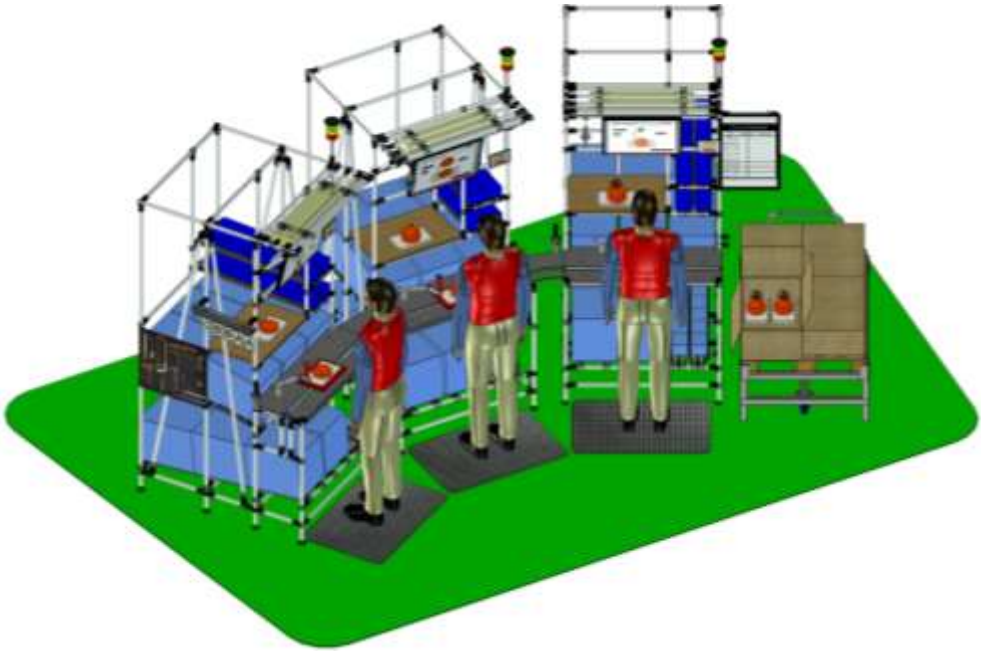
4LEAN

Services



4LEAN Engineering

4LEAN School

4LEAN Workshops

Vol. III

We Build Lean

Index

|Índice | Indice | Índice | Index

Index

|Índice | Indice | Índice | Index

Index

|Índice | Indice | Índice | Index

About us

4Lean is a company dedicated to the creation and implementation of Lean solutions. We have a vast knowledge in Lean, we are able to implement a full supply chain with our vast portfolio that is developed in our Lean Lab.

All organization practice Lean everyday. We have regular training in Lean and we participate in Kaizen Events to understand customer needs.

We believe our *gemba* is at customer site, we are a natural extension of your organization.

4Lean é uma empresa dedicada à criação e implementação de soluções Lean. Temos um vasto conhecimento em Lean, somos capazes de implementar uma cadeia de fornecimento completa com o nosso vasto portfólio que é desenvolvido no nosso Laboratório Lean.

Todos na organização praticam Lean diariamente. Temos uma formação regular em Lean e participamos em eventos Kaizen para entender as necessidades dos clientes.

Acreditamos que o nosso gemba está à vista do cliente, somos uma extensão natural da sua organização.

4Lean è una società dedicata alla creazione e implementazione di soluzioni di Lean. Abbiamo una vasta conoscenza in Lean e siamo in grado di implementare una catena di approvvigionamento grazie alla nostra vasta gamma sviluppata nel nostro Lean Lab.

Tutta la nostra organizzazione, pratica Lean tutti giorni . Abbiamo formazione regolare in Lean e partecipiamo a cantieri Kaizen, eventi per capire al meglio i nostri clienti.

Crediamo che il nostro gemba è presso il cliente, siamo una naturale estensione della vostra organizzazione.

4Lean es una empresa dedicada a la creación e implementación de soluciones de Lean. Contamos con un amplio conocimiento en Lean, somos capaces de implementar una cadena de suministro completa con nuestro amplio catalogo que se desarrolla en nuestro Laboratorio de Lean.

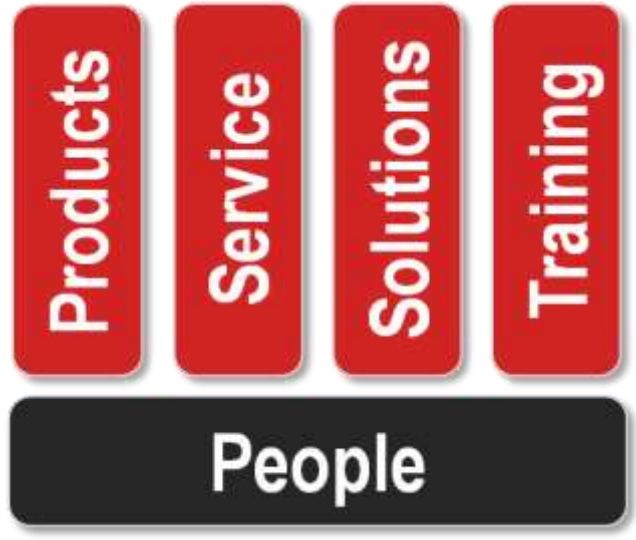
Todos en la organización practicam Lean diariamente. Tenemos una formación regular en Lean y participamos en Kaizen Eventos para entender las necesidades del cliente.

Creemos que nuestra gemba está en el sitio del cliente, somos una extensión natural de su organización.

4Lean est une société dédiée à la création et la mise en œuvre de solutions Lean. Nous avons une vaste connaissance dans Lean, nous sommes capable de construire une chaîne d'approvisionnement complète avec notre vaste portefeuille qui est développée dans notre Lean Lab.

Tout l'organisation pratique Lean quotidienne. Nous avons régulièrement des formations Lean, nous participons à chantier Kaizen pour comprendre les besoins des clients.

Nous croyons que notre gemba est le site du client, nous sommes un prolongement naturel de votre organisation



We Build Lean !

Services Areas

Create skills in your organization in order to have a successfull lean implementation

4LEAN School

We support Lean Implementation at your site: design, installation, process reliability and maintenance

4LEAN Workshops

Have at your service 4lean's engineering, manufacturing and testing capability

4LEAN Engineering

Work Areas

Operations

Solutions

Design

Safety

4ean CAD

Scope Areas

Workstation

Logistic Train

Supermarket

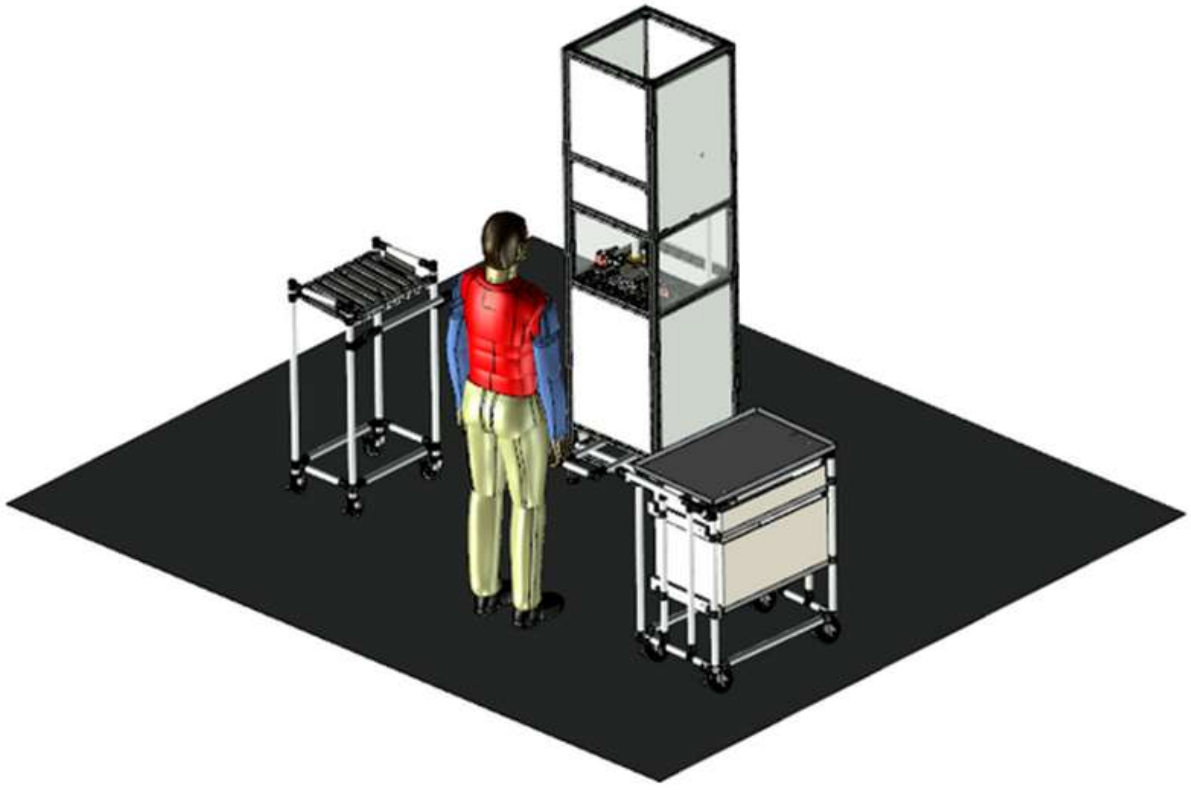
Warehouse

External Logistic

Lean Management

Our Value Proposition

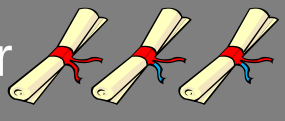
Green Field	Factory Layout
Kaizen Area Support	Bulk
Webstore	Visual Bulk
Solution	Structure
Lean Managment Solutions	Visual Structure
Lean Lab	Development
Forklift Free Enviroment	Logistic Train
Dealer Development	Dealer



Create skills in your organization in order to have a successful lean implementation

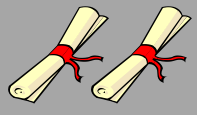
Certification Courses

Lean Engineer



- Supply chain flow design
- Functional design

Lean Technician



- Kaizen area coordination
- Solutions design

Lean Builder

- Lean solutions assembly
- Structural design (static and dynamic structures)
- Structure inspection
- Structure maintenance

Lean Builder

- Lean solutions assembly
- Structural design (static and dynamic structures)
- Structure inspection
- Structure maintenance

Session 1

- Assembly Training
- Designing static structure, pipe sizes and loads
- Building static structure (homework)

Session 2

- Inspection of the static structure
- Filling the structure lifetime file, for static structure
- Designing dynamic structure (homework)

Session 3

- Inspection of dynamic structure
- Filling the structure lifetime file, for dynamic structure
- Maintenance structure system

- **Available** (12 hours per each product family)

4Lean Aluminium | 4Lean MODULAR | 4Lean Aluminium+ | 4Lean System | 4Lean System+ | 4Lean Mockup

Lean Technician

- **Kaizen area coordination**
- **Solutions design**

Session 1

- **Kaizen Area Set-up I**
- **Kaizen Area Set-up II**
- **Organize the area in order to allow for picking, feeding, cutting and assembly (homework)**

Session 2

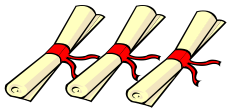
- **Solution Training**
- **Making a Lean Project (homework)**

Session 3

- **Installation Training**
- **Structure Quality Control**
- **Structure Maintenance Training**

