constant, sustained performance over all rounds is more important than individual operator working speed.

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When the game begins, the Master Scheduler will issue a work order based upon the Master Schedule to the Machine Set-Up Technician.

The Technician uses the work order to determine which color product should be assembled. After the schedule requirements for a certain color have been completed, the Machine Set-Up Technician then takes apart the tooling on the machine and prepares the machine for the next color on the schedule. No product can be made until all tooling is back in place.

The Base Assembly Operator will then assemble the base of the product according to the Base Assembly Specification Sheet located at the work station. When the Base Assembly Operator runs out of Base Blocks, they will yell “Parts”.

A Truck Driver will arrive to determine the quantity and color of Base Blocks that are needed. He will go to the Warehouse, get the needed Base Blocks and deliver them to the Base Assembly Operator on a skid.

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Once the product has been pushed to Assembly, the Assembly Operator then completes the product according to the Assembly Specification Sheet.

Once a product has been fully assembled, it is passed onto Heat Treat.

Heat Treat is an 8-cavity oven that requires 80 seconds to Heat Treat the product. The Heat Treat Operator must time the oven cycle and then pass the completed product onto the Inspector.

The Inspector examines all products and returns any defects to the Base Assembly area for the appropriate rework. Once units are reworked, they must go back through all processes again.

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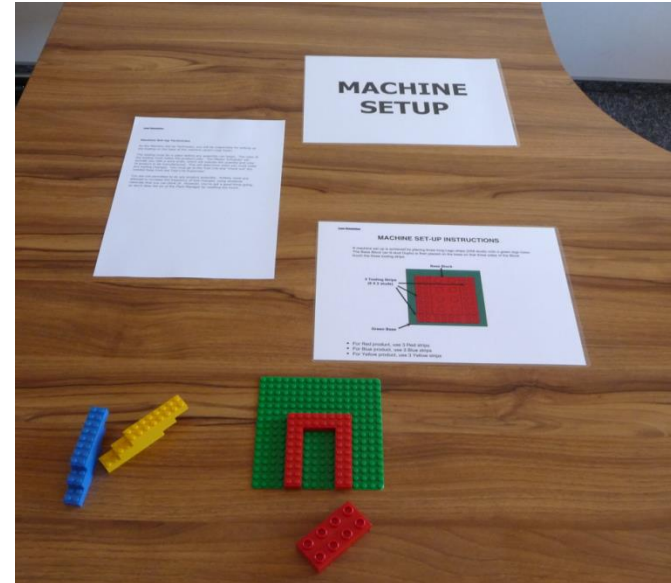
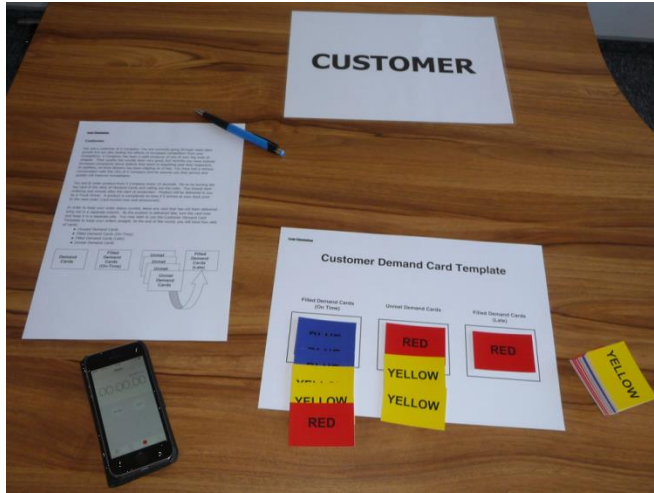
The Supplier, (The Big Block Company) will allow you to work on consignment all of the small Lego bricks that you need although you will have to order the Base Blocks (Duplos).

The Warehouse Manager is responsible for storing a small inventory of the Base Blocks. When the Warehouse runs out of Base Blocks, the Warehouse Manager submits a Materials Requisition to the Buyer.

Once the Buyer Receives the Materials Requisition, they will give the Supplier a Purchase order for the Duplo bricks in order to replenish your inventory. The Supplier will ship the needed Base Blocks to the Warehouse.

