CHAPTER VI
CONCLUSION AND RECOMMENDATION

After data has been analysed and come out with the final result, there are some option that available to improve the productivity from the project target. But need to consider many aspects by calculating the benefit and cost needed to do the improvement of the hybrid automation line whether in-line or off-line production.

6.1. Conclusion

Based on the previous result on the data analysis, we can separate the result become two targeted improvement in the hybrid automation line which are in-line improvement and off-line improvement, in-line improvement consists of improvement in the hybrid automation line in product of Apollo, off-line improvement consists of improvement that located on the support line of hybrid automation line in the station of kitting, packing, and material handling.

6.1.1. In-line

After some option have been applied, there are some changing in the process steps in the in-line of hybrid automation line Apollo 2306AB which option that have been applied into some simulation will lead into conclusion:

a. Productivity of HSA increase 6% based on the calculation result.
b. Utilization of Apollo hybrid automation line increase around 1%.
c. Start from the current Apollo with 28.57 HSA / HC become 30.25 HSA / HC
d. Gasket Install will become the first station before Loading
e. 1 HC saving in Gasket Install station
f. Should be eliminate ACF inspection or combine with Loading station
g. Cost for modifying the fixture is $1.800
h. Payback period on this option is 0.088 years
i. Cost saving for 1 operator is $20.400 / year
j. Proposed option is still waiting for capital budget calculation and plant to implement in the next target DGR (Daily Going Rate).

6.1.2. Off-line

Implementation in the off-line area such as material handling, support operator in the main production line lead into positive outcome that have been show in the conclusion below:

a. There are 3 HC saving improvement that have been implemented on 13th of July 2017
b. Labour productivity increase 7%
c. From 39 HC that run the off-line hybrid automation line become 36 HC
d. Rearrange and combine jobs using ECRS technique
e. Should be remove some non-value add job
f. Remove put scanner label QST levels on tray (-4.45 min)
g. Material loading from Kitting to automation line plus transfer finish goods to packing area (+4.19 min)
h. Utilization increase from 83% become 90%, there is 7% increase.
i. Job from material handling will be combine with kitting and packing station
j. Cost saving for 3 HC is $61.200 / year
k. Should be improve key down time system

6.1.3. Cost Spent, Benefit, Payback Period

Total of cost spent, benefit and payback period within the in-line and off-line improvement:

Total HC saving = 4 HC / shift

Salary = 1.700$ / HC x quarter

Working shift = 3 shifts

Total saving = 4 HC / shift x (1.700$ / HC x quarter) x 3 shifts x 4 quarters = $81.600 / year

6.2. Recommendation

Lean is really powerful tools that can help many industrial companies to reach every goal that has been settle up. Especially, lean concept with correct understanding which mean running by trained people with dedication is really become tools that will help the company to reach the maximum productivity with reducing or eliminating any waste. In this thesis, line balancing and ECRS technique are both coming from the method from Lean that has been commonly used by many industrial company that have production and assembly line to achieve their own target.

Therefore, the concept of Lean technique should be always developed that will always lead into significant and critical result through any methods and improvement that will help many people to achieve their own projects. In X, the

concept of lean technique should be learned deeper because in this case they are quite implementing Lean technique just previous 2 years, and because X Co. experienced significant result for the production line they keep development every Lean team in every department that will support in X Co. Thailand.

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