Potential for improvement at ABB Cewe-Control

(Based on a degree project with the same title)

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Introduction

ABB Cewe-Control in Vasteras Sweden has had a growth in terms of sales over the last ten years, but they haven't made any changes in their internal logistics to meet up with the increase in demand and production. With this background ABB Cewe-Control believes that they have a great potential for improving their efficiency by eliminating waste in their internal material flow.

According to ABB Cewe-Controls potential the projects purpose was to produce proposals for how to eliminate waste within the internal material flow.

1 Method

At the first stage a literature search was performed in order to get a relevant knowledge base within the projects focus. Literature that became a part of the project regarded for example Lean production, waste, Benchmarking, Six Sigma, and Lead-time analysis.

To gather the necessary information to identify waste within the internal material flow interviews and observations were performed. In order to get a good understanding of ABB Cewe-Controls material flow several flow charts were drawn based on the information gathered through the interviews and observations. The flow charts were divided into one flow chart for each of the different production divisions. The routes of the different material batches arriving and departuring from the production divisions were covered by the flow charts.

Based on the gathered information different kind of waste could be identified. The project involved benchmarking where companies like SCANIA, ABB Robotics, Getrag, and Bombardier were studied through visits and interviews. The purpose of the benchmarking was to find relevant solutions and information regarding internal material flows that could be adapted to ABB Cewe-Control. To get knowledge regarding how much time the different materials spend within the production facilities a lead-time analysis was performed.

2 Results

2.1 Areas of problem

During the gathering of information the following areas of problems was discovered:

- Lack of space in the pallet layer for arriving material batches, witch for example may force the material staff to place the material batch on the floor.

- At the arriving department some pallets that arrive are not adopted for the conveyor belt.

- High frequency of heavy pallet handling.
- Many handlings per material batch.
- Forklifts that can't reach the highest level in the storage and some of the material staff haven't got the right forklift license.
- A common behaviour is repacking of material.
- Vital material staff that get of the daily work shift earlier then other material staff.
- Low balance security of material.
- Lack of standardized routines in the tasks regarding the internal material flow.
- Messy around the production units as a result of unpacking arriving goods in cardboard boxes

2.2 Hand over analysis

With the knowledge that there are many handlings per material batch a hand over analysis was performed. The analysis was performed during one day where arriving material were randomly studied with the aim of finding how many different handlings the material batch in question involved. The number of different handlings were counted from the material batch arrival at ABB Cewe-Control to its first planned storage location. And the factor counted was the number of different staff that was handling the material.

Four randomly chosen arriving material batches became the result of the analysis and the number of handlings for those were as follows: 4, 5, 5, and 5 handlings.

2.3 Lead-time analysis

A lead-time analysis was carried out for the material that arrives at the three departments that produces components and parts for the end products. The lead-time measured consists of the time from arrival of a material batch until the material batch is used in the production.

An ABC-classification of the different materials was made based on the value of the yearly consumption of the material in question. The A-classified materials have the highest values of yearly consumption and represent approximately 20 % of the total yearly value of material consumption for the department. Lead times were calculated based on the A- and B-classified materials. All lead times were calculated based on the average consumption during January to April 2009. And the lead times calculated were the lead time for the actual balance of material the day the data were collected (2009-04-30), the lead time per lot size, the lead time of the average stock, and the lead time of the reorder point quantity.

The analysis showed many lead times way over 60 working days, which is the same as three working months.

2.4 Benchmarking

During the benchmarking the following solutions amongst others regarding internal material flow were found:

- Two separate arriving departments, one adapted for small arriving goods and another for large arriving goods.

- ”Box system” with different kinds of plastic boxes for arriving goods instead of other goods carriers like cardboard boxes.

- The usage of ”kit stations” where preparations of the material is made so that the assembler can focus on assembles instead of unpacking material for example.

- The usage of ”material train” as material supply system in the internal material flow. It’s a system where a truck is driving with several trailers in tow. All the material gets transported by the material train which has different routes. The train picks up its goods at different material squares and then delivers it to the different assembly stations of its predetermined route.

- Automatic arrival station with an automatic weight control and conveyor belt.

3 Analysis and Conclusion

Here is a summarized presentation of the waste discovered in the internal material flow and proposals for how to eliminate/minimize those.

- **Waste:** Long lead times were shown during the lead-time analysis. **Improvement:** Reduce lead times by minimizing the order quantities.

- **Waste:** Some of the material pallets that arrive are not adopted for the conveyor belt. **Improvement:** Talk to the supplier in question to adopt the pallets to the conveyor belt.

- **Waste:** Heavy pallet handling. **Improvement:** Reduce the number of pallet storages which will force a behaviour with a lower frequency of heavy lifting and transportation of pallets. Reduce the storages sizes and implement a new central storage at today’s department for arriving material. Implement an automated arriving system.

- **Waste:** To many handlings per material batch. **Improvement:** Transportation of a material batch should be performed all the way from arrival at ABB Cewe-Control to its first predetermined storage location in one transportation. The same behaviour should also be adapted to internal transportations later on in the supply chain. A ”material train” could be a good solution to minimize the number of transportations and handlings per material batch together with an automated arriving system.

- **Waste:** Lack of truck license and trucks that can’t reach the highest level of storages. **Improvement:** A truck that can handle the required operation should be used. New truck licenses and improved routines could easily solve this problem, in this case a co-

worker with the right license should take care of the task together with the right truck.

- **Waste:** Predetermined storage places that are already taken and wrong sizes on the predetermined storage places. **Improvement:** Go through the data stored in the warehouse management system to correct errors should solve the problem.

- **Waste:** Unique competences amongst the co-workers. Which is referring to some staff that is the only staff with its specific competence regarding the internal material flow. **Improvement:** A new material department is under construction and all staff of this department should be able to perform all tasks in the whole internal material flow.

- **Waste:** Repacking material. Both unpacking material at the assembly stations by assembly staff and the repacking of finished products at the packing department. **Improvement:** Make sure to get the material batches delivered as the assemblers want it in the assembly. ”Kit stations” can be implemented where the material is prepared for assembly in the best possible way. Either the material arrives from supplier as they want it in assembly or it will be unpacked at the ”kit station” at ABB Cewe-Control at arrival. Packing of finished product should only take place one time either at the department in question or at the packing & spedition department.

- **Waste:** A vital material staff that finishes the work shift earlier than other related staff. **Improvement:** The staff referred to should work as long shifts as the others to make sure the right competence is available when needed.