Subsystems Explained

# Production Planning & Control (PP&C)

Schedule production including maintenance time prediction (preventative maintenance) based on machinery lifetime for example. Production Schedule includes production sequence ie. Process (material) flow for the delivery of the end product as well as the number of new machines needed and workers needed to operate them. They take into account the startup defects as well. This is the planning part. They get input from the PM about the preventive and corrective protocol and implement that in the production schedule when there are defects. This is the control part. The control part consequently affects the finance and inventory part.

Output of the Planning part is :

* production schedule with production sequence

Output of the Control part is:

* adjusted production schedule in case of failure

# Finance & Inventory Management (F&IM)

They receive the production schedule. They list down the raw materials, new machines and staff needed from P&C and use that for cost prediction as well as order prediction of the raw materials (as in when it needs to be scheduled) since they also manage inventory and warehousing.

Output is :

* a financial prediction data sheet (Financial Model and Break Even Prediction)
* the inventory plan.

Output when there is an adjusted production schedule:

* adjusted ordering schedule in case the safety stock kept is not enough (the financial model and inventory plan needs to account for this by maintaining flexibility)

# Production Flow Design (PFD)

They receive information about the production schedule and sequence from P&C and warehousing information from F&IM in order to create the optimum floor plan layout so that interdependent machines are grouped in order to minimize the ide time while keeping in mind the safety of the floorplan layout and keeping enough space for inventory (warehousing).

Output is :

* the floorplan layout. (the best outcome to achieve product flow efficiency).

# Quality Control & Risk Mitigation (QC&RM)

They receive the green highlighted outputs from the different subsystems and do a risk and FMEA analysis based on statistical models. They maintain quality control by deriving a preventative and corrective protocol in case failure occurs during production. This also includes the FEM analysis of the cranes since this can be seen as a risk preventative method for ensuring the end product quality is met. The protocol includes a maintenance strategy as well.

Outputs are :

* Risk and FMEA analysis,
* Quality Control (using Statistics)
* FEM analysis
* a preventative protocol including the unpredicted maintenance strategy.

The preventative protocol from PM is given to the different subsystems again so that they can reimplement it in their subsystems. This mainly concerns P&C and F&IM. So they redesign the production schedule and inventory by implementing the maintenance strategy and keeping a safety stock in the warehouse in order to lower the risk of inactive operations. This way the final system can run more efficiently and deliver the end product with the desired quality.