

**Absoft White Paper**

# **Stock Optimisation: Making the warehouse an efficient service partner for the business**

**Björn Harzer**  
Absoft Limited

## Contents

---

<b>Executive summary</b>	<b>1</b>
<b>Introduction</b>	<b>2</b>
<b>Stock performance</b>	<b>3</b>
<b>Stock segmentation</b>	<b>4</b>
<b>Stock optimisation</b>	<b>6</b>
<b>Conclusion</b>	<b>8</b>
<b>About Absoft</b>	<b>9</b>

---

## Executive summary

### **Stock Optimisation - Making the warehouse an efficient service partner for the business**

Effective warehousing, on and offshore, is essential to business continuity and safe operations in exploration, production and oilfield services and organisations are faced with the challenge of managing complex stock requirements across an increasingly global landscape. This places a responsibility on stock controllers to ensure effective processes are in place to deliver the right equipment, to the right place, at the right time, with minimal cost.

This white paper identifies three areas that a business can address to ensure effective warehouse performance, introducing efficient processes and automating reporting for stock controllers who are burdened with the challenge of manually optimising stock levels.

#### **Stock performance**

The white paper establishes how to measure stock turnover during a specific timeframe and how to objectively monitor the movement of stock items. Monitoring stock levels and determining the demand value for items can avoid 'stock piling' or 'dead stock'.

#### **Stock segmentation**

The white paper explains how to segment or classify stock. This process establishes the relative importance of each stock item and identifies which items need to be monitored more closely than others. ABC classification is recommended for effective segmentation, whilst taking into account existing maintenance data and whether items have long lead times.

#### **Stock optimisation**

With segmentation complete, stock controllers need to determine how high or low they should set the stock level for each specific item. This ensures sufficient spares are available for safety critical or high value equipment.

Defining a stock policy can help determine minimum and maximum desired stock values whilst also taking average consumption and deviation patterns into consideration.

The white paper concludes that effective stock optimisation requires a holistic view of the business due to the wider implications of reduced stock levels on maintenance and procurement activities. The challenge is to cut stock levels whilst ensuring that critical equipment and spares are accessible and business continuity is maintained. A balance has to be achieved and standard reporting tools are required to review key performance indicators (KPIs).

## Introduction

### Stock optimisation - Making the warehouse an efficient service partner for the business

Oil and gas companies, and their prospective supply chains, are operating at optimal capacity for long periods of time driven by increased exploration, production and drilling activities, set against the backdrop of high oil prices. Central to optimal performance is effective warehousing and the continuous process of optimising the accessibility of active materials, safety critical equipment and essential spares which is vital to controlling costs and reducing operational downtime.

With the complexity of global operations, how can oil and gas companies manage the demand and constant change of commissioned and decommissioned equipment, and ultimately, turn a warehouse into an effective service partner for the business?

The stock controller is faced with some key questions:

- How do I evaluate warehouse performance?
- How do I monitor stock levels?
- Which materials are consumed more frequently than others?
- Which equipment is critical to operations?
- Do I have sufficient spares in stock for safety critical equipment?

This white paper addresses how to develop lean and efficient warehousing activities by considering three fundamental actions:

- How to measure warehouse performance by monitoring stock activity levels
- How to segment and classify stock to determine the importance of each item
- How to determine stock levels based on safety critical equipment and frequency of use

## Stock performance

To measure stock performance the stock controller has to consider:

- How much stock is in the warehouse?
- How much of it is used and during which period? (day, week, month, year)
- How quickly does each item move?
- How long will the stock last without replenishment?
- When did the stock item move last?
- Were any stock items lost or found?

The answers to these questions can be encapsulated in a number of different stock measurements:

### Stock levels

Stock levels record how much material is available in the warehouse which is expressed as a quantity or value. It is important to monitor stock levels to avoid 'stock piling', which is the unnecessary storage of spares for items which are either redundant or rarely used. Recording stock levels is also beneficial to the accounts department which makes regular demands to logistics about reducing stock levels in order to maintain a healthy balance sheet.

### Demand value

The usage history and planned consumption of materials is usually known as the demand. The demand during a particular timeframe (day, week, month, year) can also be expressed in terms of value by multiplying it with the unit price giving the demand value. Plotting the demand, or demand value, against a timeline allows stock controllers to analyse if the demand for a specific material is increasing or declining over time. This information allows the stock controller to identify fast or slow moving items and proactively respond to changes in demand to replenish spares or discontinue obsolete items.

