SYSPRO™
Simplifying your Success

Increase Supply Chain Performance with The Next Evolution of MRP and Lean Manufacturing

Introducing Demand Driven Material Requirements Planning (DDMRP)

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TODAY'S SUPPLY CHAIN CHALLENGES

As a manufacturing leader, supply chain management is an intricate part of your day-to-day operations, and being aware of every aspect of your company's complex supply chain is necessary for you to make an informed decision. If you aren't aware of what is best for your supply chain, your decisions can have a negative effect on your operations and impact your bottom line.

Supply chain management is more than inventory control–it determines your customer experience too–dictating whether you have the product available to meet customer demand, and managing the time it takes the product to get to the customer.

Unfortunately, according to the Demand Driven Institute, the problem is that in today's world, the supply chain is *broken*. Many businesses rely on old business processes that simply no longer work. Companies are finding it increasingly difficult to use their current legacy systems to keep up with the complexity of today's supply chain. Furthermore, the demand put on our supply chains nowadays is far greater, and the needs are becoming far too complex for many companies to meet this demand. The paradigm shift of today's environment is wreaking havoc on our systems and contributing factors include:

- Shorter product cycles
- Customer demand for short turnaround times
- Increased competition and ability to meet demand
- The need for Leaner inventory
- Product complexity and customization

FOR EXAMPLE, IN 1965, COLGATE AND CREST, LEADING TOOTHPASTE BRANDS, HAD ONLY ONE FLAVOR OF TOOTHPASTE TO OFFER THE MARKETPLACE. TODAY, COLGATE OFFERS 17 VARIETIES OF TOOTHPASTE WHILE CREST OFFERS OVER 42 VARIETIES OF TOOTHPASTE.

As a result, businesses are suffering from bi-modal inventory distribution—characterized by too little of the right inventory and too much of the wrong inventory—at the wrong times. This results in inflated or shortages in inventory and increased-waste expenditures.

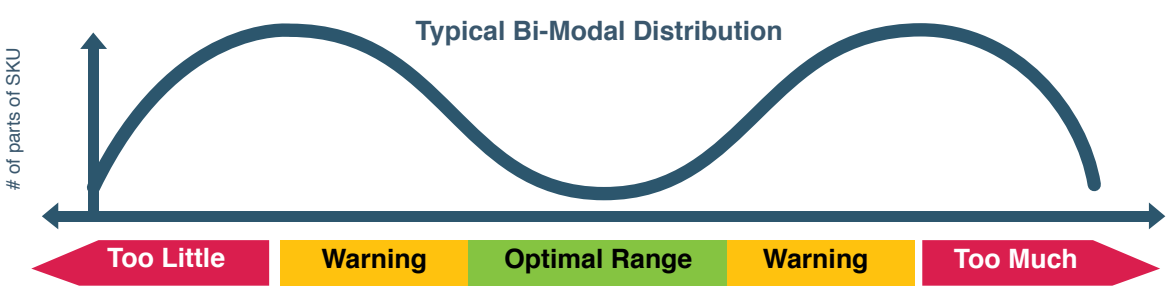


Image Source: Demand Driven Institute

WHAT IS MATERIAL REQUIREMENTS PLANNING (MRP)?

As a manufacturing leader, you are likely familiar with the concepts of Material Requirements Planning (MRP) and Lean Manufacturing. However, as Demand Driven Material Requirements Planning (DDMRP) is a relatively new methodology, you may not be aware of how it works and how it can be implemented to improve your supply chain operations.

Material requirements planning (MRP) is a production planning, scheduling, and inventory replenishment system used to manage requirements for materials. Most MRP systems are software-based, while it is possible to conduct MRP by hand as well. MRP has three objectives:

- Ensure materials are available for production and products are available for delivery to customers
- Maintain the lowest possible material and product levels in store
- Plan manufacturing activities, delivery schedules and purchasing activities

BENEFITS OF MRP

MRP allows companies to plan in advance, schedule production, and allot the necessary time based on capacity needs, while also meeting material needs

MRP enables businesses to plan manufacturing, purchasing, and delivering activities, while maintaining low inventory levels, and keeping costs to a minimum

MRP systems will include inventory control, bill of material processing, and scheduling. Most costing systems use elements of MRP data such as bills of materials.

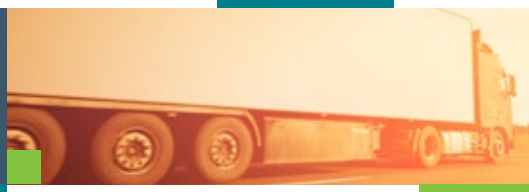
COMMON CHALLENGES OF MRP

MRP is reliant on accurate inputs in order for it to provide the user with valuable outputs; therefore, if the inputs aren't accurate, you risk inaccuracies with order quantities which can lead to schedule delays on finished product

Another challenge with MRP is its inability to take constraints into consideration. MRP assumes that lead times won't vary and will be the same regardless of the quantity of other orders, which can impact lead times, especially in circumstances when customer demand is at its peak

Image Source: Demand Driven Institute

WHAT IS LEAN MANUFACTURING?



