Our Mission

To produce trucks with excellent quality level, delivery precision and operation flexibility to our customer.

A Journey of Lean Manufacturing!
AVI History

Key Points

- Operation Started in August 1999 at a newly built assembly plant for Volvo Trucks, south of Jeddah, Saudi Arabia.
- The designed technical capacity for the plant was to produce 650 trucks during single shift.
- Operational Management by Volvo.

Total Assembled Trucks in K14 Facility: 15,750
Volvo & Renault Truck Assembly Plant

Start June 2015
17 trucks / day
5 000 trucks / year

Plot area : 55 000 m²
Building footprint : 10 824 m²
How much time do we add value?

- Waste
  - Non value adding
  - Necessary
    - Add value
  - Good waste!
  - Added value = 0

Operator vs Support function/Leaders
Why?
The 7 Wastes

**MUDA** is the Japanese word for WASTE.

Over Processing: 1. Processing beyond the standard required by the customer.

Overproduction: 2. To produce sooner, faster or in greater quantities than customer demand.

Inventory: Raw material, work in progress or finished goods which is not having value added to it.

Rework: Non-right first time. Repetition or correction of a process.

Waiting: People or parts that wait for a work cycle to be completed.

Transportation: Unnecessary movement of people or parts between processes.

Motion: Unnecessary movement of people, parts or machines within a process.
Where?
The Sequence of Introduction of VPS

Current State
1. Organizational Structure
2. Cross-functional team
3. Targeted law Education VPS / 5S

Stable Process
- 4 standardized work
- Saudi law business rules
- Poke Yoke AM / WPO
- Inspection / control plans
- Process capability Cp / Cpk
- Machine capability Cm / Cmk
- Layer Audit

Data Collection
- 5 Loss Hunting
  - Cost Deployment
  - Data collection with rotor saw categories OLE

Improvements
- Improvement
- Organization
- Improvement Culture
- Priority Problem Solving Methodology (11 focus areas)
- Focused improvement

(KPIs) Kanri Hoshin / Policy Deployment
Muri, Mura, Muda

Results

Competence + Time

world class
VPS
Volvo Production System

- Takt
- Balancing
- Standardization
- Equalization

CUSTOMER

BUILT-IN QUALITY

CONTINUOUS IMPROVEMENT

JUST-IN-TIME

THE VOLVO WAY

TEAMWORK

PROCESS STABILITY

THE VOLVO WAY
A part of the overall picture

- 5S
- Autonomous maintenance
- Professional Maintenance
- Standardised way of work
- Takt
- SMED: Single Minute Exchange of Die
- Reduced machine - MUDA
I cut stones

I am building a school
VPS Journey: ”Set the Vision”

- AVI’s vision is completed and will be explained in our transformation map, from 2017 - 2020
# VPS – Going For Diamond

## ROAD MAP 2017 - 2020

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<td>Observation (710 - 1/E/M)</td>
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<td>Near miss (30 - 3/M )</td>
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<td>Safety Induction for Visitor</td>
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<td>New ISO Standard</td>
<td>Amjad</td>
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<td>Process Audit</td>
<td>Amjad</td>
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<td>Nut Runner Training</td>
<td>Amjad</td>
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<td>Zero defect</td>
<td>Amjad</td>
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<td>Reduction in Q.Inspectors</td>
<td>Masood</td>
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<td>Yamazumi Study</td>
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<td>MTBF &amp; MTTR</td>
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<td>Takt Board Deviation</td>
<td>Amjad</td>
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<td><strong>Economy</strong></td>
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<td>Cost Deployment (BC training &amp; implement)</td>
<td>Masood</td>
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<td>Waste Loss analysis</td>
<td>Masood</td>
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</table>
How?
Lean Manufacturing

To establish a lean oriented organization must be started by:

- Leadership
- Commitment and understanding of the trip
- Create discipline
- Structure
- Standardize
- Request and follow up
- Coaching vs. rebuke
WHY STANDARDISED WAY OF WORK AND TAKT?
STANDARDS
Standards

Currently the best known and documented way to perform a task

- Necessary in order to detect what is not normal
- Base for continuous improvements
  - Visualizes and quantifies waste
- Contribute to predictability
  - Quality
  - Time

- Must be challenged and improved!
What is necessary to standardize?

- How work shall be performed
- How to prioritize
- Where and how to store an article
- How to move products between processes
- Criteria for eg. decision for overtime
- How to transfer to another step in process
- How to follow up
- How to handle deviations
- ...

