TAKT PERFORMANCE INDICATORS

PAPER 135

BY

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INTRODUCTION
INTRODUCTION

• Interior activities: 10 different trades
• Takt planning team: carpentering, plumbing, ventilation, electricity, kitchen installation and painting
• 16 wagons
INTRODUCTION

PRELIMINARY CASE STUDY
- Practicing takt
- Mapped possible challenges during the takt planning and the takt plan execution
- Handle these challenges

PRIMARY CASE STUDY
1. What general challenges are expected during the takt plan execution?
2. Which takt performance indicators can identify these challenges?
METHOD

- Literature review: To understand takt and its evolution
- Case study: Obtain data from an ongoing takt project
- Document study: Obtain data from an ongoing takt project
- Interviews: Strengthen the validity of the study
- Measurements: Answer the second research question
MEASUREMENTS

1. What challenges do we want to measure?
2. Where do we want to measure? (takt area)
3. How are we going to measure? (indicators)
4. When do we want to measure? (point of time)
5. Who shall be measured and who shall measure?

1. PPC
2. Perfect Handovers
3. Overtime
4. Returns
5. Additional choices
6. Man-hours
7. Staffing
THEORETICAL FRAMEWORK

TAKT
The required rate of production to meet the supply demand for that product.

TAKT PLANNING
Improve workflow in production

Adjustment mechanisms:
• Hybrid wagons
• Directional construction process
• Buffers
• Standardization
• Quality assurance

TAKT CONTROL
Record necessary changes to the takt plan
### RESULTS – Takt plan components

<table>
<thead>
<tr>
<th>TAKT PLAN COMPONENTS</th>
<th>CHALLENGES</th>
<th>MEASURE TECHNIQUE: INDICATORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) GATHER INFORMATION</td>
<td>Inadequate and insufficiently detailed information</td>
<td>Protocol: Returns (4)</td>
</tr>
<tr>
<td></td>
<td>Honesty within the man-hours estimate</td>
<td>Timesheets: Man-hours (6)</td>
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<tr>
<td></td>
<td>Lack of manpower</td>
<td>Protocol/Timesheets: Overtime (3)</td>
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<td></td>
<td>Achieve steady staffing</td>
<td>Timesheets: Staffing (7)</td>
</tr>
<tr>
<td>4) BALANCE THE WORKFLOW</td>
<td>Illness</td>
<td>Timesheets: Staffing (7)</td>
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## RESULTS – Takt plan components

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<tr>
<td><strong>5) UNDERSTAND THE TRADE DURATIONS</strong></td>
<td>Delays</td>
<td>Protocol: PPC (1) + perfect handovers (2) + overtime (3) + returns (4)</td>
</tr>
<tr>
<td></td>
<td>Illness</td>
<td>Timesheets: Staffing (7)</td>
</tr>
<tr>
<td><strong>6) ESTABLISH THE PRODUCTION PLAN</strong></td>
<td>Trades: Obtain control over the takt</td>
<td>Protocol: Perfect handovers (2)</td>
</tr>
<tr>
<td></td>
<td>Project management: Obtain control over the takt</td>
<td>Protocol: Are the protocols filled out?</td>
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RESULTS – Adjustment mechanisms

<table>
<thead>
<tr>
<th>ADJUSTMENT MECHANISMS</th>
<th>CHALLENGES</th>
<th>MEASURE TECHNIQUE: INDICATORS</th>
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</thead>
<tbody>
<tr>
<td>1) HYBRID WAGONS</td>
<td>Avoid different trades working in the same areas at the same time</td>
<td>Protocol: Returns (4)</td>
</tr>
<tr>
<td>2) DIRECTIONAL CONSTRUCTIVE PROCESS</td>
<td>A directional construction process should not provide buffer zones</td>
<td>Protocol: Returns (4)</td>
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<tr>
<td>3) BUFFER</td>
<td>The right number of buffers</td>
<td>No existing indicator</td>
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<td></td>
<td>Low priority on buffer-work</td>
<td>Timesheets: Staffing (7)</td>
</tr>
<tr>
<td>4) STANDARDIZATION</td>
<td>Less variation in the work tasks</td>
<td>Timesheets: Staffing (7)</td>
</tr>
<tr>
<td>5) QUALITY ASSURANCE</td>
<td>Good communication within the project</td>
<td>Protocols: Do every trade sign?</td>
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<tr>
<td></td>
<td>Forget an additional choice</td>
<td>Protocol: Additional choices (5)</td>
</tr>
</tbody>
</table>
## RESULTS

### Handover protocol

<table>
<thead>
<tr>
<th>Week</th>
<th>1) Steel, Inner walls</th>
<th>2) Plaster, 1st layer</th>
<th>3) Electrical plumbing</th>
<th>4) Ventilation ducts</th>
<th>5) Fire sprinkler + Pressure test</th>
<th>6) Plaster, Close walls + Ceiling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 4</td>
<td>1,2</td>
<td>2,3</td>
<td>3,4</td>
<td>4,5</td>
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- **No protocol was filled out**
- **Handover conducted before planned progress or with delay**
- **Handover conducted according to plan**
- **Protocol lacking a signature**
DISSCUSION

• Follow-ups and personal support

PROTOCOL:
2. Perfect handover
3. Overtime
4. Returns
5. Additional choices

TIMESHEETS:
6. Man-hours
7. Staffing

MANUAL MEASUREMENT?
1. PPC

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CONCLUDING REMARKS

16 CHALLENGES

1. Hybrid wagons
2. Directional construction process
3. Buffers
4. Standardization
5. Quality assurance

7 INDICATORS

1. PPC
2. Perfect Handovers
3. Overtime
4. Returns
5. Additional choices
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GATHER INFORMATION
DEFINE ZONES
UNDERSTAND THE TRADE SEQUENCE
BALANCE THE WORKFLOW
UNDERSTAND THE TRADE DURATIONS
ESTABLISH THE PRODUCTION PLAN