- 12 hours
- Priors: Lean Builder

Lean Engineer



- **Supply chain flow design**
- **Functional design**

Session 1

- **Supply Chain Design**
- **Designing Supply Chain (homework)**

Session 2

- **Workstation Simulation & Design**
- **Designing workstation (homework)**

Session 3

- **Logistic Train Simulation & Design**
- **Designing logistic train (homework)**

- 12 hours
- Priors: Lean Technician

Operations

Assembly Training

Impact areas

↑ Ergonomy ↓ Cost

↑ Productivity ↓ Defects

Goals

- Understand how to build safe structures
- Understand how to assemble parts

Content

- Assembly Guide:
  - Tips
  - Safety Building
  - Necessary Tools
  - Standard Designs

Available

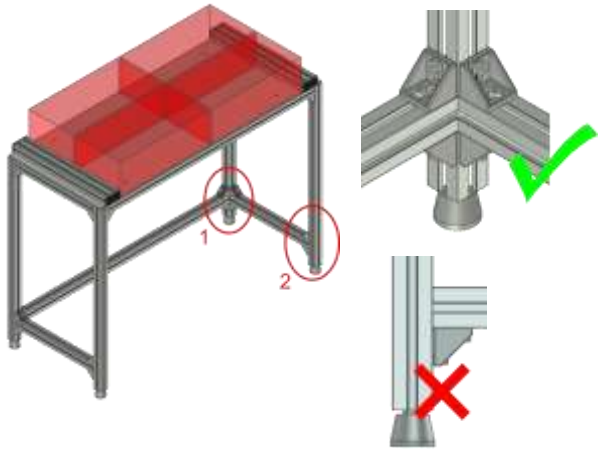
4Lean System | 4Lean System+ | 4Lean Mockup

4Lean Aluminium | 4Lean MODULAR | 4Lean Aluminium+

Operators, Process engineers, Lean engineers, Times & methods, Logistic Engineers

4 Hours (Per product family)

Quick Structural Design 4lean Aluminium +



- **Goals**
  - Understanding how safe structures are built with 4lean materials
  - The best practices for having safe structures

- **Content**
  - Struttural Guide:
    - Tips
    - Safety Building
    - Necessary Tools
    - Standard Designs

Operators, Process engineers, Lean engineers, Times & methods, Logistic Engineers

4 Hours (Per product family)

Advance Assembly Training

- **Impact areas**

↑ Ergonomy ↑ Safety ↓ Cost

↑ Productivity ↓ Defects

- **Goals**
  - Understand how to build karakuri
  - Understand the dynamic mockup karakuri
  - Mockup and simulation

- **Content**

- **Basic concepts Karakuri**
  - Gravitational forces
  - Elastic forces
  - Slides (sliding surfaces)
  - Counterweight

- **Available**

4Lean System | 4Lean System+ | 4Lean Aluminium | 4Lean Aluminium+ | 4Lean MODULAR

Assembly Training

Operators, Process engineers, Lean engineers, Times & methods, Logistic Engineers

8 Hours (Per product family)

Foam Scanning Training

Tools Required

- Scanner suitcase
- Camera
- Instruction manual for scanning
- Camera charger

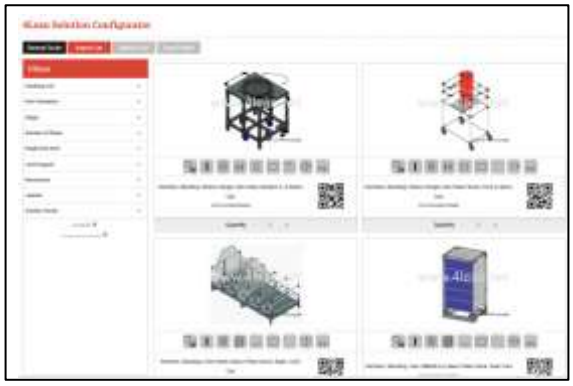
Content

- Tool positioning tips
- Scanner quality check
- Software Training
- Quality Check
  - Required external dimensions
  - Layout control

1 Hour

Solutions

Quick Solution Training



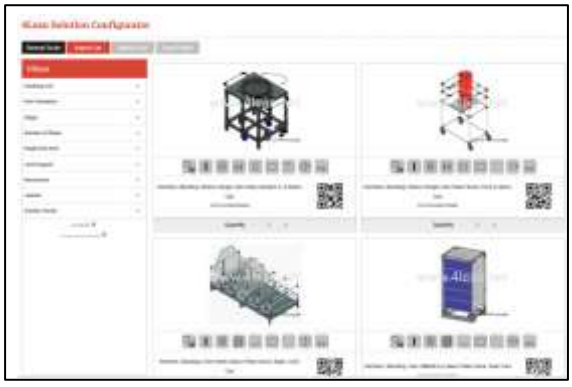
Content

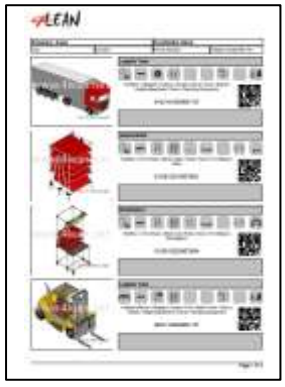
- Solution
  - Smart Working tool
  - Smart Consulting
  - Smart Training
  - Design service
  - Wood Working
  - 3D Printer
  - Metal Working
  - Lean
  - Wheel test
- Idea
  - Mouck UP
  - Workshop
- Implementation Speed
  - Assembly
  - Bulk
  - KIT
  - Lab Customized

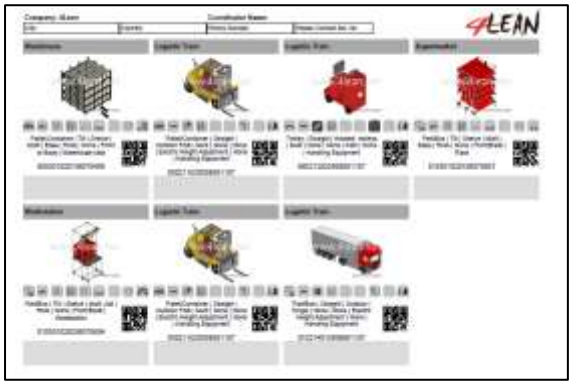
Process engineers, Lean engineers, Times & methods, Logistic Engineers

1 Hour

Solutions Training







Content

- Line Feeding
  - Kanban
  - Junjo Sequence
  - Junjo Kit
- How to create a solution
  - Handling Units
  - Part orientation
  - Movements
  - Solution Family
- Workstation Optimization
  - Types of Production (Small Parts, Medium Parts ,Machine, Large Parts)
- Logistic Trains
  - Types of wagons
  - Wagon Challenges (Drift, Drag, Stability)
- Supermarkets
  - Boxes
  - Trolleys
  - Containers
- Warehouse and External Logistics
  - How to integrate them in logistic trains concept

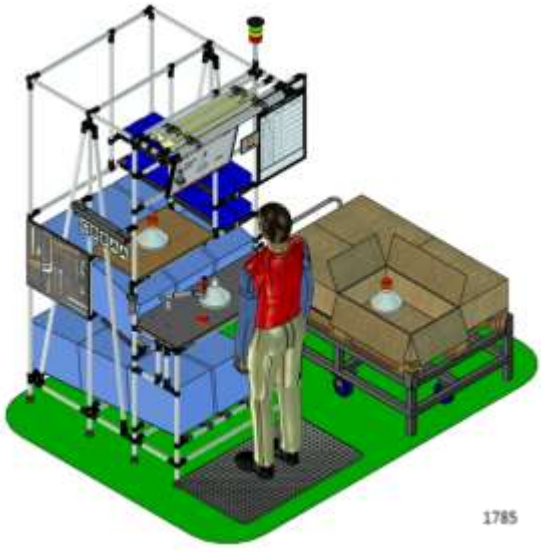
Quick Solution Training

Process engineers, Lean engineers, Times & methods, Logistic Engineers

8 Hours

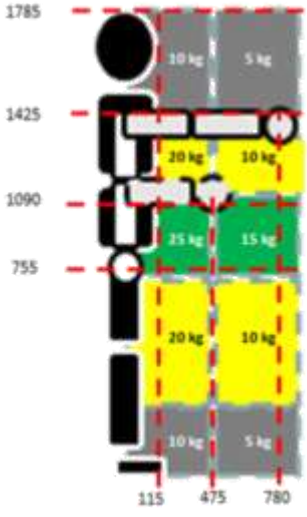
Design

Workstations Small Parts Design



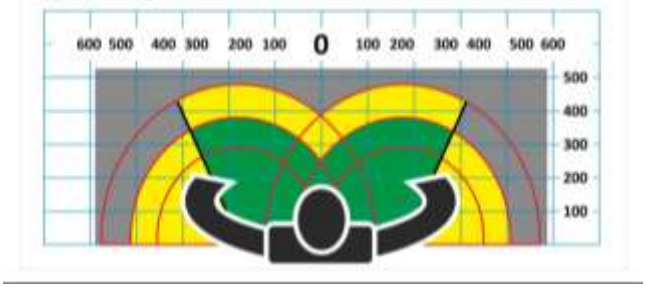
Goals

- Design workstations
- Workstations ergonomics



Content

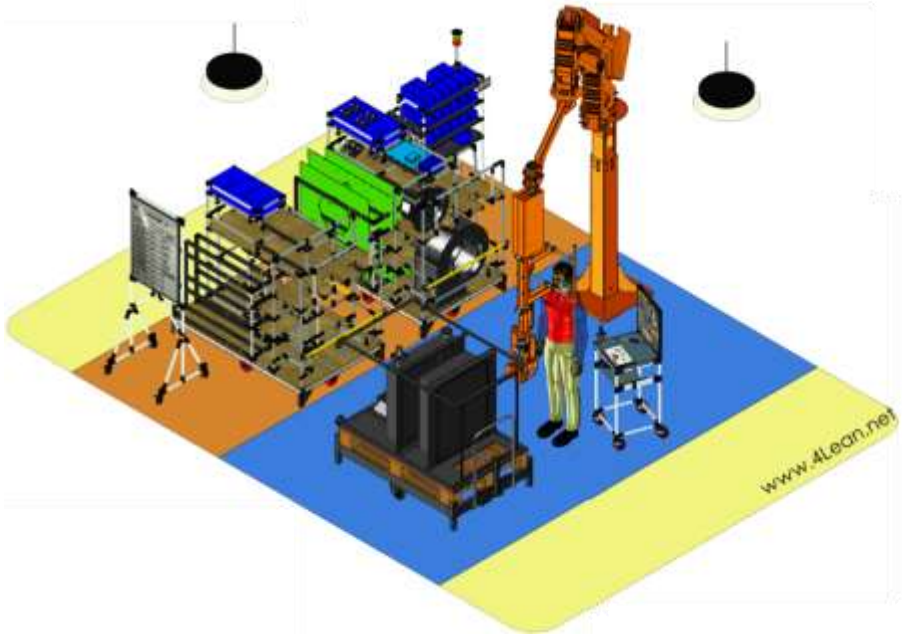
- Workstations design
- Border of the line design
- Mockup
- Ergonomics
- Strike zone
- Golden zone
- Structural dimensioning