EVERYTHING!
Result

- Increased focus on running the plant
- Better work situation for operator
- Clarify the benefit of working with takt deviations
- Better knowledge of the true capacity of the line
- Better predictability when planning
- Increased process efficiency
Train the Trainer (The LUTI – Learn, Use, Teach & Inspect) Concept

Presenting Autonomous Maintenance (LUTI)

Presenting New Yearly Meeting Agenda for 2016 & 2017
<table>
<thead>
<tr>
<th>Description / Initiative</th>
<th>Charter</th>
<th>Priority</th>
<th>Account-able</th>
<th>Accountable</th>
<th>Wk. 40</th>
<th>Wk. 41</th>
<th>Wk. 42</th>
<th>Q. 1</th>
<th>Year 2016 / 2017</th>
<th>Resource</th>
<th>Q/S/E</th>
<th>Economy</th>
<th>Time Plan</th>
<th>Comments</th>
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<tr>
<td>Local Material Content</td>
<td>Amjad</td>
<td>Low</td>
<td>Masood</td>
<td></td>
<td>Initial Discussion</td>
<td>Project Charter</td>
<td>Assessment by Engg starts</td>
<td>Re-assessment</td>
<td>On target as plan</td>
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<td>VPS Self assessment</td>
<td>Amjad</td>
<td>Medium</td>
<td>Initial Discussion</td>
<td></td>
<td>Format Preparation &amp; Training</td>
<td>Daily Monitoring by Prod</td>
<td>On - going</td>
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<tr>
<td>Team Boards</td>
<td>Amjad</td>
<td>High</td>
<td>Initial Discussion</td>
<td></td>
<td>1. Preparation and sharing with Manage</td>
<td>2. Training</td>
<td>OMS / Skill matrix / takt for operation</td>
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<tr>
<td>Autonomous Maintenance</td>
<td>Amjad</td>
<td>Low</td>
<td>Initial Discussion</td>
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<td>Pilot stage done, rest to be as AM calendar</td>
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<td>Admin Improvement</td>
<td>Abdulrhman</td>
<td>Low</td>
<td>Initial Discussion</td>
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<td>Phase 2 started</td>
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Visual Planning Board
Operational Management System: Level I & Level II

- OMS Level 1 – Meeting - Production
- OMS Level 1 – Meeting - Maintenance
- OMS Level 1 – Meeting - Logistics
- OMS Level 2 - Meeting
Takt Board

Productions plan

Capacity

Planned activities:
OMS level 1 Trainings

Input

Takt flow

Output

Deviations from plan

Correction against plan

Improvement

Production Takt

Training/Meeting

Lunch / Tea

08 : 00 10 : 00 12 : 00 14 : 00 16 : 00 18 : 00

Sun

Mon

Tue

Wed

Thu

Production
Training/Meeting
Lunch / Tea

Takt Board - Stage 1

Arabian Vehicles & Trucks Industry Co. Ltd.
3 polyvalents in the team 3 operations mastered per operator 3 autonomous per operation

3 X 3 X 3 concept

To have key users to training their own teams and visualized in skill matrix.
Increase the VPS knowledge by using the Keys users to develop the team.
Autonomous Maintenance

- Skill development
- Reduce equipment breakdown
- Workplace organization and housekeeping

Initial cleaning

Tentative standards

Countermeasures against sources

General inspection

Autonomous inspection

Workplace organization and housekeeping

Challenge this step and find benefits.

Step 1

Step 2

Step 3

Step 4

Step 5

Step 6

Fully implemented autonomous management

Step 7

AM Roll out Plan

<table>
<thead>
<tr>
<th>Department</th>
<th>Stage</th>
<th>Week</th>
<th>2016</th>
<th>2017</th>
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</table>

Production

- PAV Vales + A1 Talk
- PAV APM + Plug Box
- Oil Rigs, Offshore

Equipment Call

- Full
- 6

Line Start-Up Check Sheet

Autonomous Maintenance

<table>
<thead>
<tr>
<th>Description</th>
<th>Description</th>
<th>Check Date</th>
<th>Frequency</th>
<th>Time</th>
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Position 5... No damage on cable and cable trolley

Position 6... No damage on cable and cable trolley

P0S.5

P0S.6
Work Place Organization: 5S

1 - 4 - Operator Trolleys 5 & 6 - Chassis Trolleys
7 & 8 - Chassis Empty 8 & 9 - OH crane Remote control
9 - Tool Cabinet 10 - Bin

Arabian Vehicles & Trucks Industry Co. Ltd.
Work Place Organization: 5S

Maintenance Room

Production Hall

Battery Box Pre-Assy.