Lean manufacturing or lean production, often simply “Lean”, is a systematic method for the elimination of waste within a manufacturing system. Lean principles strive to create increased value for customers—relying on fewer resources and by eliminating waste through continuous improvements. Some key indicators of a Lean organization are:

- Maximizing customer value while minimizing waste
- Creating more with fewer resources
- Continuously improving customer resources
- Optimizing the flow of products and services
- Eliminating waste along the value stream
- Processes that require less human effort, less space, less capital and less time at a lesser cost with fewer defects

BENEFITS OF A LEAN ORGANIZATION

A Lean organization will reap several benefits due to the efficiency of its operations.
Benefits include:

- Increased quality performance
- Fewer defects and rework
- Fewer machine and process breakdowns
- Lower inventory levels
- Greater stock turnover
- Less warehouse space required
- Higher efficiencies, more output per man hour
- Faster development
- Greater customer service
- Improved employee morale and involvement
- Improved supplier relations

COMMON CHALLENGES FOR A LEAN ORGANIZATION

The most common challenge for a Lean organization almost always originates from lack of support from upper management or buy-in at the employee level

Communication is also a critical component to successfully implementing Lean. If there isn't a proper communications funnel and ability to communicate to the employees, it will be extremely challenging for the company to educate the employees and get acceptance

Some companies rely on it solely as a waste reduction method for center cost cutting. Relying solely in it to cut costs can be dangerous. As much as Lean will help to reduce waste, some organizations may get overzealous as to how much money they will save adopting it; setting expectations is extremely important

MRP VS. LEAN MANUFACTURING

MRP VS. LEAN–WHAT IS THE DIFFERENCE?

MRP is used to plan and schedule your production schedule to keep production on time and secondary material costs to minimum. MRP works backwards by taking a finished good and listing the supplies and materials used in the production process, in order to deliver the good. MRP bases the production schedule on the production of secondary materials rather than demand.

MRP doesn't take constraints into consideration and unfortunately, this can lead to inaccurate schedules and the possibility of exceeding operational capacity. In some instances, operations will have to wait for resources, causing a delay in production due to insufficient raw materials.

Lean on the other hand is a constraint-based process management system that strives to eliminate inventory and produce product in a Just-In-Time (JIT) manner. Its focus is to eliminate waste and is dependent on the execution so finished goods are delivered without waste. The purpose of Lean is to look for continuous improvement in an organization and identify ways to eliminate idle work and decrease inventory—delivering products as demand occurs.

In MRP production, it isn't possible to produce a small amount of goods due to the cost inefficiencies. In a Lean environment, the company is more likely to develop product in small batches because the resources are more efficient and therefore, available. Lean relies on the totality of the organization to meet customer demand.

SO WHAT HAPPENS WHEN ONE OF THESE TWO SCENARIOS DON'T MEET THE PRODUCTION NEEDS OF THE BUSINESS?

When the production needs of the company can't be met, businesses choose to integrate MRP and Lean. This solution allows them to strategically plan for production needs—while keeping inventory and costs at a minimum.

THE SOLUTION FOR TODAY'S SUPPLY CHAIN CHALLENGES: DEMAND DRIVEN MRP (DDMRP)

AN INTRODUCTION TO DDMRP

Demand Driven Material Requirements Planning or DDMRP (as defined by the Demand Driven Institute) is a multi-echelon demand and supply planning and execution methodology. It integrates multiple tiers (including the bill of material) in the supply chain, in order to provide end-to-end integrated planning and execution visibility.

DDMRP combines critical Material Requirements Planning (MRP) and Distribution Resource Planning (DRP) tactics, combined with the pull-based approaches and signals of Lean and the theory of constraints. The solution includes planning and execution innovations, improving lead time compression and execution visibility. It takes Lean's waste reduction focus and visibility for execution, and combines it with a new set of demand-driven planning tactics to generate clear planning visibility across an enterprise and supply chain.

The results are synchronized demand and supply signals that make capacity scheduling simpler for a company so they can maximize their supply chain.

DDMRP encompasses the following:

- MRP–Material requirements planning
- DRP–Distribution requirements planning
- Lean–Eliminates "Muda" or waste
- TOC–Theory of constraints
- Six Sigma–Eliminating defects
- Innovation

There are five elements to Demand Driven Material Requirements Planning (DDMRP).