Process engineers, Lean engineers, Times & methods, Logistic Engineers

8 Hours

Workstations Large Parts Design



Goals

- Design of workstations large parts
- Workstations ergonomics

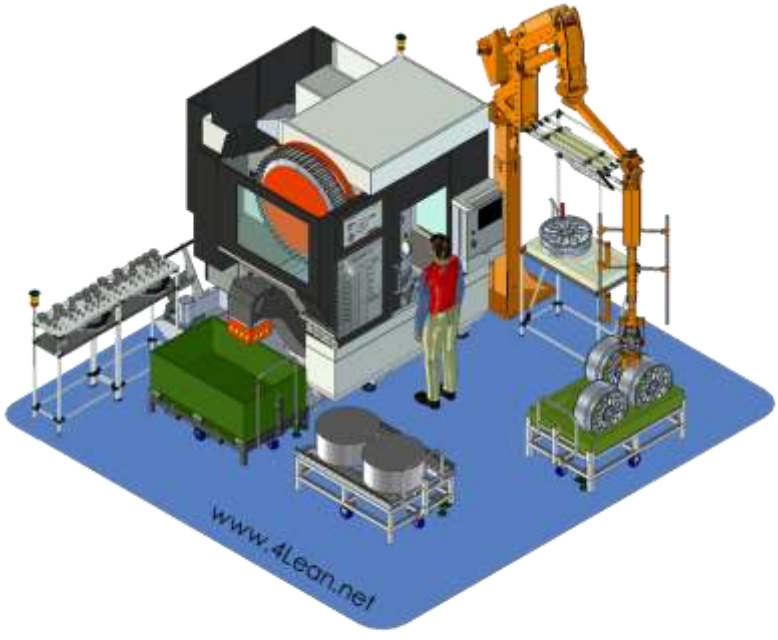
Content

- Workstations design (Fixtures, support pannel)
- Border of the line design (sequence, kit and kanban)
- Mockup
- Ergonomics
- Strike zone
- Golden zone
- Structural dimensioning

Process engineers, Lean engineers, Times & methods, Logistic Engineers

8 Hours

Workstations Machine Design



Goals

- Project and design of workstations
- Workstations ergonomics

Content

- Workstations design
- Border of the line design
- Mockup
- Ergonomics
- Strike zone
- Golden zone
- Structural dimensioning

Process engineers, Lean engineers, Times & methods, Logistic Engineers

8 Hours

Logistic trains Design

Goals

- Project and design of logistic trains
- Logistic trains ergonomy
- Understand the different types of logistic trains advantages and disadvantages

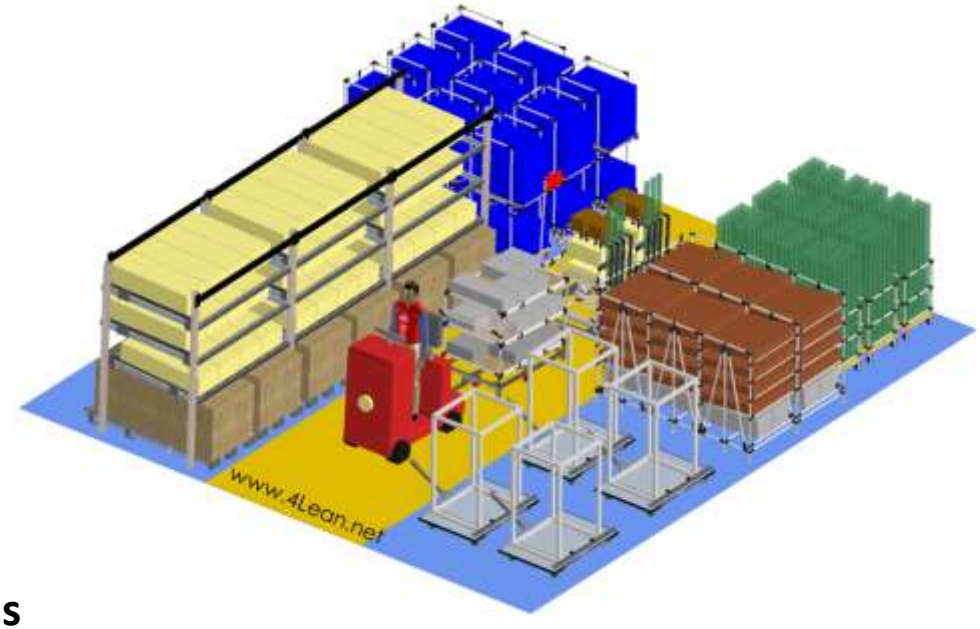
Content

- Types of logistic trains
- Casters configuration
- Structure Design
- Drift, Stability and Drag
- Mock up

Process engineers, Lean engineers, Times & methods, Logistic Engineers

8 Hours

Supermarkets Design



Goals

- Project and design of supermarket
- Supermarkets ergonomy
- Understand the different types of supermarkets

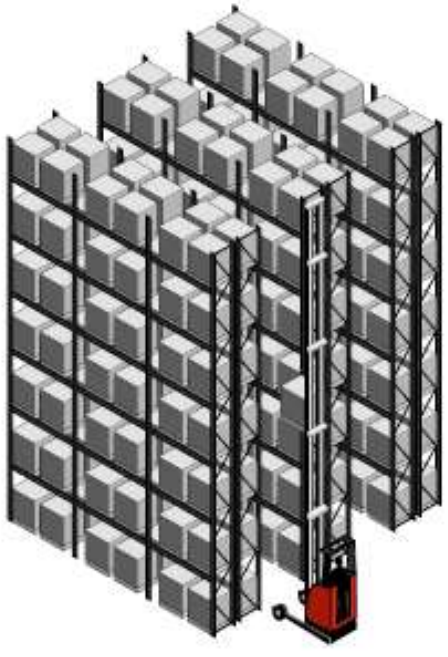
Content

- Types of supermarkets
- Strike zone
- Picking area
- Structure Design
- Mock up

Process engineers, Lean engineers, Times & methods, Logistic Engineers

8 Hours

Warehouse Design



Goals

- Project and design of racking and storage solutions

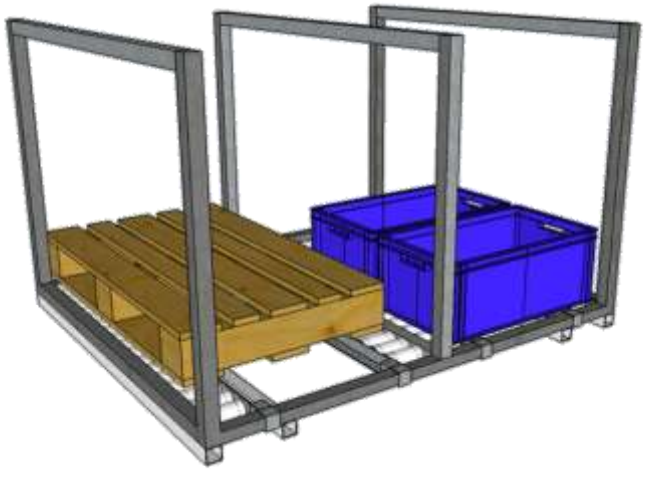
Content

- Types of racking system
- Low cost solution
- Types of handling equipment
- Hand Picking
- Types of Handling Units

Process engineers, Lean engineers, Times & methods, Logistic Engineers

8 Hours

External logistics Design



Goals

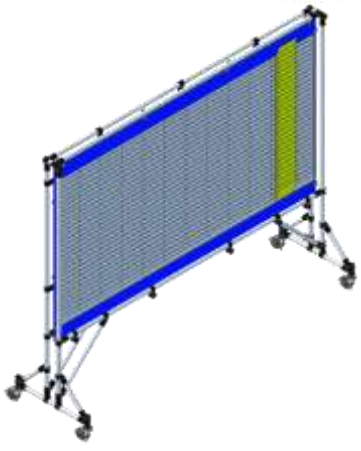
- Project and design of logistics solutions

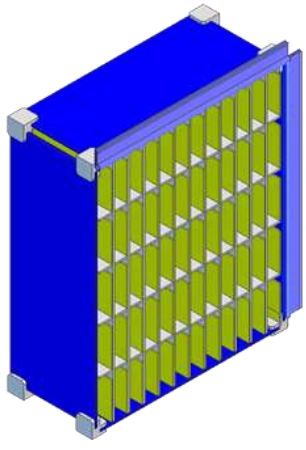
Content

- Types of trucks
- Milk runs
- Combining internal/external logistics
- Packaging solutions

Process engineers, Lean engineers, Times & methods, Logistic Engineers

8 Hours





Goals

- Project and design of Kanban boards, sequencers and heijunkas
- Project and design daily kaizen boards
- How to improve 5S

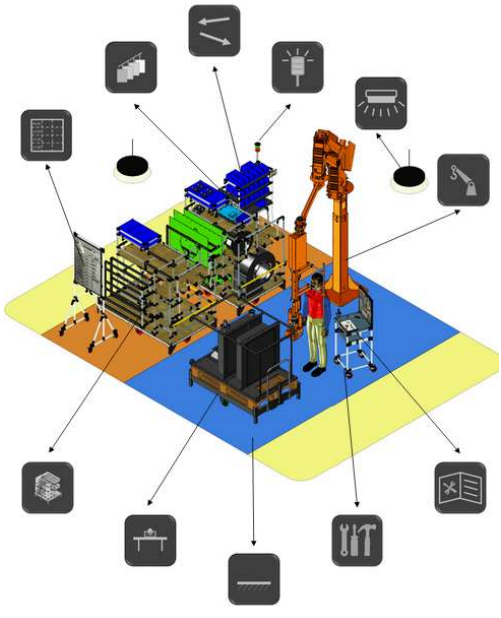
Content

- Kanban
- Heijunka
- Kanban board
- Sequencer
- Production Boards
- Andons
- Quality workstations

Process engineers, Lean engineers, Times & methods, Logistic Engineers

8 Hours

Quick Workstations Design



Goals

- Design of workstations
- Workstations ergonomics

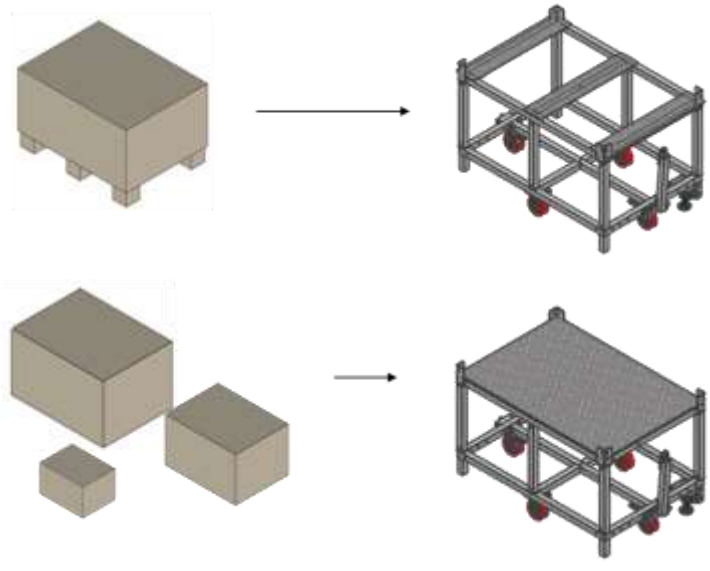
Content

- Border of the line design
- Mockup
- Ergonomics
- Strike zone - working heights
- Golden zone
- Structural dimension (Gap Sizing)

Process engineers, Lean engineers, Times & methods, Logistic Engineers

4 Hours

Quick Logistic trains Design



Goals

- Logistic trains ergonomy
- Understand the different types of logistic trains advantages and disadvantages