Stage 4
# AVI Gemba - Auditing Layer

<table>
<thead>
<tr>
<th>Team:</th>
<th>TP1</th>
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</table>

## Safety:
1. Use appropriate PPE?
2. What observations have been reported. Have measures been taken?
3. Is the escape route known and free from obstacles?

## Quality:
4. Reported deviations within the timeframe of 24 hours?
5. Ensure FL remarks mentioned on control cards by QF?
6. Is team aware about campaign/normal action on going?

## Delivery:
7. Line move as per the take time and deviation reported on wall board?
8. Ensure the action plan for the reported deviation?

## Logistics:
9. Are all materials in identified place?
10. Are no damage - Rejection parts mixed on station?

## Standardized work:
11. Checks and inspections as SS and AM carried out according as per check sheet?
12. Are operators working as per the OEC?
13. Are skill matrix board updated and training followed?

## Improvement:
14. All CI / Kaizen trend as per target vs actual displayed?

## Management by objectives:
15. Target followed up according to the current rate?
16. Carried out adequate measures to achieve the objectives of what is the connection to the improvement work?

## Leadership:
17. Performed Audit Layer according to the plan?

## Environment:
18. Are the Waste segregated as per the requirements?
19. Ensure the availability of spillage kit and properly used?

## Rate & RAG

- **KU**: 1 time / day or shift for line / facility.
- **TL**: 1 day / week per line / facility.
- **SV**: 2 times / monthly per line / facility.
- **MGR**: 1 time / month.

Managerial Group: Reporting 1 time / quarter

Verdict: **Green**: No deviations, **Yellow**: Small deviations are corrected immediately, **Red**: Large deviations noted that requires action.

---

To ensure the standard way of working
“Kaizen Environment is a Natural Way for us to Increase our Performance in all Areas”
Continuous Improvement

Quick Kaizen Events

Major Kaizen Events

Standard Kaizen Events

No of Quick Kaizen Events
Week

No of Major Kaizen Events
Week

No of Standard Kaizen Events
Week

Our Facility

Arabian Vehicles & Trucks Industry Co. Ltd.
**Major Kaizen**

**AVI**

---

**Theme**
- Focussed Improvement
  - Pillar: Yamazumi
    - Production Cards

**Subject:**
- Implementation of yamazumi & Production cards on pilot area
- SOP for all process on each station will be listed in production card
- Continuous improvement on SQDCEP by standard way of working
- Balance the operation for each variants with maximum man power utilisation
- Eliminate the waste

**Team:**
- Shahul
- Ali
- Mahboob
- Amjad

**Plan:**
- Rollout plan

---

### System/Process

- To learn that how to do the yamazumi balancing
- Process study with operator involvement
- Mention value added, semi value & waste
- Fill the yamazumi board & improve process with team involvement

---

### Analysis of causes:

- No split up time study available for the semi value & non value added activities on the station
- No SOP for list of activities on the station
- No document to ensure the standard way of working
- No, Station & Detail card to explain the sub activities from the production cards for the all critical process

---

### Tools used:

<table>
<thead>
<tr>
<th>Tools used</th>
<th>4M</th>
<th>5S</th>
<th>SWTH</th>
<th>AM Tag</th>
<th>FMEA</th>
<th>NVAA</th>
<th>Poka Yoke</th>
<th>QM Matrix</th>
<th>SMED</th>
<th>VSM</th>
<th>X Matrix</th>
<th>Others</th>
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**Project leader:**
- Amjad

---

### Action & Follow up from the implementation

- Identify the Pilot stage to implement Yamazumi & Production card
- Prepare list of activities on the station and mention in production card
- Time study for each listed activities
- List out value, semi value added & Waste
- Remove the waste and improve semi value added
- Implementation of yamazumi & cards on pilot area
- Action & Follow up from the implementation

---

### Phenomenon Description:

- Total manpower (qty) 47
- Total manpower cost/year 3,666,000
- Expected Savings/year 20%
- Cost Saving/Year 733200
- Implementation cost per station 600
- Implementation cost per station & 14 per Assy/SAR 17,400
- Total cost Savings/Year (SAR) 715,800