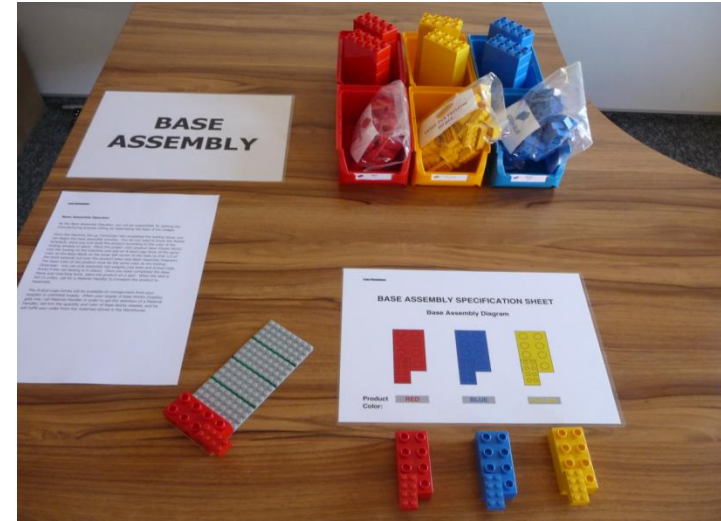
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Work stations layout & instructions for setup (1)



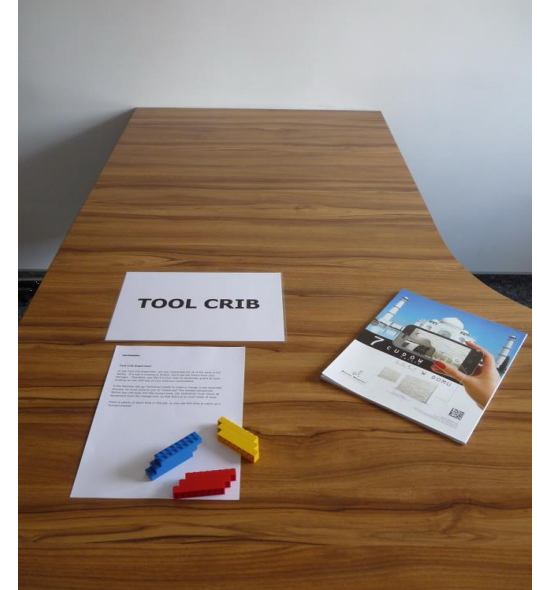
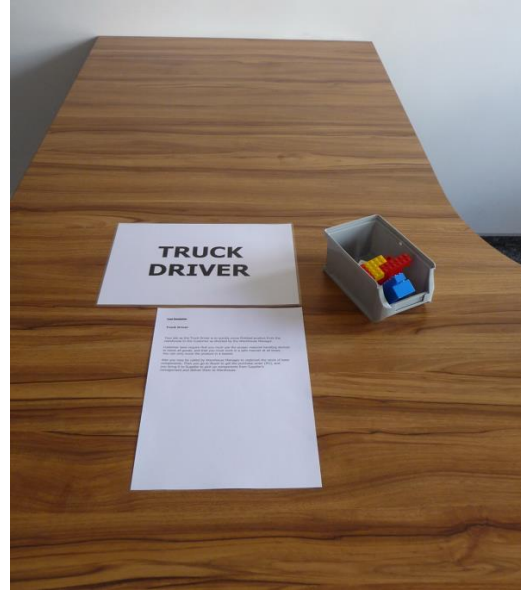
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Work stations layout & instructions for setup (2)



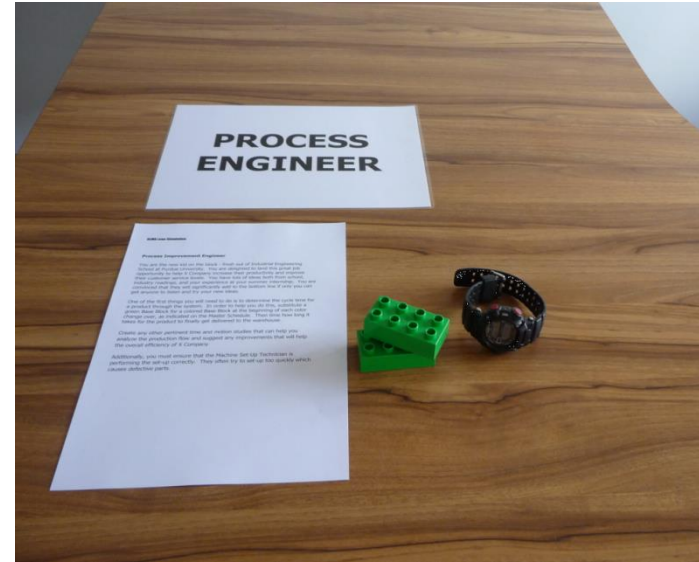
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Work stations layout & instructions for setup (3)



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Work stations layout & instructions for setup (4)



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Thank you!