Content

- Types of logistic trains
- Casters configuration
- Gaps
- Offset, Stability ,Drag ,Top Heavy
- How to make Mock up´s

Process engineers, Lean engineers, Times & methods, Logistic Engineers

4 Hours

Safety

Logistic train safety

- **Impact areas**

↑ Ergonomy ↑ Safety

- **Goals**
  - Safety rules
  - Maintenance rules
  - Usage rules
- **Content**
  - Good practices in the usage of the logistic train
    - Drift
    - Stability
    - Drag
    - Tilted planes
    - Curves

  - Good practices in loading and unloading

Process engineers, Lean engineers, Times & methods, Logistic Engineers

8 Hours

4Lean Cad

Impact areas

↑ Delivery ↓ Cost

↑ Productivity ↓ Defects

Goals

- Draw solutions with 4Lean components

Content

- How to draw 4Lean strucutures
- 4Lean components
- Custom components
- Smart dimensions

Process engineers, Lean engineers, Times & methods, Logistic Engineers

4 Hours

4LEAN CAD Advance

Impact areas

Delivery

Productivity

Cost

Defects

Goals

- Draw solutions with 4Lean Components
- BOM
- Work Preparation

Content

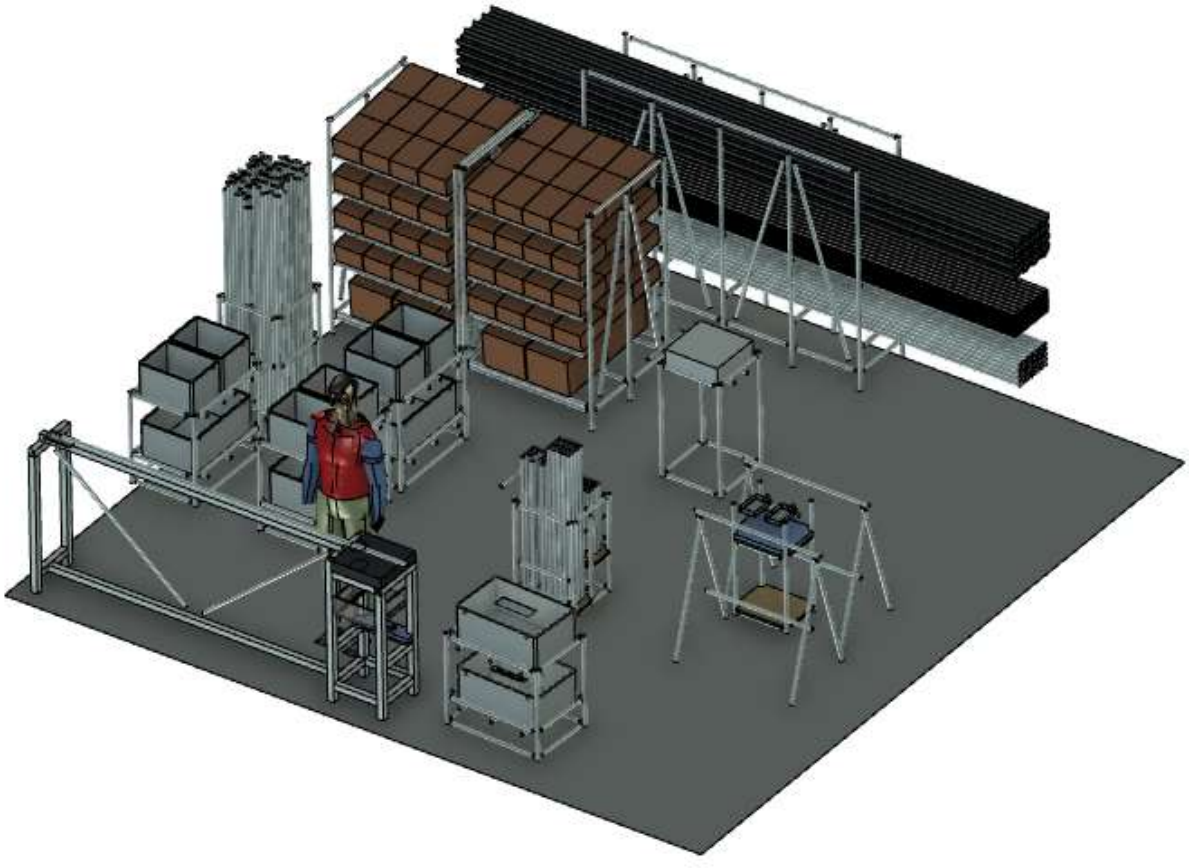
- How to draw 4Lean strucutures
- 4Lean components
- Triball
- Custom components
- Linear Dimensions
- BOM

4LEAN CAD

Process engineers, Lean engineers, Times & methods, Logistic Engineers

4 Hours

4LEAN Workshops



4LEAN Workshops

Operations

4Lean Truck

- 4Lean Truck is the most effective solution when complex applications must be implemented very quickly
- Your company makes the request and we take care of the rest
- Our assembly team, travels to your company and assemble the applications in your manufacturing environment

Process engineers, Lean engineers, Times & methods

1-5 Days

4LEAN Workshops

Retrofit Events

- Turning old into new, transforming what exists into useful structures adequate to the new reality

Process engineers, Lean engineers, Times & methods

1-5 Days

Installation

- **Scope**

- **Hardware**
  - Unpack the structure and place it.
  - Adjust and place accessories (tools, instructions, etc)
  - Test of the structure (dimensional, functional and structural)

- **People**
  - Risk analysis
  - Training
  - Follow up

- **Maintenance**
  - Maintenance analysis
  - Define Maintenance Plan
  - Auditing

1-5 Days

Foam Scanning

- **Scanning**
  - Photo for every product

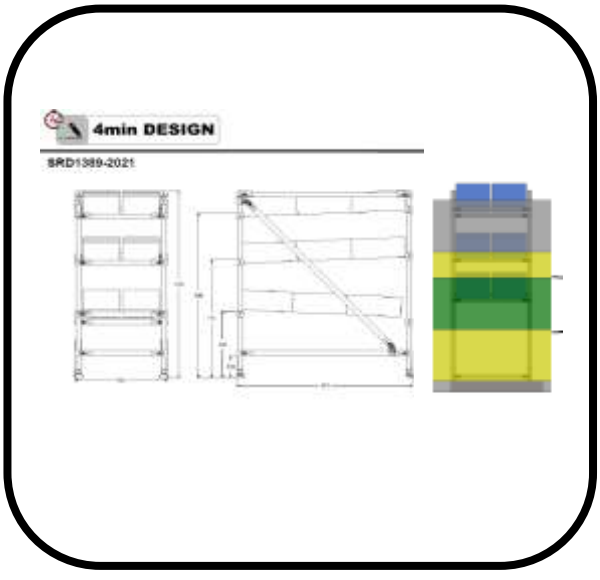
- **Quality Check**
  - Verify each part in the software

- **Layout Design**
  - Depth
  - Part Picking

- Hourly paid
- Travel Expenses

4LEAN Workshops

Solutions

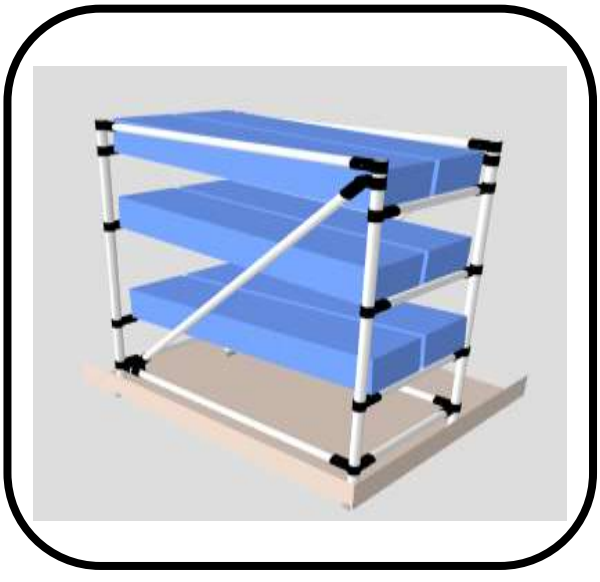


Service Description:

- Create a 3D model together with your sales consultant ideally on the shop floor in order to make a quick decision. Its important to make it together with mock-ups so you can simulate immediately.

Goals

- Decreases lead time in decision making by sharing in a earlier moment of the project
- Focused on improving workstation ergonomics.



Target Customer

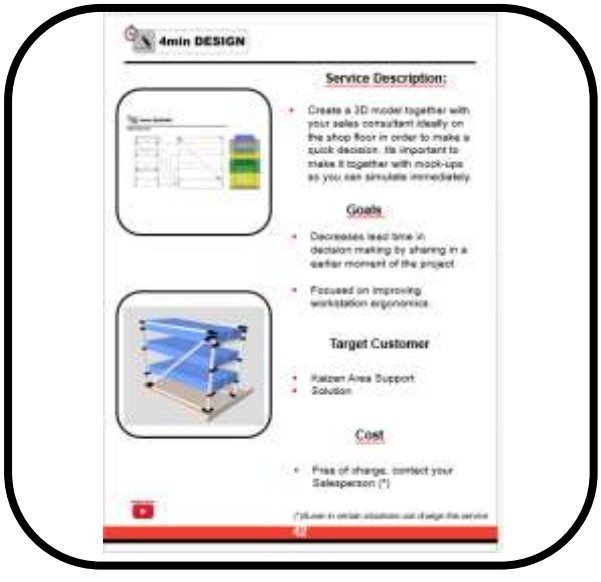
- Kaizen Area Support
- Solution

Cost

- Free of charge, contact your Salesperson (*)