**Description**

- Train the team for yamazumi study
- Preparation of Yamazumi board
- Preparation of activity list on the station
- Prealignment of production station card formats & present to management teams
- Do time study with production team
- Share the current state of study to the teams
- Present the NVA & waste to team & management
- Implement future state on pilot stage & follow up

**Who**
- Stefan
- Shahul & Mahboob
- Shahul
- Shahul & Amjad
- Shahul & Ali
- Amjad, Shahul & Ali
- Amjad, Shahul & Ali & Mahboob

**When**
- WK43,17
- WK44,17
- WK44,17
- WK44,17
- WK47,17
- WK47,17
- WK47,17
- WK47,17

---

### Definition of objectives

- Eliminate the waste and improve semi value added
- SOP for all activities using production card on each stations with pre assembly

### Results

- All NVAA will be eliminated and semi VA will be improved in desired routine
- Zero defects by following the production cards as a standard way of working
- Max manpower utilisation managed for all variant & brands
- SOP available for all the activity on going on the station
- This production card will be will be one of FMEA control on the station
- Process visualised by Yamazumi board on each station
- All production cards will be displayed on the station and will be verified during GEMBA audit for improvement
- Cost: SAR 7,15,800 in a year

---

### Standardization & Horizontal expansion analysis

- This yamazumi & production card will be implemented for all stations including pre assembly with all variants & brands
## Total Savings from Major Kaizens

<table>
<thead>
<tr>
<th>S.No</th>
<th>Areas Of Improvement</th>
<th>Benefit Euro</th>
<th>BC Ratio</th>
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<tr>
<td>1</td>
<td>OBC - Stage1</td>
<td>11,518</td>
<td>159.4</td>
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<td>2</td>
<td>OBC - Stage2</td>
<td>26,027</td>
<td>239.6</td>
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<td>3</td>
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<td>28,300</td>
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<td>OBC - Stage4</td>
<td>27,618</td>
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<td>5</td>
<td>PM Inspection For Lifters</td>
<td>7,205</td>
<td>80.3</td>
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<tr>
<td>6</td>
<td>PM For AC Units</td>
<td>17,557</td>
<td>4.1</td>
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**Total** 118,225
### Continuous Improvement

PM stickers and other sticker was mixed inside the cotton box

- Wooden box made to place the PM stickers inside the maintenance stock rack

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<tr>
<th>Before</th>
<th>After</th>
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<tbody>
<tr>
<td>![Before Image]</td>
<td>![After Image]</td>
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</table>

**Steps:**
- 1. Identify
- 2. Prepare
- 3. Reflect
- 4. Select
- 5. Plan
- 6. Do
- 7. Check
- 8. Act

**Feedback:**
- 1. [Feedback 1]
- 2. [Feedback 2]
- 3. [Feedback 3]

**Next Steps:**
- [Next Step 1]
- [Next Step 2]
- [Next Step 3]
"Tact flow"

**Daily follow up – Teamwork**

- AVVIKELSER
  - A2: Maskinflytt
  - T1: Fräsbyte
  - T2: Varan: styrningen där i från
  - T3: Emag: utbana i staket
  - A3: Möt - VGAS
  - A4: Operatör Sven
  - K1: Programändring Emag
  - T4: Läckage Varan Dwo 182467
  - T5: Storge fastnor vid "klav" 
  - T6: Anmärkning fastnor i "klavens"

**Weekly follow up - Teamwork & long pulse**

- QK, EWO/DWO/RNC/HERCA

- QK/EWO/DWO/RNC/HERCA

- QK, SK

- SK, MK, AK
Standardized Way of Working

Production, Station & Detail Cards will be the major contributors for us to reach zero defect mind set in all areas!
<table>
<thead>
<tr>
<th>Type of card</th>
<th>Under production</th>
<th>during set</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>level 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Card</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production alt.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rack Cards</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>level 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Station Short</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>level 3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Detailed Card</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Production Card