### Stock turnover

Stock turnover describes how often an item is replenished in the warehouse. This can be based on different periods, for example, a stock turnover of '3' means that the material is replaced three times a month in the warehouse. Clearly, the higher the stock turnover rate the quicker the item moves.

### Stock coverage

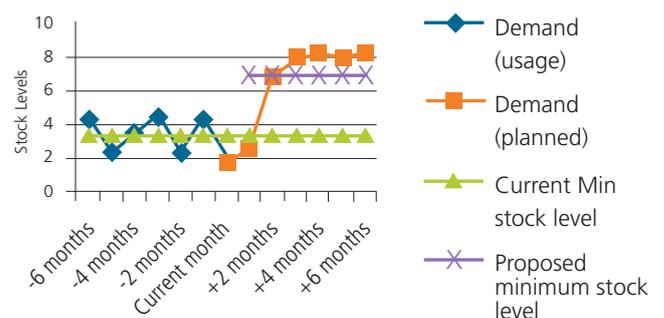
Stock coverage determines how long the stock, which is currently in the warehouse, will last if the stock controller does not get another goods receipt to replenish stock. Ultimately, this is a measure of how long operations can continue before shutting down.

### Last movement

The date of last receipt, issue or movement identifies potentially 'dead stock'. This is an item with a stock level higher than zero, which hasn't been issued to a job in the last 'X' months. In this instance, there would be a requirement to investigate why this item is still stored in the warehouse.

It is one of the hardest decisions to actually dispose of stock items, but having said that, a business should consider storage costs incurred by these items and enforce a business process around this issue.

Visually examining levels of current stock, usage and demand using clear graphs and timelines can highlight problem areas and allows the effects of business process improvement measures to be evaluated easily.



## Stock segmentation

With warehouse performance measurements in place, an efficient means of segmenting or classifying stock in the warehouse needs to be defined.

The purpose of stock segmentation is to enable stock controllers to quickly analyse any increase or decrease in demand for equipment. This will support decisions to invest in more kit or to sell it on to the market before the technology is superseded.

In order to achieve this, the stock controller must focus on the demand value explained earlier. Segmentation focusses on demand value because it captures slow and fast-moving items, as well as low and high-value materials.

### ABC(D) classification

In order to know which items to focus on, the stock controller has to establish an indicator for each material and define rules on how to populate this.

ABC(D) classification, offers an objective method to segment stock in the warehouse using the demand value for each material. It simply sorts historic and planned demand value from lowest to highest, with the following results:

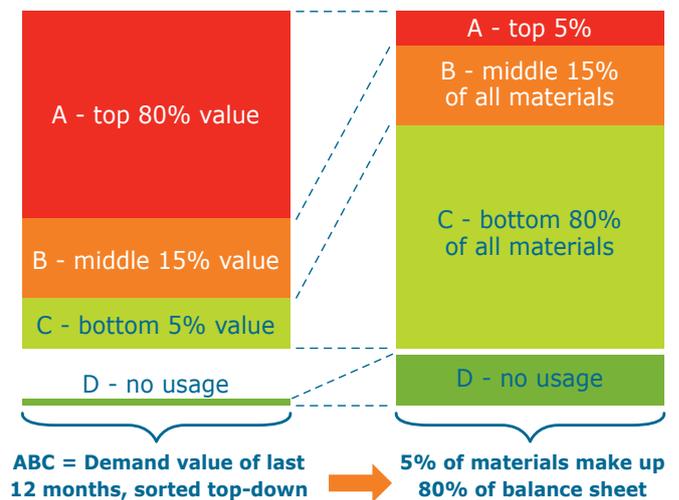
- A-materials represent the top 80% of the demand value
- B-materials represent the mid 15% of the demand value
- C-materials represent the bottom 5% of the demand value
- D-materials represent items without or even a negative demand value (i.e. items which were returned to stock more often than actually used)

Although this is the case, the actual items in stock often look like this:

- A-materials are represented by 5% of the materials in stock
- B-materials are represented by 15% of the materials in stock
- C-materials are represented by 80% of the materials in stock
- D-materials should usually be removed from stock (since there is no demand)

### What does this mean?

If we apply the Pareto Law (or 80:20 ratio), the stock controller can prioritise which stock levels to maintain based on the principle that 5% of the materials in stock make up 80% of the demand value on the balance sheet.



### **What about critical spares?**

This classic ABC(D) classification approach is integrated in SAP® ERP (Enterprise Resource Planning) and is well suited to consumables used in maintenance related work, however, it may not prove an accurate measure in all situations. For example critical spares do not have a regular consumption value, meaning they could be classed as less important, although they are vital, and need to remain immediately available.