(*)4Lean in certain situations can charge this service

4min DESIGN LAYOUT

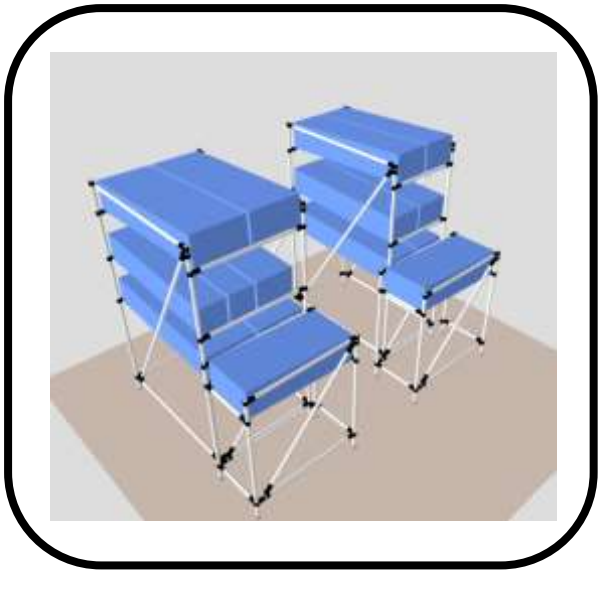


Step 0 – Divide your project

- Split your project in several 4min structures

Step 1- 4min Design

- Create the different 4min Design's



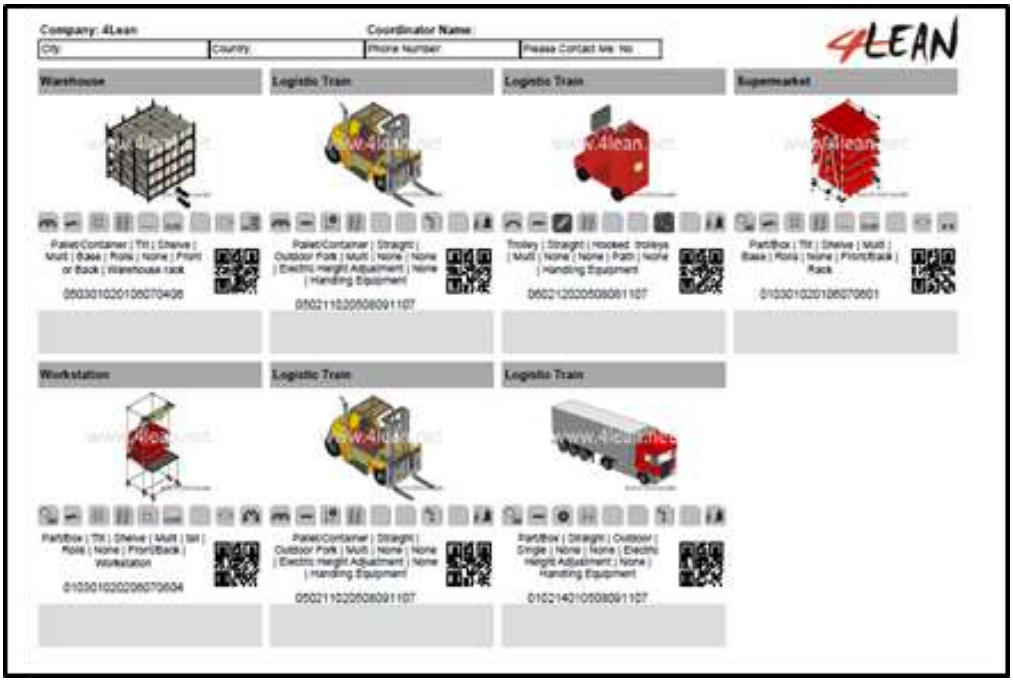
Step 2 - Layout

- Place the different structures in the line or cell
- Check operator movements between structures, and if needed place an ergonomic mat

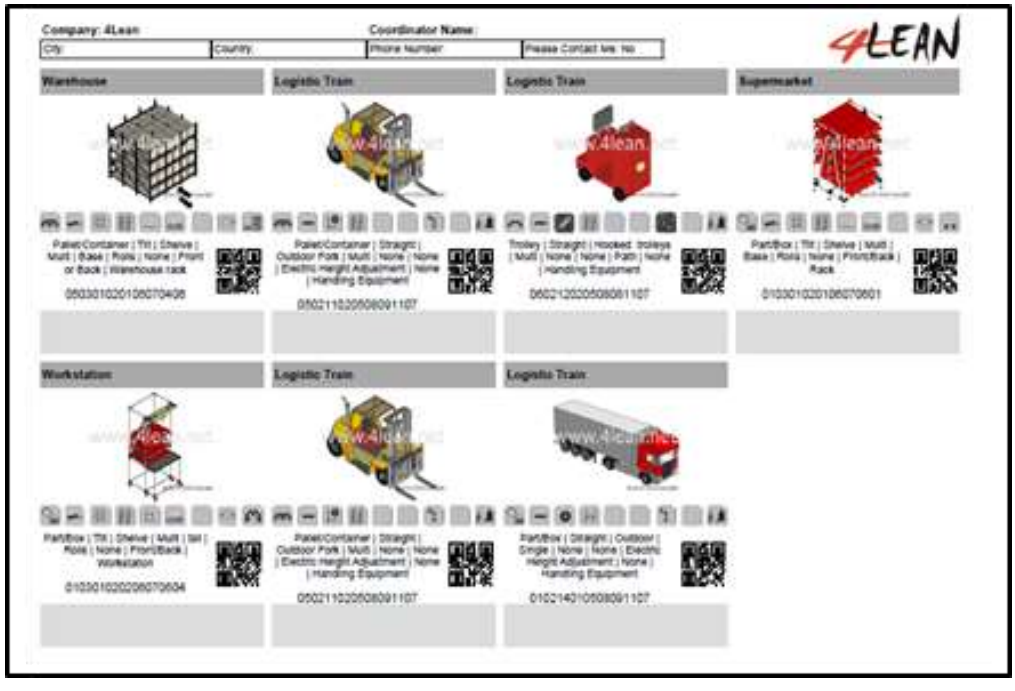
Cost

- Free of charge, contact your Salesperson (*)

(*)4Lean in certain situations can charge this service



- Use solution configurator to design the Future State.
- Scope: one area all the handling units, or between areas only one handling unit
- Duration: 1 Hour



- Use solution configurator to design the Current or Future State.
- Scope: Between areas all handling unit, or the all the flow of one handling unit
- Duration: 1 Day

Quick Lean Project

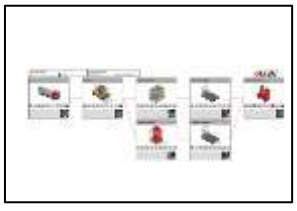
4LEAN Workshops

Design

Factory Layout – Greenfield Analysis

Material Flow

- Material flow and product matrix



- CAD Layout

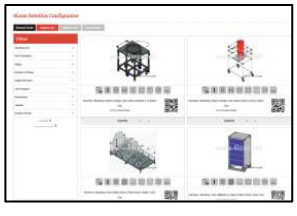
- Equipments specification

Information Flow

- Information Flow

- Software needs, stock needs, labeling

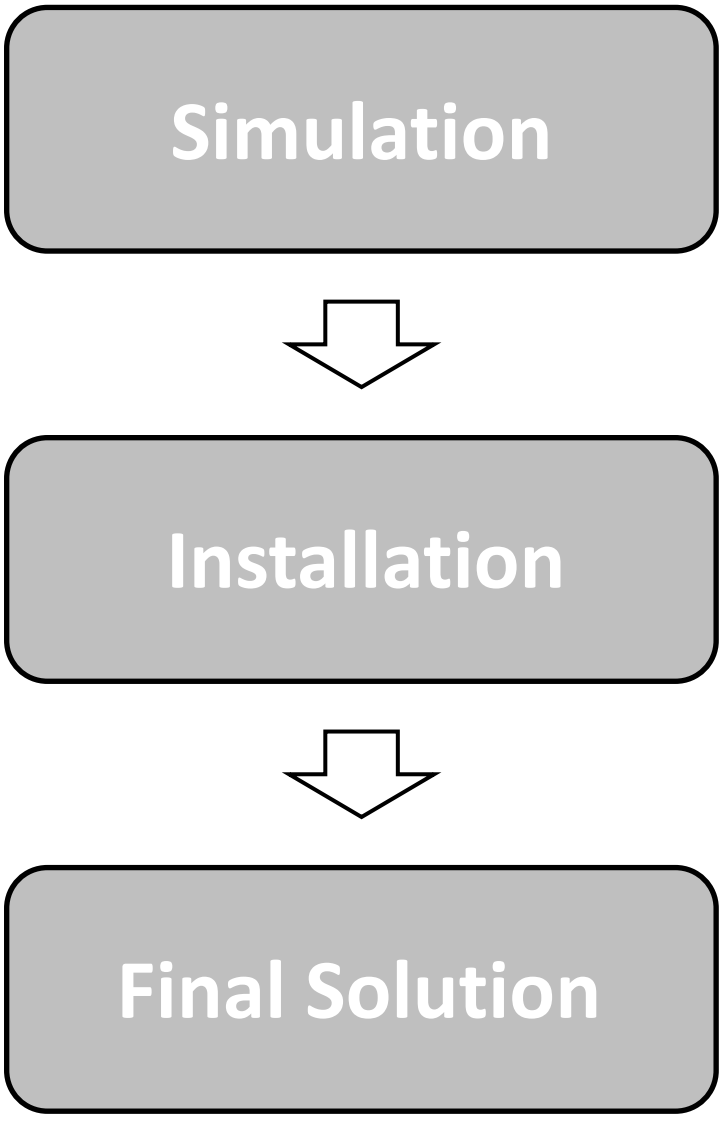
- Manufacturing strategy: MTS – MTO - ATO



Investment

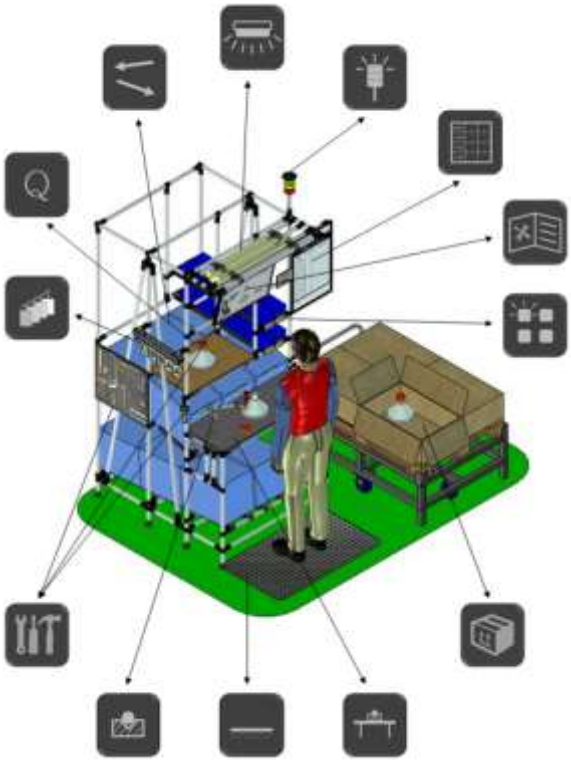
- Investment List

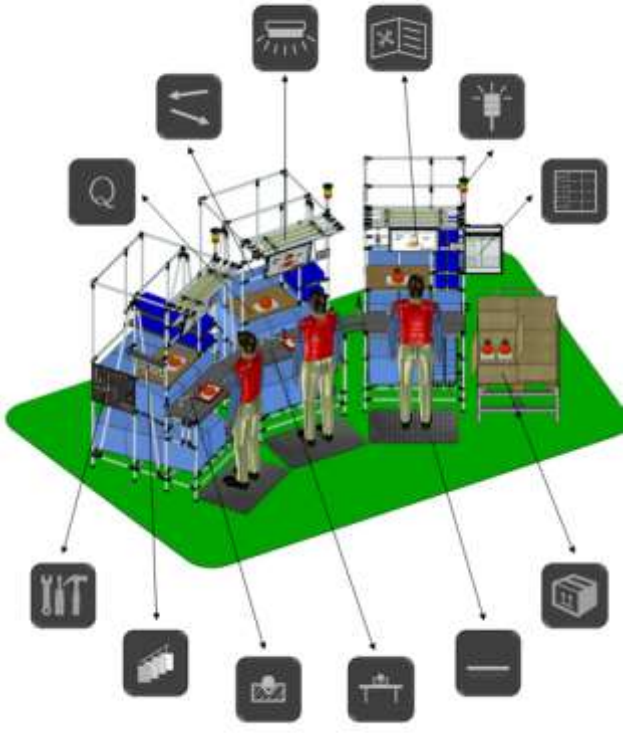
- Schedule



5 Days

Workstation Simulation Small Parts





Goals

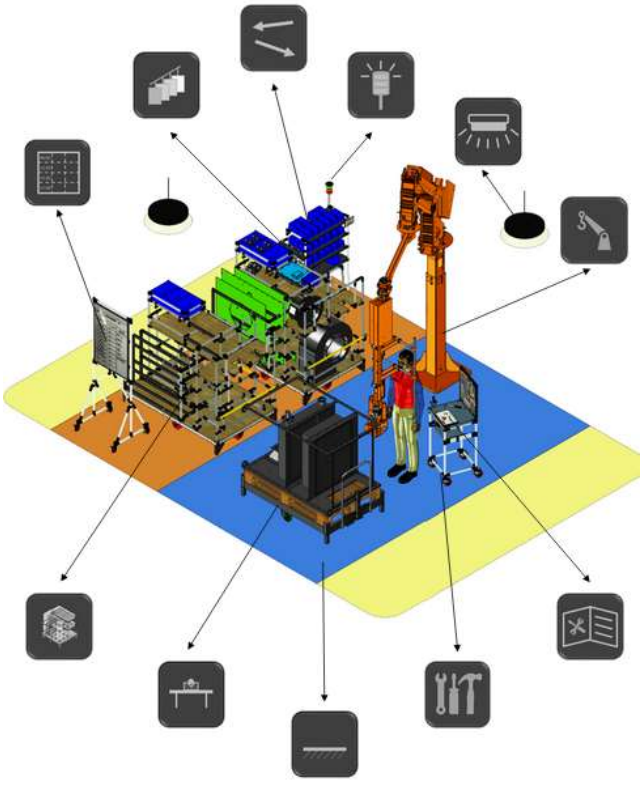
- Data colection for prototype workstation