## Production Card - Standard Operation Sheet

<table>
<thead>
<tr>
<th>Process Name</th>
<th>Model</th>
<th>Applied Model and Operation Time in mins</th>
<th>Team leader (Name)</th>
<th>TP1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>8X2</td>
<td>6X4</td>
<td>8X4</td>
</tr>
<tr>
<td>OMS Level 1 meeting</td>
<td>Volvo</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Autonomous maintenance</td>
<td></td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Assembly process</td>
<td></td>
<td>47</td>
<td>75</td>
<td>2</td>
</tr>
<tr>
<td>Job distribution</td>
<td></td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Calibration Status</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Takt Board</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Skill matrix</td>
<td></td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Quality Inspection - CC1</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Check cards</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>DPP - Daily production plan</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Kanban</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Defects/Damage parts</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Waste Segregation</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Non Value added operations

<table>
<thead>
<tr>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking path</td>
<td>Walking path</td>
</tr>
<tr>
<td>Taking parts</td>
<td>0.2</td>
</tr>
<tr>
<td>Putting parts</td>
<td>0.5</td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

### Symbols

- Stock
- Operating Area
- Inspection

### Total Cycle time
- Model 1: 131.0
- Model 2: 83.0
- Model 3: 8.0

---

**Issue Date:** 20/09/2017  
**Rev.: 1**  
**Model:** Volvo  
**TP1:** Alan  
**Confirmation by:**  
- Pr Engineer: Shahul  
- Supervisor: ljaz  
- Production: Amjad  

---

**Process Name:** Station 1 - Frame & Cross member Dropping PA - Cross member

**Activity / Main Step**

1. OMS Level 1 meeting  
2. Autonomous maintenance  
3. Assembly process  
4. Job distribution  
5. 5S  
6. Calibration Status  
7. Takt Board  
8. Skill matrix  
9. Quality Inspection - CC1  
10. Check cards  
11. DPP - Daily production plan  
12. Kanban  
13. Defects/Damage parts  
14. Waste Segregation

**Key Point**

- Check all the KPI's as per level 1 board
- Refer AM sheet, (How to perform it already available on check sheet)
- Station card
- Refer OBC sheet
- Refer 5s daily/weekly check sheet
- Update the takt board as per line movement
- Refer skill matrix board
- Station card
- Follow the DPP sequence as per planned (Level 1 meeting)
- Station card
- Station card
- Station card
- Station card

---

**Total time of non value added operation**

- Model 1: 131.0
- Model 2: 83.0
- Model 3: 8.0

---

**Stock**

- Operating Area
- Inspection

---

**Symbols**

- Stock
- Operating Area
- Inspection

---

**Arabian Vehicles & Trucks Industry Co. Ltd.**
### Station Card Operation Sheet

#### Operation Name
**Quality Inspection**

<table>
<thead>
<tr>
<th>No</th>
<th>Main Steps / Activity</th>
<th>Time</th>
<th>Key Points (Reason)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inspect the chassis after operator completion</td>
<td>2.00</td>
<td>Verify the assembly and ensure no detect</td>
</tr>
<tr>
<td>2</td>
<td>Refer the CC1 check</td>
<td>1.00</td>
<td>Check the torque value as per the CC1 instruction</td>
</tr>
<tr>
<td>3</td>
<td>Measure the torque for CC1</td>
<td>2.00</td>
<td>Mention the actual torque value on the CC1 instruction</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If not ok adjust it to specific value and sign</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mark the joints with green marker for CC1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Inform to operator about the defects &amp; mention in open points</td>
</tr>
<tr>
<td>4</td>
<td>Sign for CC1 and Check the operator sign in check card</td>
<td></td>
<td>Sign on CC1 instruction after the marking and Verify respective operators are signed once job is complete</td>
</tr>
</tbody>
</table>

**Special instructions & Others:**
If there is any deviations in process, report to Team Leader/Supervisor as soon as possible.
Line Start-Up Check Sheet

Autonomous Maintenance

<table>
<thead>
<tr>
<th>Description</th>
<th>Checking Method</th>
<th>Inspection Position</th>
<th>Check Item</th>
<th>Countermeasure</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaning</td>
<td></td>
<td>N/A</td>
<td>Dust and rust to be removed</td>
<td>Cotton waste / Scissor lift</td>
<td>Monthly</td>
</tr>
<tr>
<td>Visual Check</td>
<td></td>
<td>Position 1</td>
<td>No damages on remote, cable &amp; cable trolleys and dust or rust</td>
<td>N/A</td>
<td>Monthly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Position 2</td>
<td>Abnormal Braking condition</td>
<td>N/A</td>
<td>Daily</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No damages on remote and cable</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No abnormal noise on chain</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Check for hook safety lock</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Over Head Crane</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Check</td>
<td></td>
<td>N/A</td>
<td>Dust and rust to be removed</td>
<td>Cotton waste / Brush</td>
<td>Monthly</td>
</tr>
</tbody>
</table>