Therefore, to guarantee uninterrupted production or safe operations, the business has to identify critical spares which must be kept in stock and the stock controller needs to understand the criticality indicators of the related equipment so they know the importance of the spare.

Rules for promoting such spares need to be defined by the business and captured in an ERP system. For example, the stock controller needs to promote the status of such spares from a probable 'D' to an 'A' approach, regardless of the actual demand value.

### **What about long lead items?**

Similarly, long lead materials which are difficult to obtain require special consideration and need to be promoted in status. For example, if the lead time of a material is more than 12 months, the material should be promoted up a level:

- D-material would be promoted to C
- C-material would be promoted to B
- B-material would be promoted to A

### **What have we achieved so far?**

The stock controller essentially has a framework to highlight and prioritise the 'importance' of any stock item allowing them to make educated decisions regarding whether a material is classified: A, B, C or D.

Ideally, this is displayed in a traffic light system which indicates the status of the different variables using red, amber or green for:

- ABC classification using demand value
- Safety critical indicators of equipment
- Long lead items

## Stock optimisation

### The Service Level

Using stock segmentation, an objective stock policy can be defined for stock controllers; taking into account usage history, planned demand, lead times, spare part criticality and introducing a further key parameter described as the 'service level'.

The service level describes how often demand needs to be met with available stock. For example, when stock is removed from the shelf, the probability of not running out of stock is described as a percentage (99.9% etc).

Obviously, for critical items, the stock controller wants to maintain a higher service level than for the less important items in stock. Setting appropriate service levels is essential due to the wider impact on business continuity. For instance, a delay in receiving critical equipment can cause operational downtime and jeopardise safety.

The stock controller is often best placed to set these service levels, and once they are set, it is equally important to continuously monitor changes.

### Stock Policy

Once the service level is determined, the stock controller can assign these levels to the ABC indicators, discussed during segmentation, to define a stock policy.

For example, A materials are assigned a service level of 99.9%, with varying degrees for B and C materials down to D materials at 50% (the statistical foundation of the 50% rating means, in practical terms, that this material should not be stocked). Ultimately, the higher the service level of the material, the less likely it is to encounter a 'stock out' situation.

ABC Indicator	Service level
A	99.9% "Meet demand most of the time"
B	91.7% "Meet demand 11 out of 12 times"
C	75.0% "Meet demand 9 out of 12 times"
D	50.0% "Meet demand half the time" (No stock)

## Setting stock levels

Together with stock segmentation, the service level allows the stock controller to build an objective way of defining a stock policy and set objective minimum and maximum stock levels to avoid 'stock piling' and 'stock out'.

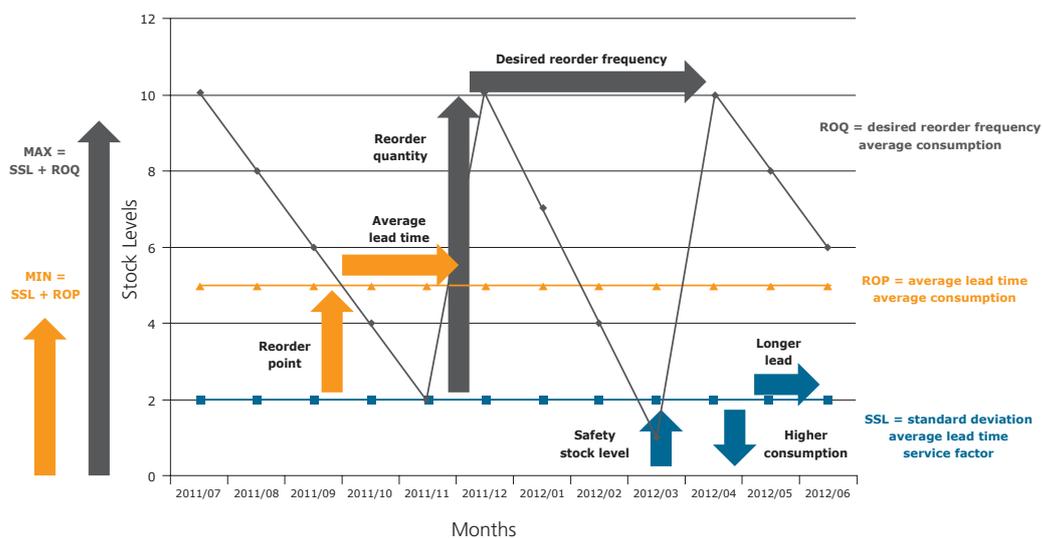
To set appropriate stock levels, the stock controller must firstly determine the average consumption and any deviations for each item in stock. To achieve this, the consumption history and future demand can be recorded using graphs and data extracted from ERP systems. Using this information, stock controllers can objectively review when demand for a material increases or decreases.