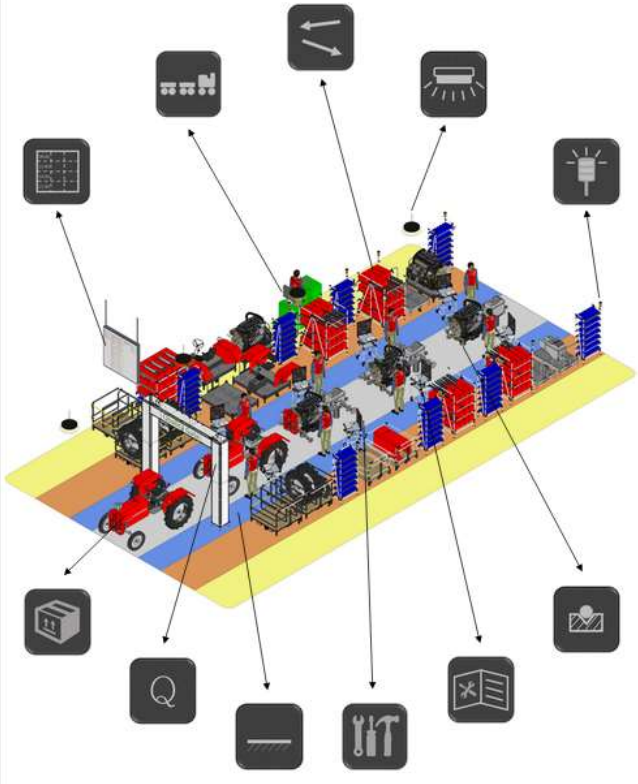
Work Areas

- Workstations design and Mockup (Fixtures, support pannel)
- Border of the line design (sequence, kit and kanban)
- Ergonomics
- Strike zone & Golden zone
- Structural dimensioning

1-5 Days

Workstation Simulation Large Parts





Goals

- Data colection for prototype workstation

Work Areas

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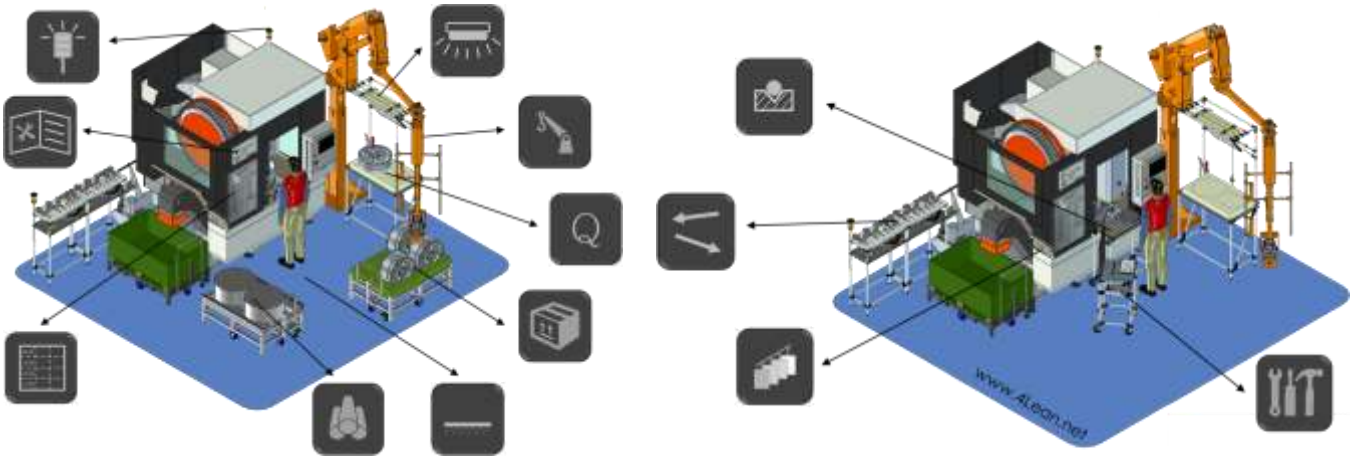
- Strike zone & Golden zone
- Structural dimensioning

1-5 Days

Workstation Simulation Machine

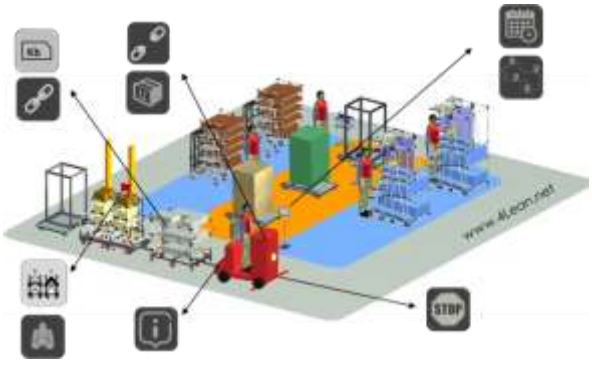


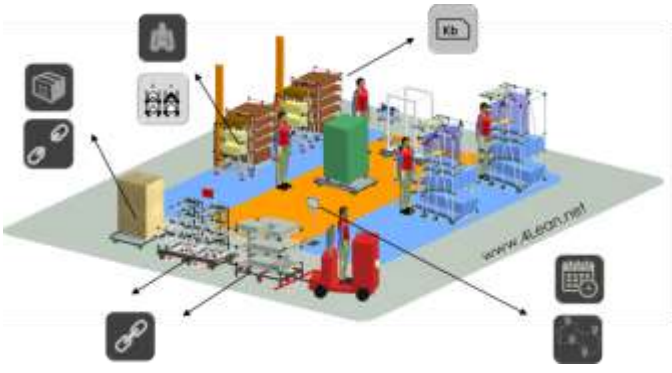
- **Goals**
  - Data colection for prototype workstation

- **Work Areas**
  - Workstations design and Mockup (Fixtures, support pannel)
  - Border of the line design (sequence, kit and kanban)
  - Ergonomics
  - Strike zone & Golden zone
  - Structural dimensioning

1-5 Days

Logistic Train Simulation





Goals

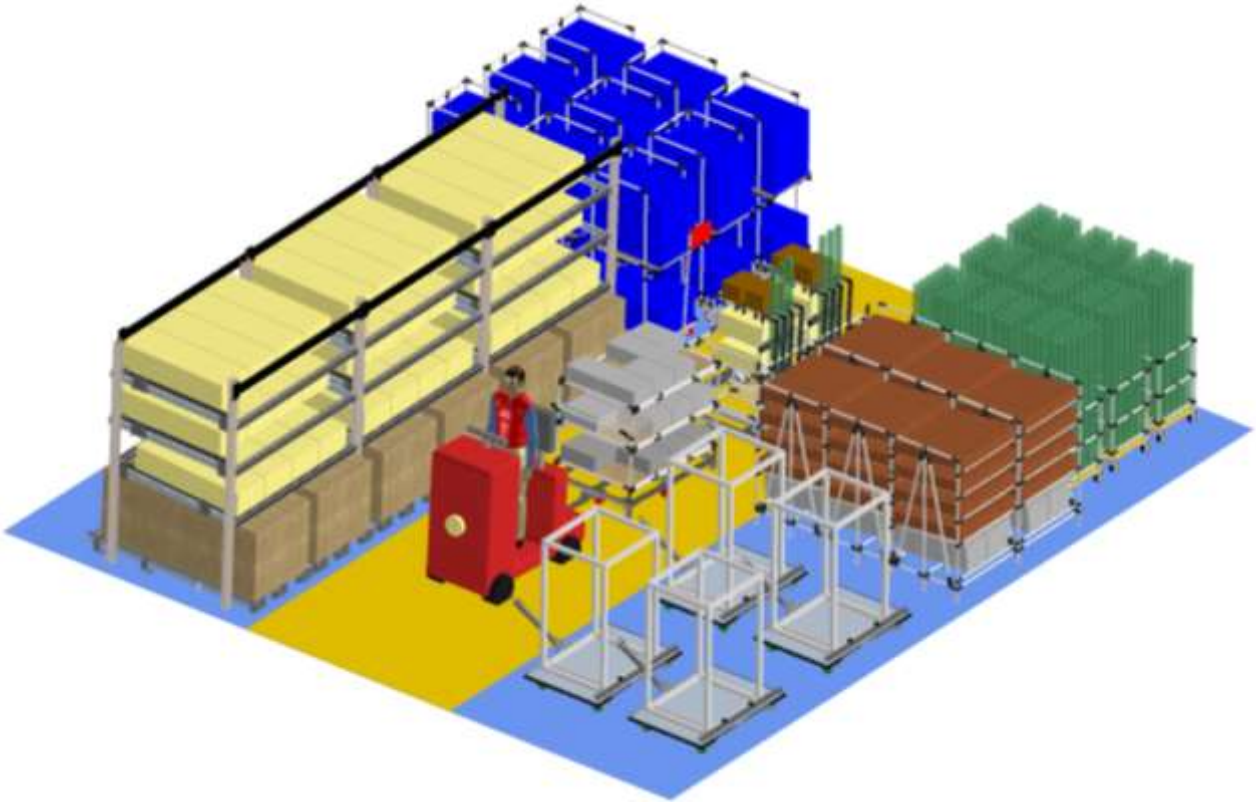
- Data colection for prototype Logistic Train

Work Areas

- Layout Simulation
  - Path and Aisle width
  - Location of loading and unloading points
- Wagon maneuvres
  - Wagon path optimization
- Wagon dimensions
  - Measurements of pallets and containers
- Diferent types Wagons
  - Standardize type of wagon
- Drift, Drag and stability
  - Place type of load
  - Handling ergonomics