Chassis Rack

<table>
<thead>
<tr>
<th>Description</th>
<th>Checking Method</th>
<th>Inspection Position</th>
<th>Check Item</th>
<th>Countermeasure</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual Check</td>
<td></td>
<td>N/A</td>
<td>Dust and rust to be removed</td>
<td>Cotton waste / Brush</td>
<td>Monthly</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Check No dust or rust</td>
<td>N/A</td>
<td>Weekly</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>As per picture</td>
<td>N/A</td>
<td>Daily</td>
</tr>
</tbody>
</table>

NOTE:

i) All Check points should be checked at the beginning of production
ii) All crane remote and hoise not keep together on the hook
iii) If any abnormality is found, stop and inform to your Team leader/Supervisor
iv) In case of no check mark, mark NA
v) Don't fill anything on week end/off days and leave as blank

Date

Item

Concern Description

Inform to

Comments on Maintenance Monthly Check

Name & Sign

SOP

POS.5

POS.6
Balancing

• Balancing work content between resources.
  – equipment
  – Individuals

• Important to.
  – Achieve legal capacity
  – Achieve high resource
  – Make harmonious flow
  – Highlighting waste
Yamazumi Objective

➢ We want to have standardized operations by having Production, Station and Detail cards and optimizing these operations by visualizing our capacity and manpower requirements by Yamazumi Boards!

OUTCOME

➢ Zero defect mindset by implementation of SOP
➢ Value added to the work/ customer
➢ Improve the semi value added activity
➢ Eliminate the non value added activity
➢ Synchronize the operation for all variants with maximum utilization of resources
  - Visual, showing key issues
  - Promotes continuous improvement
  - Help engage teamwork
Visual balancing

- Timed standard is the starting point.
- Conducted primarily by the operators.
- Visualizes coating at each position.

Green magnets are the work moments we do today (both value creation and not value building operations). Red cards - waiting time - wasting.

The coating is visualized, it simplifies / allowing rebalancing. It creates engagement and participation!
Stay balanced alive!

• Changes in standards might require rebalancing
  – Modified work content.
  – Amended operation time
  – Moved operation. Etc.

• The balance needs to be kept alive!

• Required to "bring home profits"
Yamazumi Board

Capacity: 5 Trucks / Day
Capacity: 10 Trucks / Day
Capacity: 15 Trucks / Day
Capacity: 20 Trucks / Day

Operator 1  Operator 2  Operator 3  Operator 4
Summary

Now that we have equalized, standardized and balanced production flow, we can start working with takt flow.
KPI’s
“Due to our Journey Our Way of Working will Establish our KPI’s in an Excellent Position”
Safety Board: 12 Nov 2017
Questions asked during Gemba Audit Layer from Mr. Moosa Al-Oufi:
1. When can you fill the observation card
As soon as I find any safety observation/violation at the work place.
2. What is the next step?
Inform the safety violator and the team leader and try to find the solution of observation.
3. What is the next step?
Give to my team leader.
Safety (No. of Accidents with Lost Time)

Celebrating Safe Plant

- 2013: 11 accidents
- 2014: 12 accidents
- 2015: 3 accidents
- 2016: 0 accidents
- 2017: 0 accidents

Accidents
Delivery Precision

Year: 2007-2017

- Delivery Precision
  - 2007: 53%
  - 2008: 68%
  - 2009: 65%
  - 2010: 90%
  - 2011: 58%
  - 2012: 61%
  - 2013: 72%
  - 2014: 67%
  - 2015: 77%
  - 2016: 85%
  - 2017: 79%

Target: 80%
First Time Through

Year | FTT (%) | Target
--- | --- | ---
2013 | 32 | 50
2014 | 60 | 80
2015 | 69 | 90
2016 | 78 | 100
2017 | 83 | 100
Lowest ever in history of AVI
Inventory Turnover Days

- **2009**: 126 days
- **2010**: 50 days
- **2011**: 39 days
- **2012**: 42 days
- **2013**: 54 days
- **2014**: 52 days
- **2015**: 51 days
- **2016**: 56 days
- **2017**: 48 days

The days have been decreasing over the years, and the target seems to be approaching the average days.
Absent (Permanent)