Whitepaper

Excess and Obsolete Inventory Reserves

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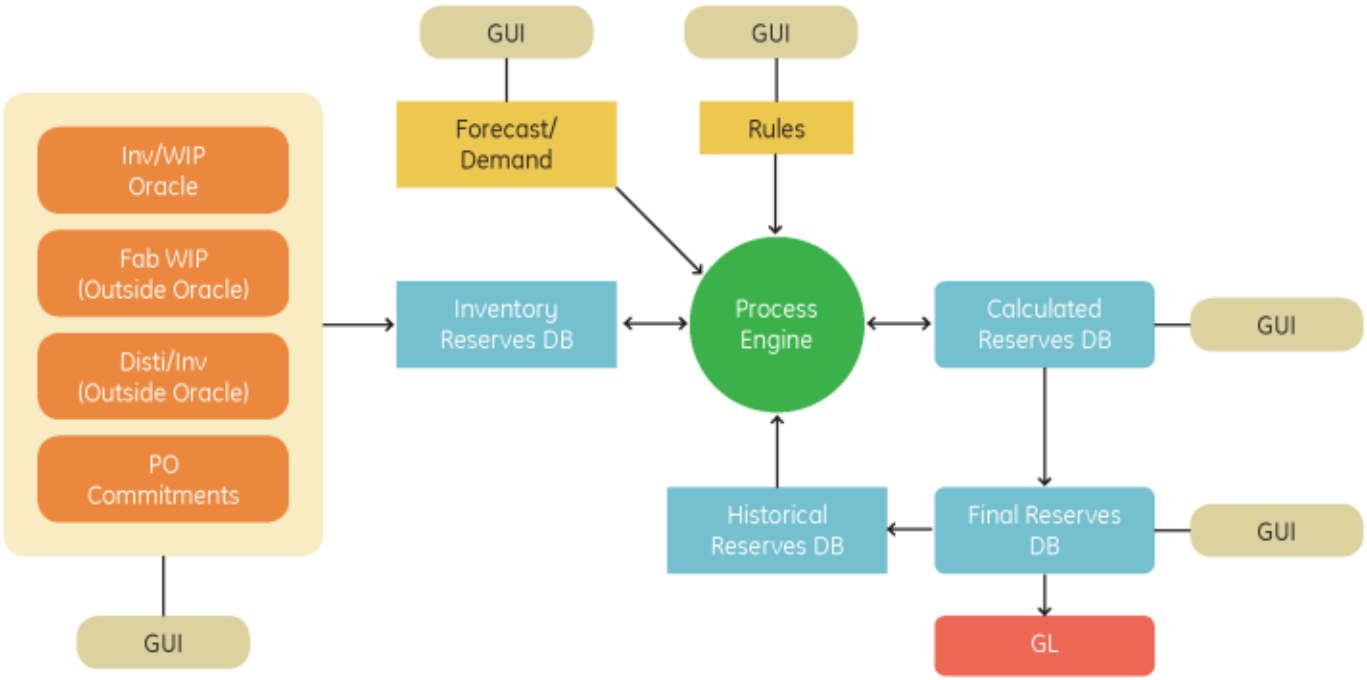
Introduction

GAAP and IFRS call for true and correct representation of material assets (inventory and WIP) of the reporting company. The valued inventory should have demand and the market price should be more than the reported value.

A number of companies, especially in high-tech industry have limited product life cycle and ever reducing market prices for their products. Lead times for the entire supply chain are typically upwards of 3 months and hence companies try to keep some stock against forecast. Rapid developments and fierce competition sometimes leads to excess and/or obsolete inventory, with less demand to consume the available and committed supply (and pipeline).

Once reserved, this inventory can be valued again only if the demand is materialized (i.e. material is actually sold). Add the complexity of distribution channel inventory and purchasing commitments towards suppliers, managing inventory reserves is a very time consuming job for cost accounting professionals, more so if you are a manufacturer with medium to highly complex product structures.

Another reserve (LCM – Lower of Cost or Market) is related to mark down on available stock or work in process in case manufacturing cost becomes lower than the market price. This would take into account cost to complete and sell available inventory while comparing current book value to market price. Most companies create some kind of spreadsheet solutions to calculate and manage reserves, which becomes unmanageable once the business matures and there are a number of old products.