When setting parameters for minimum and maximum stock levels, the stock controller needs to consider when to reorder items and how much to order. With this in mind, the stock controller can use the following rules to set stock levels objectively:

- **The Reorder point (ROP)** is when the item needs to be reordered based on the average lead time and average consumption
- **Reorder quantity (ROQ)** is how much stock to reorder during a specific timeframe (day, week, month, year)
- **Safety stock level (SSL)** is a safeguard used when items are consumed more frequently than usual

These rules allow the stock controller to define minimum and maximum stock levels as indicated in the diagram:

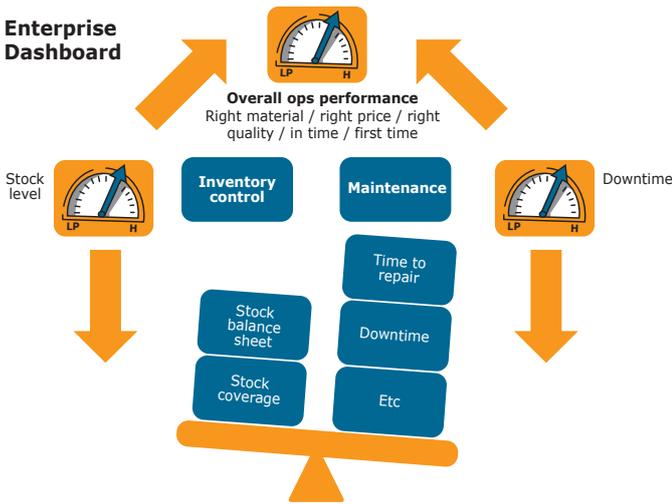
- **Minimum stock level (MIN)** is the sum of the safety stock level plus reorder point
- **Maximum stock level (MAX)** is the sum of the safety stock level plus reorder quantity



## Conclusion

### Reporting

All businesses have competing objectives and it is important not only to minimise stock levels and lead times, but also to understand the negative effect that depleted stock reserves have on business continuity. To achieve a balance between these objectives, producing a score card system in dashboard format can display significant key figures across the business and monitor healthy stock activity.



Stock optimisation is a well established procedure in many businesses but the process requires discipline.

It should not be treated as a one-off activity but instead as an iterative process since, due to ever changing technology and a constant cycle of projects, equipment is being replaced all the time and underlying spare parts and consumables have to be frequently reviewed.

The impact of stocking policies on other areas of the business, such as maintenance and procurement, also needs to be monitored. The goal is to cut stock levels, but if stock levels reduce too much this can result in a negative effect on maintenance performance such as operational downtime. To ensure balance, management requires a view of key performance indicators (KPI) across the business, which can be provided by standard reporting tools.

A careful review of the data available and implementing the three areas of stock performance, segmentation and optimisation, will ensure the warehouse becomes an efficient service partner for the rest of the business.

## About Absoft

---

Absoft is the leading provider of SAP solutions and consultancy services to the upstream oil and gas industry in the UK and Norway.

With over 20 years' experience in delivering SAP solutions tailored to the needs of major operators and integrated oilfield service companies and with implementations in over 40 countries, Absoft has an unrivalled knowledge of global upstream oil and gas business processes.

From our offices in Aberdeen, London and Stavanger, we provide a comprehensive range of SAP services and advice, including consultancy, implementations, process improvement projects, system hosting and management, training, and support both onsite and through Absoft's UK based SAP helpdesk.

Absoft is also a SAP® BusinessObjects™ partner providing powerful Business Intelligence solutions which bring together information from across the business for reporting, query and analysis with the aid of user friendly dashboards and visualisation tools. These give users of all levels, from the high end analyst to the casual business user, access to the information they need, when they need it.

We are proud of our track record in customer service excellence and our belief in delivering business solutions of enduring value – our first customer remains a customer more than 20 years later.

**Aberdeen | London | Stavanger**

**T. +44 (0)1224 707088 E. [info@absoft.co.uk](mailto:info@absoft.co.uk) W. [www.absoft.co.uk](http://www.absoft.co.uk)**

© 2013 SAP AG. SAP, the SAP logo and any SAP products and services mentioned herein are trademarks or registered trademarks of SAP AG in Germany and in several other countries.

