Introductions

- Name
- Company
- Position
- Expectations
- Favorite Movie
Instructors Background:

- **Jacob McKenna** has been involved with Lean manufacturing for over two years with Hoover and Strong. He was certified as a Lean Six Sigma Green Belt from Virginia Technical Institute. He has participated in numerous Lean events such as Kaizen, Five S, Training within Industry, JI, JR, JM, Value Stream Mapping, and A3 training.

- **Seaver Woolfolk** is the current events chair for VBEC. He also holds the Safety & Five “S” Coordinator position for Super Radiator Coils. He has lead multiple Kaizen events, Five “S” projects and other Lean events. He has also completed train the trainer courses for both OSHA Safety & Kaizen Facilitator.
Time Line of Today’s Events.

Agenda

☐ 9:00am Networking

☐ 9:30am Introduction

☐ 10:00am Simulation
  ☐ Break between Round 1 & 2

☐ 12:00pm Lunch
What is Lean?

- Lean is a management philosophy based on a system of tightly-coupled practices organized to deliver value with the lowest possible amount of waste.
Why should you Embrace Lean?

- Control Costs
- Improve Productivity
- Improve Quality
- Improve the workplace
- Improve Morale
- Improve Employee engagement
Lean Building Blocks

Continuous Improvement

- Pull/Kanban
- Cellular/Flow
- TPM
- Quality at Source
- POUS
- Quick Changeover
- Standardized Work
- Batch Reduction
- Teams
- 5S System
- Visual
- Plant Layout
- Value Stream Mapping
Waste or “muda” is defined as anything that uses resources (money, time, or space) but does not provide value.

- The eight wastes commonly identified in a production environment are:
  - Overproduction
  - Waiting time
  - Unnecessary transportation
  - Extra processing time
  - Excess inventory
  - Excess motion
  - Defects
  - Underutilization of people’s skills
Overproduction

Overproduction happens when:

- Making more than is required by the next process
- Making earlier than is required by the next process
- Making faster than is required by the next process
- Producing more than the customer needs right now
Excess Inventory

Excess raw material, work in process, or finished goods causing longer lead times, obsolescence, damaged goods, transportation and storage costs, and delay. Also, extra inventory hides problems such as production imbalances, late deliveries from suppliers, defects, equipment downtime, and long setup times.
Defects

- Defects - Work that contains errors, rework, mistakes or lacks something necessary.

- Any time material is inspected and repair of material is required, it is considered as a defect.

- Examples of defects include:
  - Scrap
  - Rework
  - Correction because of design changes
  - Field failure
  - Variation, or differences noted in the same type of product
  - Missing parts
Waiting Time

Waiting Waste is described as:

- Idle time created when material, information, people, or equipment is not ready when it is needed.
- It is acceptable to wait when product is not needed. It is better to do nothing than to produce product that is not ready to be received by the next process step.

Examples of waiting waste include:

- Waiting for parts
- Waiting for prints
- Waiting for inspection
- Waiting for machines
- Waiting for information
- Waiting for machine repair
- Waiting for the next job assignment
Transportation Waste

Transportation Wastes is described as:

- Movement by machine or person of product that does not add value to manufacturing process.
- Examples
  - Carrying parts in and out of storage.
  - Moving material from one workstation to another
  - Shipping product to a warehouse and then to the customer
  - Cycling product in the warehouse in order to maintain shelf life requirements.
Over Processing

Is defined as:

- Effort that adds no value to the product or service from the customers' viewpoint
- Effort that adds no value from the customer’s viewpoint
- Referred to as Non-Value added activities

Some examples of Process waste are:

- Multiple cleaning of parts
- Paperwork
- Over-tight tolerances
- Awkward tool or part design
- Raw material too large requiring extra machining
**Motion waste**

Any movement of people or machines that does not add value to the product or service.

- **Examples**
  - Searching for parts, tools, prints, etc.
  - Sorting through materials
  - Reaching for tools
  - Lifting boxes of parts
  - Searching for parts, tools, prints, etc.
  - Repeated stooping, twisting, bending or and other motion that is repetitive and can cause injury after time.
People Waste

Described as:

- The waste of not using peoples' mental, creative, and physical abilities to their maximum potential.