Terms Defined

Following are the terms and their importance in calculating and managing reserves:

Supply:
This is the inventory through the relevant part of supply chain. It includes raw material, semi-finished material and finished goods and the work in process owned by the company. It may also include any supplier inventory that your company is committed to take possession and any inventory in the distribution channel that your company has to accept returns or where revenue is not yet recognized. Typical commitment is one node up and down the supply chain.

Demand:
This is the total of forecast and firm demand (sales orders) for relevant demand horizon. For different companies the demand horizon could be significantly different. Typically it is either 1 or 2 years demand blessed by all departments. If LCM reserves are considered, the demand needs to be broken down in periods with expected ASP for each period to get correct and detailed LCM calculations.

E&O – Excess and Obsolete:
Refers to Excess and Obsolete inventory which has no demand.

LCM – Lower of Cost or Market:
Refers to the minimum number between the stated unit cost and market price for the product and is applicable for products where market price has reduced below production/procured cost. Some companies handle LCM reserves by lowering the standard cost for their products, although it is not possible if there are multiple end products being manufactured using the same raw material. It also creates big manufacturing variances.

Cost to Complete (and Sell):
This is the cost to complete in-process material to its finished saleable form. It typically includes selling cost. It usually goes with LCM calculations in case the material is not yet finished.

ASP:
Average Selling Price: Is the average of selling price for a product across all demand channels (typically for the period under consideration). This is used to determine if LCM reserves are applicable for a product or not. If the ASP is lower than finished good cost + cost to sell, then there is a need for LCM reserves.

Shipments:
This represents actual sales to end customers (or tier 2 customers) when typically revenue is recognized. This does not represent shipments to replenish/load distribution channels.

EGU – Effective Good Units:
The expected finished good quantity for a lower level supply considering standard yield loss at each manufacturing stage and/or operation

Calculating E&O Reserves

The process to calculate E&O reserves involves netting of supply and demand. The demand would be ideally sorted by near term to long term with firm demand being considered first. The supply would be sorted such that supply closest to consumption point would be considered first – distribution channel inventory followed by finished goods, followed by WIP and semi-finished goods, followed by raw material. Purchasing commitments (or supplier inventory) would be considered last.

- Extract supply and demand data from ERP system; upload additional data as required
- Net Supply and Demand to calculate excess supply in the supply chain
  - First consume available supply for finished goods
  - Cascade demand down to WIP, semi-finished and raw material level to net remaining demand with lower levels of supply considering BOMs defined in ERP system
  - Include any impact of yields defined in BOMs or operations in the routings
- Check any demand still available to lower levels of supply using alternate BOMs
- Calculate quantity and value of the excess supply to determine current reserve requirements
- Report excess demand that is not consumed
- Compare current reserves with previously applied reserves for the same product to identify need for additional reserves or release of reserves
- For each supply item – finished good or lower level – determine the corresponding shipments of all finished goods that can be made using the supply item
- Compare reserves against shipments for last 12 months
- Suggest additional reserve or release requirements for each supply item
- Allow for any manual overrides to the calculated reserves
- Finalize reserves and store for future reporting and comparisons
- Make GL entries either at summary or detailed level

Example of E&O calculation:

The table below shows E&O calculations:

Users can make changes to supply and demand and run supply demand netting again any many times as required. Once reserves are finalized, this supply demand match and netting information can be stored in history for future reporting and audit purposes. Once finalized, this information cannot be changed so as to make it foolproof from audit perspective.

Demand Item	Supply Item	Level	OPN Code	Supply source	Yield	Comp Qty	Demand Qty	Supply Qty	Demand consumed Qty	Supply consumed Qty
FGI1	FGI1	1		INV	1	1	100	30	30	30
FGI1	FGI1	1	ASY	WIP	.9	1	70	20	18	20
FGI1	SFG1	2		INV	.9*.9	2	52	200	52	130
FG2	SFG1	2		INV	.9*.9	2	20	70	20	50
Excess	SFG1			INV	.9*.9	2		20		
Excess	RM1	3		INV	.9*.9*.9	2		100		

Shipment Calculations

To analyze how the product is doing in the market, shipment data is used. Depending on whether it is a predominantly distributor model or direct shipments to end customers, either Oracle shipments or POS data could be used. For each supply item, the shipments of all items that include the supply item in consideration as a component (or directly shipped) are determined and reported in monthly buckets.

