To Support r

Manufacturing: -

* Configure to Order (CTO)
* Make to Stock (MTS)
* Make to Order (MTO)
* Engineer to Order (ETO)

Project:

1. MPS only figures following items : length of horizon (this is input of start product date to production completed date), how many people are needed, do we need overtime, shift, how much cost for normal, overtime and shift and purchase for every components from top down.
2. It won’t consider to new hire / dismiss extra people
3. Needs to find the algorithm to find best configuration of shift. (no longer needed, show different cost structure for different shift arrangement)
4. Compare cost of normal, overtime and shift – need to add shift rate during operation setup
5. Need to configure period type (day, week, month), how many days available in a given period to handle holiday etc. ( 8 hours, 16 hours etc, 5 dyas or 7 days etc), shift cost

**Regular time** (period day, week, month, year):

((regularTimePerEmployeePerDay\* InitialNumberEmployee) / HoursNeededPerUnitPerEmployeePerDay ) \* period = ProductMakePerPeriod;

Demand/ProductMakePerPeriod = totalRegularPeriodNeeded <= period

Cost: costPerRegularHour\* regularTimePerEmployeePerDay\* InitialNumberEmployee \* period

**Over Time:** (if totalRegularPeriodNeeded > period )

((overimePerEmployeePerDay \* InitialNumberEmployee) / HoursNeededPerUnitPerEmployeePerDay ) \* period = ProductMakeOverTimePerPeriod;

(Demand – totalRegularPeriodNeeded)/ ProductMakeOverTimePerPeriod = totalOvertimePeriosNeeded <= period

Cost: costPerOvertimeHour \* overimePerEmployeePerDay \* InitialNumberEmployee \* period

**Shift:** (if totalOvertimePeriosNeeded > period )

Shift 1:

((regularTimePerEmployeePerDay\* InitialNumberEmployee) / HoursNeededPerUnitPerEmployeePerDay ) \* period = Shift1ProductMakePerPeriod;

Demand/ Shift1ProductMakePerPeriod = totalShift1PeriodNeeded

Cost: shift1CostPerRegularHour\* regularTimePerEmployeePerDay\* InitialNumberEmployee \* period

Shift 2: (totalShift1PeriodNeeded > period)

((regularTimePerEmployeePerDay\* InitialNumberEmployee) / HoursNeededPerUnitPerEmployeePerDay ) \* period = shift2ProductMakePerPeriod;

(Demand - Shift1ProductMakePerPeriod )/ shift2ProductMakePerPeriod = totalShift2PeriodNeeded

Cost: shift2CostPerRegularHour\* regularTimePerEmployeePerDay\* InitialNumberEmployee \* period

Shift 3: (totalShift2PeriodNeeded > period)

((regularTimePerEmployeePerDay\* InitialNumberEmployee) / HoursNeededPerUnitPerEmployeePerDay ) \* period = shift3ProductMakePerPeriod;

(Demand - Shift1ProductMakePerPeriod - Shift2ProductMakePerPeriod)/ shift3ProductMakePerPeriod = totalShift3PeriodNeeded

Cost: shift3CostPerRegularHour\* regularTimePerEmployeePerDay\* InitialNumberEmployee \* period

totalShift3PeriodNeeded > period – new hires / increase employs or delay delivery date

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Demand in Period 1** | **Production in Period 1** | **cost** | **Total labor cost** | **Total cost** |
| **Regular Production** | **xxxxxx** | **nnnn** | **cr** | **cr** | **Labor+other** |
| **Over time production** |  | **mmm** | **co** | **Cr+co** |  |
| **Shfit 1** |  | **yyyyy** | **Cs1** |  |  |
| **Shift 2** |  | **zzzzzz** | **Cs2** |  |  |
| **Shfit 3** |  | **qqqqq** | **Cs3** | **Cs1+cs2+cs3** |  |

Stock:

Product/Project/retail Stok Schedule

Customer:

Customer id: (internal)

End date:[] Forecast Demand:[] (required-quantity, or total order count, may divided into deliverable time periods)

|  |
| --- |
| Customer |
| EndDate-1 Demand-1 |
| EndDate-2 Demand-2 |

~~Period unit: year, month, week, day, hour~~

~~Start time:(operation)~~

~~Procurement Type: in house/purchase/subcontract (inventory/operation)~~

~~Scrape rate: (operation)~~

~~Production Lot Size policy:( inventory)~~

~~Safety Stock (Minimum Ending Inventory level allowed): ( inventory )~~

~~Maximum Ending Inventory level allowed: (inventory)~~

~~Lead time: based on labour time to calculate the periods or one off, or milestone period (operation/inventory)~~

~~Unit cost: (inventory /opeartion?)~~

supplierPartNumber(inventory)

MPS is produced after MRP process



<https://www.youtube.com/watch?v=_uXBwibObwY>

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| MPS Summary Table | | | | |
| Product Name: | Table | **Approved By:** |  | **Product Image:** |
| Customer Order Name: | Phoenix Furniture Square Table, Australia | **Approved Date:** |  |  |
| Customer Order Number: |  | **Total Production:** |  |
| Revision: | 1.0 | **Production Starts Date:** |  |
| ~~Period Count (year/month/week/day/hour):~~ |  | **Production Due Date:** |  |  |
| Lead Time: |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Data Item | Opening Inventory | Demand Quantity | Scrape rate | Required Quantity | Net Inventory Before Production | Planned Product Quantity | Projected Inventory/Ending Inventory | Lead time: |  | Total | Note  Square | |
| Period 1  dd.mm-dd.mm | 100 | 40 | 0 | (1+scrapt\_rate) \* Demond Quantity | Opening Inventory – Required Quantity | Required Quantity – Opening Inventory > 0 | Opening Inventory - Rquired Quantity > 0 |  |  |  |
| Period 2 |  |  |  |  |  |  |  |  | 0.001 |  |
| Period 3 |  |  | 10 |  |  |  |  |  |  |  |  |  |
|  |  |  | 1 |  |  |  |  |  |  | 10000\*(1+0.001%) |  |  |
|  |  |  | 8 |  |  |  |  |  |  | 50 |  |  |
|  |  |  | 10 |  |  |  |  |  |  | 10 |  |  |
|  |  |  | 4 |  |  |  |  |  |  | 4\*10000\*(1+0.001%) |  |  |
|  |  |  | 5 |  |  |  |  |  |  | 5 |  |  |