1-5 Days

Supermarket Simulation

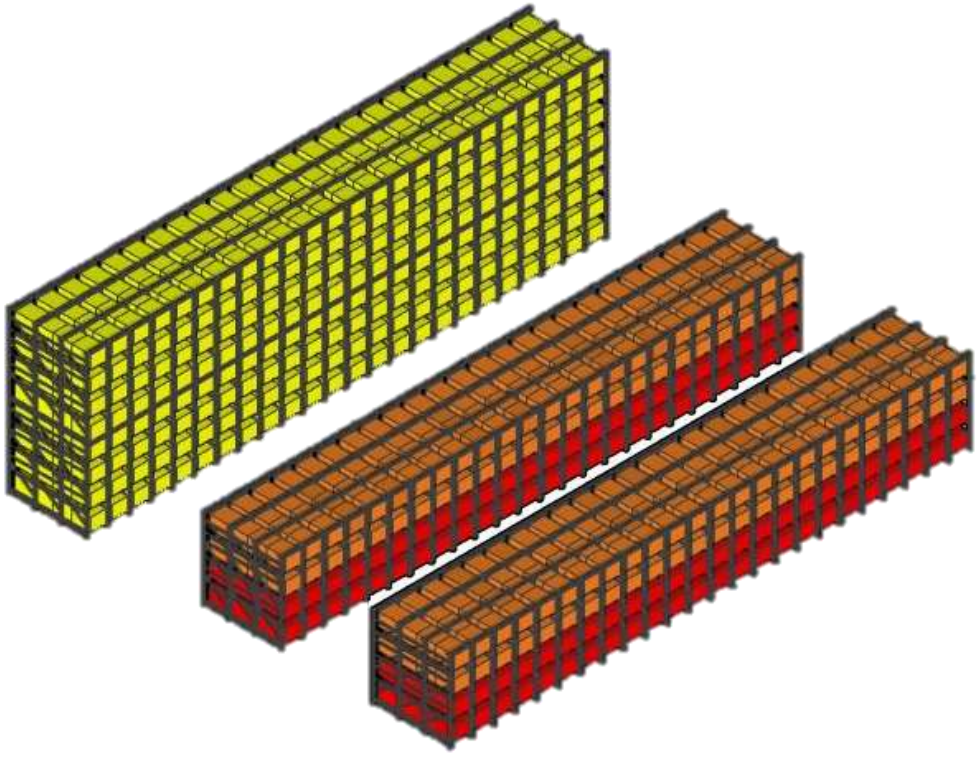


- **Goals**
  - Data colection for prototype Supermarket

- **Simulations**
  - Calculation of total Box/Part per supermarket
  - Takt time
  - Feeding system
  - Definition of type of supermarket per product
  - Mockup
  - Picking frequency
  - Supermarket depth
  - Ergonomics

1-5 Days

Warehouse Simulation



- **Goals**
  - Data colection for prototype Warehouse

- **Simulations**
  - Definition of type of warehouse per product
  - Layout definition
  - Mockup
  - Calculation of total volume per product
  - Picking frequency
  - Handling unit Weight
  - Picking and storing

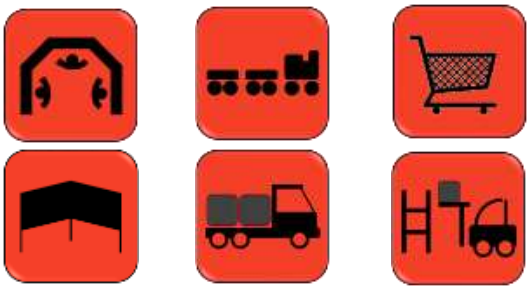
1-5 Days

4LEAN Workshops

Safety

Installation

- **Scope**



- **Hardware**
  - Unpack the structure and place it.
  - Adjust and place accessories (tools, instructions, etc)
  - Test of the structure (dimensional, functional and structural)

- **People**
  - Risk analysis
  - Training
  - Follow up

- **Maintenance**
  - Maintenance analysis
  - Define Maintenance Plan
  - Auditing

1-5 Days

Structure Quality Control

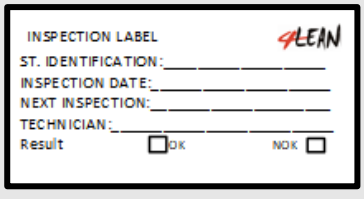
6 Months

Design

Control

Inspection and Maintenance

Labels

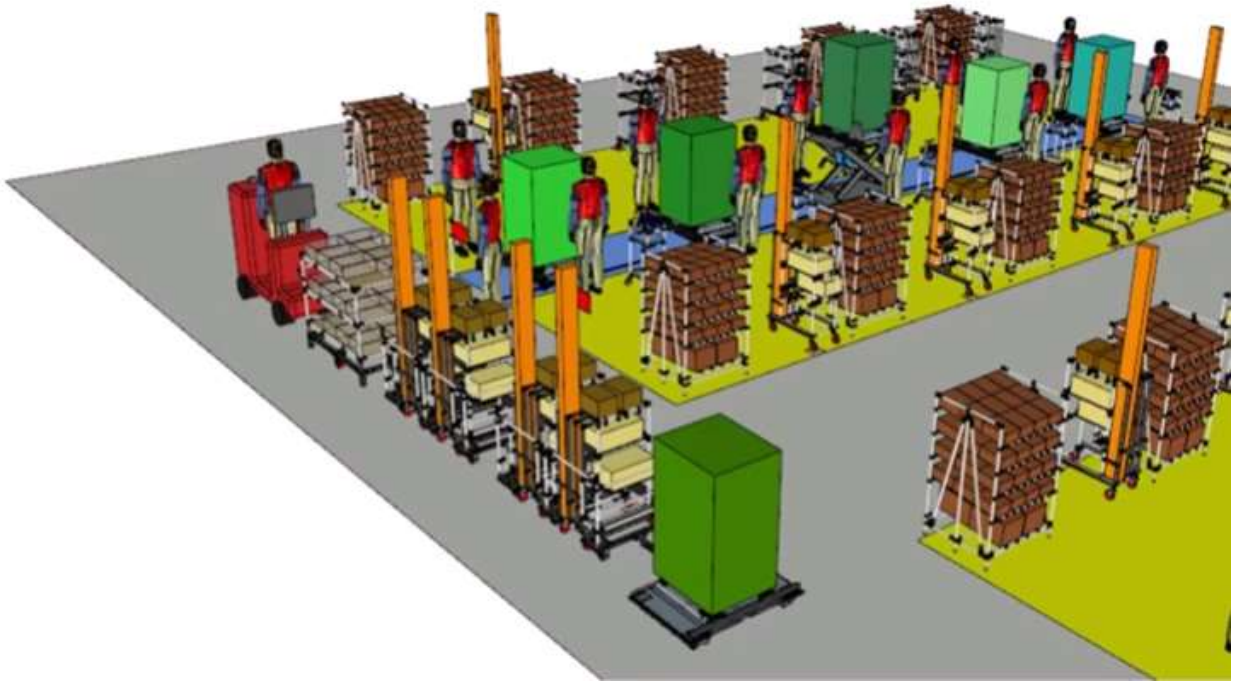


8 Hours

4LEAN Workshops

4LEAN

Engineering



Have access to 4lean's engineering, manufacturing and testing capability

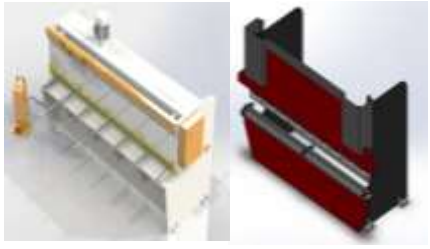
We Build Lean

4LEAN Engineering

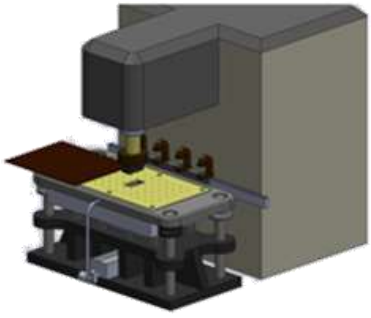
Operations

Manufacture

Metal sheet cutting and bending



Metal Sheet Punching



Pipe and Metal sheet Laser cutting

MIG/MAG Welding
Spot Welding

Cnc Profile cutting

CNC Profile Drilling

Plastic 3D print

Wood and Plastic CNC Machining

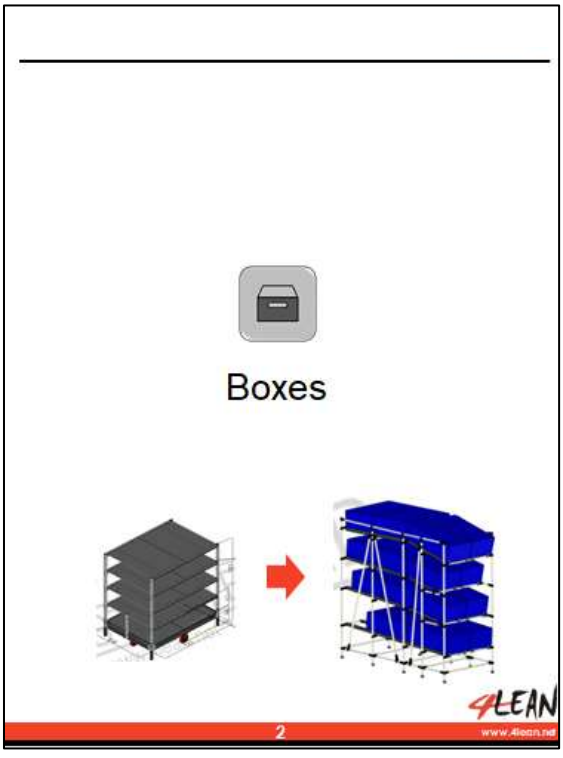
Assembly

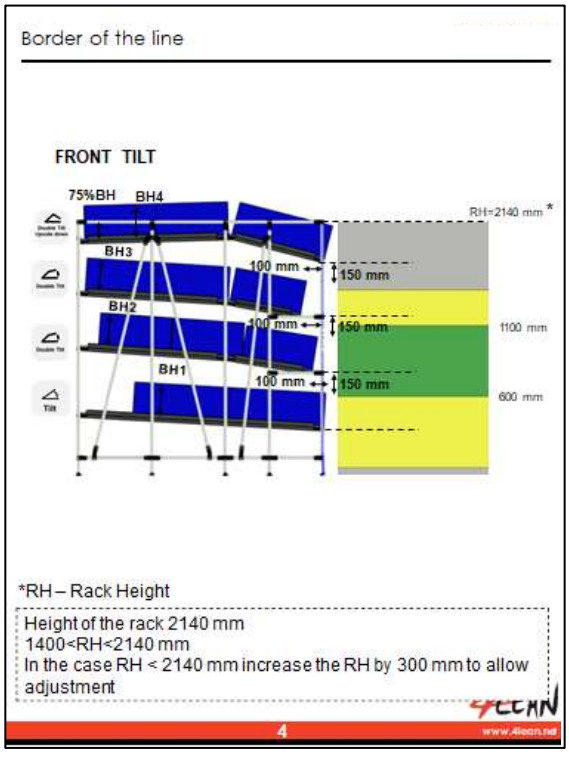
4LEAN Engineering

Design

Customer Catalog

- Specific to multi site companies
- Standardize your practices with the support of 4Lean
- Optimize your sourcing process





- Specific to our customer business
- Optimizing the design of lean hardware

Lean Lab test - Drift

- Testing the cut of the logistic train for different caster configuration.
- Calculating the size of corridors;
- Maximum number of wagons allowed;

Lean Lab test - Drag

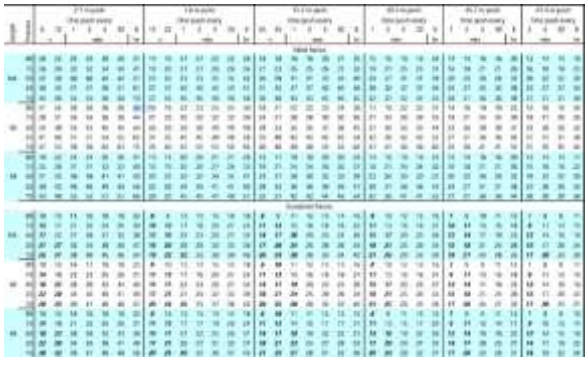
- Maximium inicial effort and maintaning movement for different caster configurations;