Examples of People Waste:

- Training people in lean methods and not allowing them to serve on a Continuous Improvement team.
- Placing someone with a technical background in an assembly line position.
- Failing to implement improvement suggestions offered by the Process Operators.
Five “S” System (5S) –

A methodology for organizing, cleaning, developing, and sustaining a productive work environment consisting of five component parts: Sort, Set in Order, Shine, Standardize, and Sustain.

The 5S system is the basis for starting and continuing a transformation to a truly lean organization.
Five “S”

- **Sort** – Distinguishes needed items from unneeded items and removes the latter – get rid of clutter.
- **Set in Place** – Organize a work area for the maximum possible efficiency.
- **Shine** – To thoroughly clean a work area
- **Standardize** – Details a plan to maintain the continual improvement activities.
- **Sustain** – Maintain through empowerment, commitment, and discipline. Involves workers in the planning of how to maintain what has been accomplished.
The VBEC Toy Company is a third generation business started by Jacob’s Grandfather. Originally, VTC created wooden toys. Throughout the years the company’s focus has shifted from old world to current trends. Jacob and this current team created the Robots that you will be building today and selling them throughout the world.
VBEC Toy Company (VTC)

Order Entry:

- Reference the Country Name on the Country Sheet
- Write the corresponding destination number on the sales ticket.
- Capture the start time.
- They will also initial the sales ticket.

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<th>PO #</th>
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<tr>
<td>Country</td>
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VBEC Toy Company (VTC)

Currier: They will perform all of the movement of the materials to and from the operators and order entry. They are the only one trained on the transportation of goods.
Base Assembly:
This operator will assemble the bottom of the robot. It’s legs and feet is four rows high.

*Colors may differ in real life
Middle Assembly:
This operator will assemble the middle of the robot. It’s torso, arms and hands are two rows high.

*Colors may differ in real life*
VBEC Toy Company (VTC)

Top Assembly:
This operator will assemble the top of the robot. It’s head is four rows high.

*Colors may differ in real life
VBEC Toy Company (VTC)

Inspector:
They will capture and document the information on the Inspection sheet.

*see below for information

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Data / Metrics

Car Data

- Fuel Gauge
  - Fuel Level
- Service Engine Light
  - Fix Car
- Oil Light
  - Needs Oil
- Odometer
  - How Many Miles
- Temperature
  - Engine Temperature
- Speedometer
  - Speed Of Car
Ideas
Spaghetti Diagram
Spaghetti Diagram
Standard Work

- Standardized work is one of the most powerful but least used lean tool. By documenting the current best practice, standardized work forms the baseline for kaizen or continuous improvement. As the standard is improved, the new standard becomes the baseline for further improvements, and so on. Improving standardized work is a never-ending process.
Five “S”
Break
Data
Ideas
Value Add / Non-Value Add

- VA or Value add is what the customer is willing to pay for.
- NVA or Non-Value Add is waste, defects, waiting, etc... The customer is not willing to pay for this.
- BVA or Business Value Add is what process that is done or captured that you need to run the business.
Five “S”
One Piece Flow
Data
Examples of 8 Wastes

- Overproduction
- Waiting time
- Unnecessary transportation
- Extra processing time
- Excess inventory
- Excess motion
- Defects
- Underutilization of people’s skills
LUNCH

Catering by Ukrop's

About Menu Order
Six Sigma Belts

- **Yellow Belt (White)**
  - Basic knowledge, involved in implementation but have other duties, and are not on a Management level.

- **Green Belts**
  - Worker Bees of Six Sigma, may have other duties in addition to leading projects.

- **Black Belt**
  - Mentor, Leaders, change Managers. May not have other duties unless a Master Black Belt is on staff.

- **Master Black Belt**
  - Highest Level of experience, fully devoted to the process, not other job responsibilities outside of methodology. Involved in all Mentoring and process improvement.
Continuous Improvement Positions.

- Continuous Improvement Coordinator Manager, Director.
- Quality Control, Five “S” Leader, Manager.
- Lean Six Sigma Support Analyst.
- Performance Improvement Specialist.
- Lean Coach. Lean Sensei.
Resources

- VBEC
- AME
- Genedge
- Center for Cooperate Education at VCU