DEMAND DRIVEN MATERIAL REQUIREMENTS PLANNING

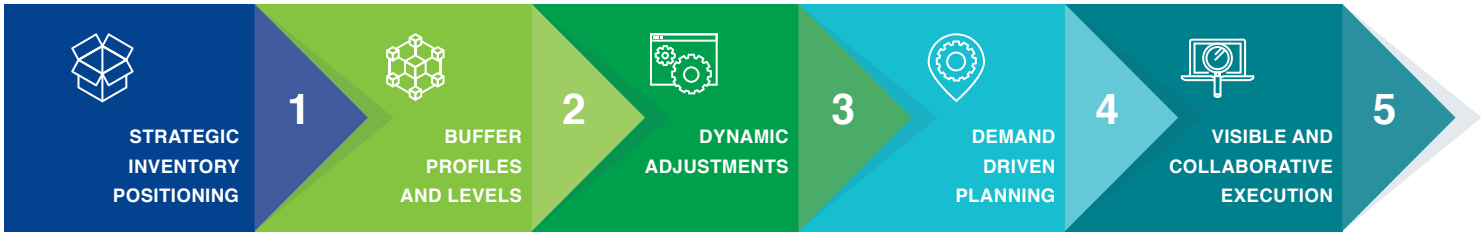


Image Source: Demand Driven Institute

1

STRATEGIC INVENTORY POSITIONING

The position in the supply chain where a business should hold inventory to provide the maximum performance. Strategic decoupling points are placed within the supply chain to absorb variability and compress lead times.

This point in the supply chain is where the product is linked to a specific customer order so you can track the performance.

DAMPENED VARIABILITY

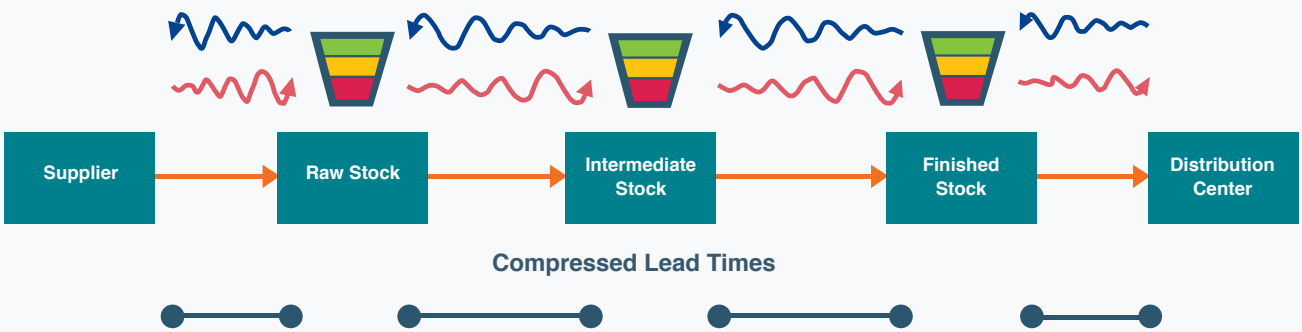


Image Source: Demand Driven Institute

2

BUFFER PROFILES AND LEVELS

Establish profiles for the buffer stock and determine them based on their variability and volume—i.e.: high variability and high volume vs. low variability and low volume. This is used to set your inventory levels.

The basic buffer concept for DDMRP is as follows:

- **OUT** — Out of inventory
- **RED** — Alerts to a problem that inventory needs to be replenished before running out
- **YELLOW** — Build or buy more to prepare for more inventory
- **GREEN** — Plenty of inventory on-hand to meet demands
- **BLUE** — Too much inventory zone

Group Trait Inputs + **Individual Part/SKU Inputs**

- Lead time categories
- Make, buy or distribute
- Variability category
- Significant order multiples

- Daily average use
- Appropriate discrete lead time
- Ordering policy (minimums, maximums, multiples)
- Location (distributed parts)