This shipment data allows user properly analyze lifecycle and trend for a product to help them with manual overrides for final reserves (see below). Shipment extraction program extracts Oracle shipments for the desired number of periods going back from the user entered period. Number of periods to go is also a user entered parameter.

For POS shipments, users can directly load them in the temporary shipment table and then run subsequent programs.

Supply Item	Shipped Item	BOM Level	Total Qty	Apr 2011	May 2011	Jun 2011	Jul 2011	Aug 2011	Sep 2011	Oct 2011	Nov 2011	Dec 2011	Jan 2012	Feb 2012	Mar 2012
RM1	FG1	Lower Level	120	10	10	10	10	10	10	10	10	10	10	10	10
RM1	FG2	Lower Level	80	5	10	5	10	5	10	5	10	5	5	5	5
SFG1	FG1	Lower Level	120	10	10	10	10	10	10	10	10	10	10	10	10
SFG1	FG2	Lower Level	80	5	10	5	10	5	10	5	10	5	5	5	5
FG1	FG1	Same Level	120	10	10	10	10	10	10	10	10	10	10	10	10
FG2	FG2	Same Level	80	5	10	5	10	5	10	5	10	5	5	5	5

Reserve Comparison

The table below shows reserve comparison with historical reserves

Current Period	Supply Item	Supply source	Current Reserve Qty	Current Reserve Amount	Compare Period	Past reserve Qty	Past Reserve Amount	Shipment Qty	User Reserve Qty	User Reserve Amount	Action
MAR-12	SFG1	INV	20	100	DEC-11	20	100	200	20	100	No change
MAR-12	RM1	INV	100	400	DEC-11	200	800	200	150	600	Add Reserve

User columns in the table provide additional flexibility for users to make any changes to the reserve amount before finalizing them and take precedence over calculated quantities. Shipment quantity in the above table represents actual shipments for all items shipped that can be made using the supply item in the past year or quarter (as desired).

This table displays all supply quantity whether reserved (excess) or not so that supply can be tied back to extracted or uploaded supply. Once reserves are finalized, they are stored in reserve history for future reporting and comparison.

LCM Reserves

LCM reserves are calculated after finalizing the excess reserves and applied only on the quantity and amount which is not already reserved. Partial amount of the unreserved value is reserved using the following formula:

- For FGI – Finished goods item LCM reserve per unit = ASP – (Stated/ Standard cost + cost to sell each unit)
- For Lower level items or WIP for finished goods item LCM Reserve per unit = ASP (for FGI) – (Stated/ Standard cost +cost to complete and sell)

If ASP for the product changes by demand period, then the supply demand match data would be used to map individual supply and demand records and reported likewise.

LCM reserves are usually easier to manage. In high tech industry, as standards are written down, need for LCM reserves goes down too so there is less complications related to comparison. Users just need to look at ASP trends and if ASP is constant, calculated and system recommended values can be used.

Lot or Location Specific Reserves

If specific lots are identified as non-salable or risky inventory, such lots can be fully reserved before running the E&O reserves calculations and excluded from all further calculations. Same applies to inventory stored in specific locations such as MRB, REWORK, etc. sub-inventories. Such inventory can be fully reserved beforehand and excluded from other reserve calculations. Typical reserve categories for such kind of reserves are:

- Aging Lots
- Non Moving Lots
- Engineering Lots
- MRB Lots
- Old Revision

Such inventory can be directly stored and reported in the final reserves report under specific reserve categories.

Historical Reserves Upload

Any company going for a sophisticated solution like this would like to keep a history of their past reserves data in a single repository. The solution provides an avenue for that by allowing users to upload history for as many past periods as desired. This history can then be reported on and the data can be sliced and diced as required for analysis.

Benefits of the solution

So we see that this solution offers an Oracle based process to calculate, compare and manage reserves of all types. It gives cost accounting users an option to move beyond spreadsheets with lengthy formulas, or beyond legacy home grown systems; or reporting tools with some build in logic to calculate and report reserves. Major benefits of such a solution include:

- The solution is created with inputs from VPs and controllers from multiple organizations making it more thorough and versatile
- It provides an end to end comprehensive solution to calculate, compare and manage reserves
- It creates a single data repository for all reserve related data
- The detailed and user friendly reporting makes working with such a complex topic very easy
- The solution and reports are very easy for auditors to work with
- The Oracle GUIs make maintenance easy and inexpensive

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