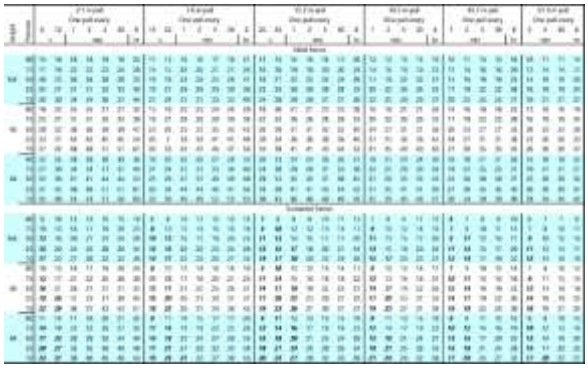
- Maxium weight allowed for inicial effort;

Lean Lab test – Ergonomic study of the effort to move a cart

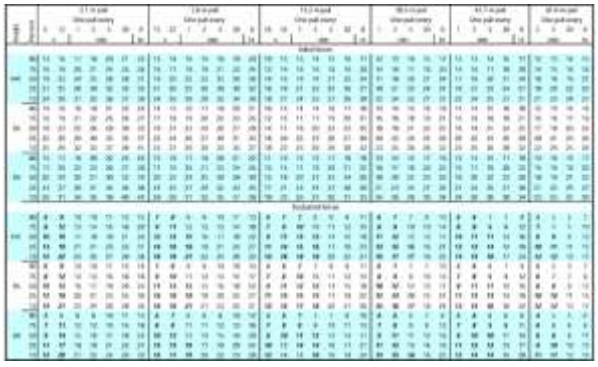
- Maximium inicial effort and maintaning movement for different caster configurations;
- These tables are in accordance with the ISO 11228 standard and are presented due to the lack of complete information in the book.

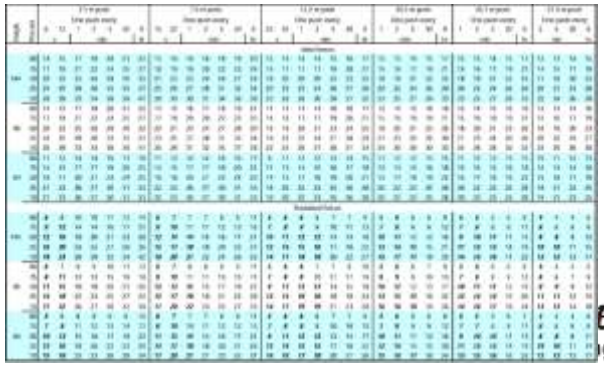
Male





Female

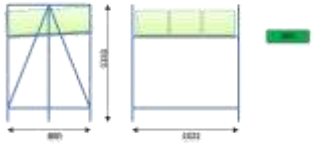
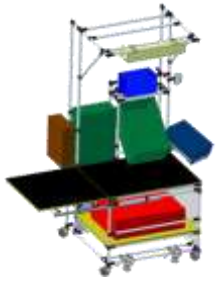
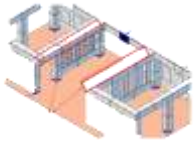




4LEAN Engineering

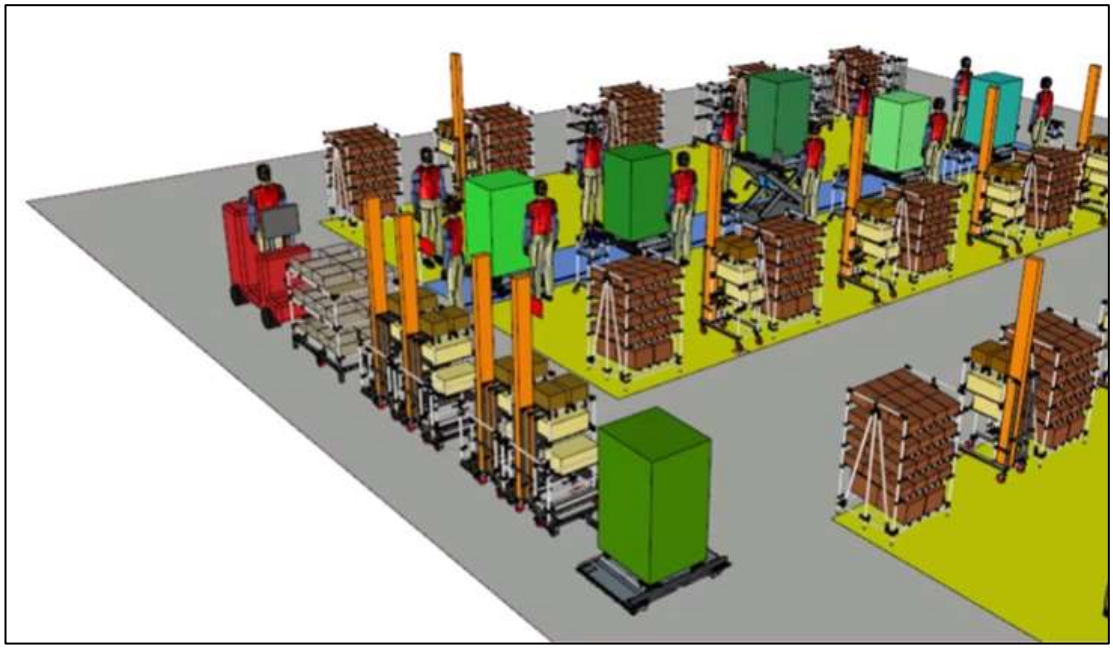
4ean CAD

4CAD Drawings

Reference Referência/ Articolo Referencia/ Référence	**Picture** Imagem / Immagine / Imagen / Image	**Delivery time** Tempo de entrega / Tempi di consegna / Tiempo de entrga / Exécution	**Documents** Documentos/ Documenti/ Ejecución / Exécution
Simple design or change, 2D design	 2 Hours	1/2 week	2D
Simple design that needs to be done from scratch	 4 Hours	1 week	2D
Complex designs, normally is highly customized	 8Hours	2 weeks	2D 3D viewer
Very complex designs	 16 Hours	3 weeks	2D 3D viewer
Very complex designs with movements	 32Hours	4 weeks	2D 3D viewer

DXF Panel = 1 DRAWING

4CAD CAD Layout Simulation



Send us your requirements

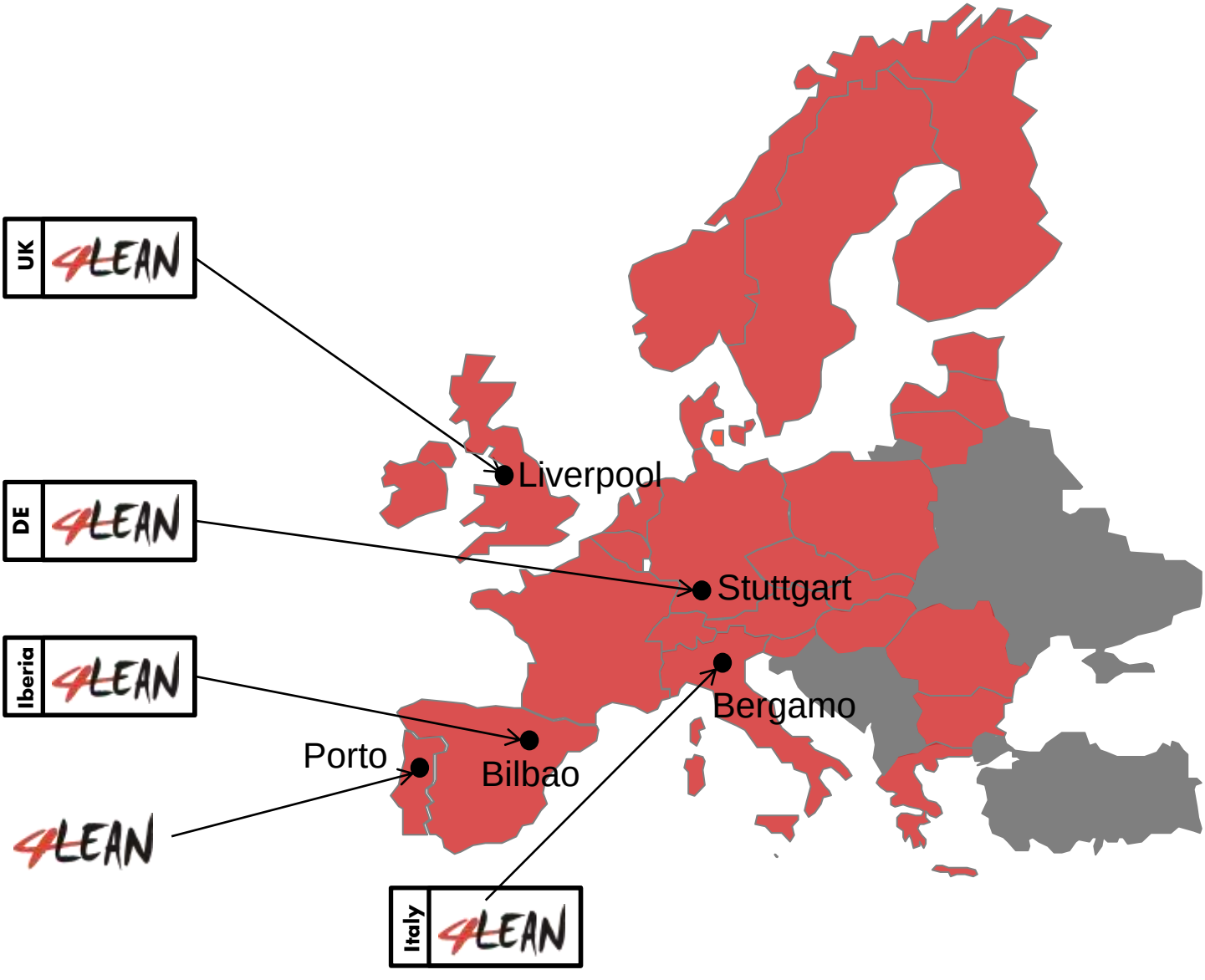
We develop your layout

1 Days

4LEAN Engineering

Notes

| Notas | Appunti | Notes


UK
DE
Iberia
Liverpool
Stuttgart
Bergamo
Porto
Bilbao
Italy

Some of our clients

| Alguns dos nossos clientes | Alcuni dei nuostri clienti | Algunos de nuestros clientes | Certains de nos clients

Horeca Equipments

Industrial and Agricultural Vehicles

Power transmission

Automotive

Aeronautics

Small Appliance

E-Commerce & Warehouse

Elevators

4Lean, Lda
4lean@4lean.net
www.4lean.net

Some of our clients

| Alguns dos nossos clientes | Alcuni dei nuostri clienti | Algunos de nuestros clientes | Certains de nos clients

White goods

Bicycles

Electrical

Electronics

Fashion

Process Industry

Ventilation and refrigeration

WoodWorking

Industrial Machines

Some of our clients

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Services

BNL GRUPPO BNP PARIBAS

Healthcare

Hospital São Sebastião

Unilabs

Banc de Sang i Teixits

São João

Construction Components

OLI

GROHE

BRUMA

Coachworks

CaetanoBus

HandTools

Snap-on

BELLOTA

Public Sector

LISBOA

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www.4lean.net