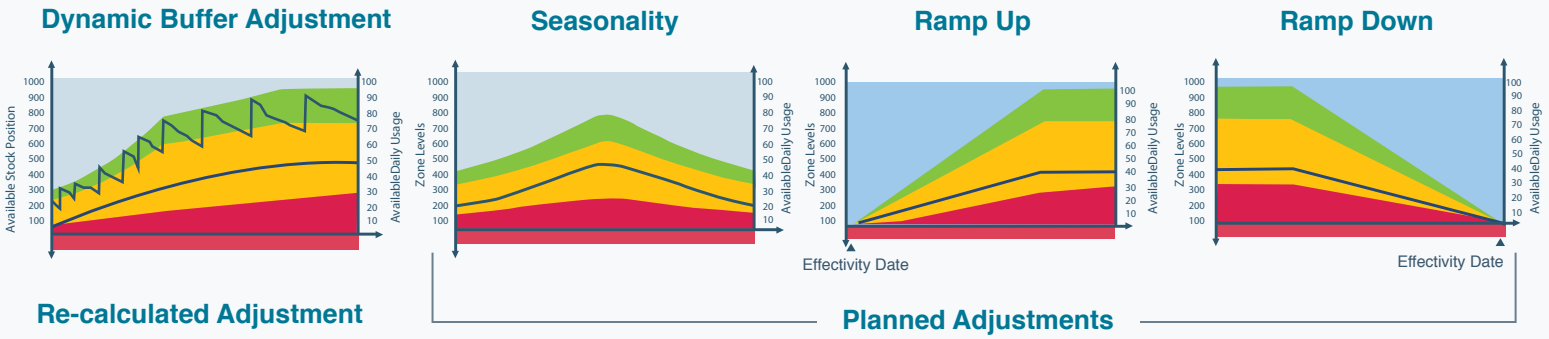
Image Source: Demand Driven Institute

3

DYNAMIC ADJUSTMENTS

Dynamic adjustments are buffers that respond to variations in the initial buffers, such as demand patterns or variabilities, including seasonality. These buffers adapt to these changes. For example, using a new vendor may change the lead time for an item with high variability; the dynamic adjustment will adapt these changes. There are two adaptions–natural and planned adjustments.

- **Natural adjustments** occur when the average daily usage changes—Red zone
- **Planned adjustments** occur when there is an increase demand for a new product or seasonality of demand



A dynamic buffer will provide the usual replenishment but also increase any requirements for more inventory to meet any increase in demand. Buffers scale to meet demand or decrease with decreased demand.

Image Source: Demand Driven Institute

4

DEMAND DRIVEN PLANNING

Demand driven planning shifts to a sales order driven planning method. Forecasts are used to develop the buffer profile but not drive replenishment. This creates resupply signals based on the available stock status of each buffer and gives prioritized sequence based on actual need. Supply generation is based on which zone the available stock equation places the part.

SHIFTING TO A SALES ORDER DRIVEN PLANNING PROCESS

- Planned orders create supply orders in anticipation of need
- Forecast errors associated with planned orders result in inventory misalignments and expedited expenses

From:

To:

- Only qualified sales orders within a short range horizon qualify as demand allocations
- Sales orders give a near perfect demand signal in terms of what will be sold and when it will be sold

Image Source: Demand Driven Institute

5

EXECUTION AND DDMRP BENEFITS

Due to the strategic and thorough planning process, DDMRP is easy to execute. The easy to understand zone coloring (red, yellow, green, blue), synchronization alert warning, and real-time access to your inventory, allows companies to reap several benefits of DDMRP including:

- **Improved Customer Service**—Achieve 97-100% on-time, fill-rate performance
- **Reduced lead times**—Decrease lead times by 80% in certain industry segments
- **Reduction in Inventory**—Lower inventory levels by 30-45%
- **Reduced Costs**—Largely eliminate costs related to expediting activities and false signals with fast freight, partial ships, cross-ships, and scheduled break-ins
- **Improved Visibility**—View real priorities instead of mixed messages from MRP system

The Power of DDMRP (Planning Perspective)

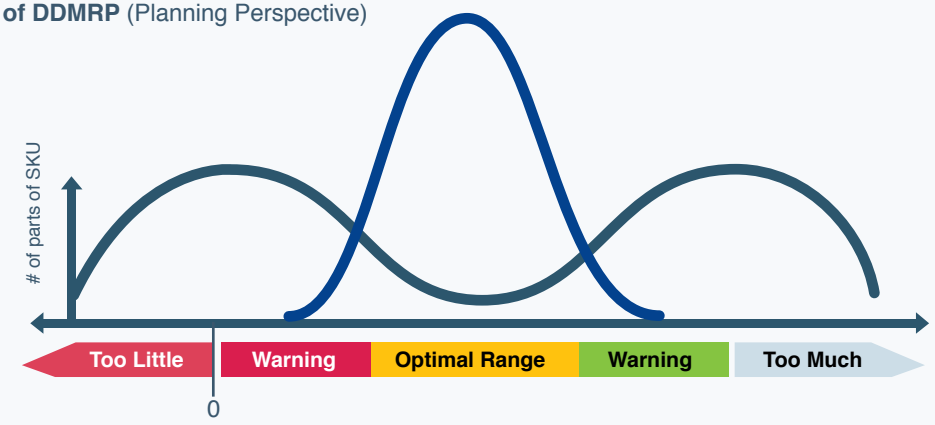
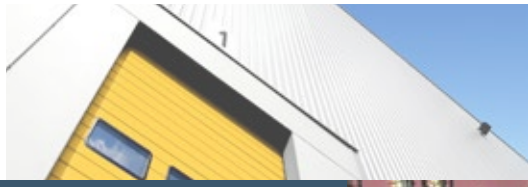
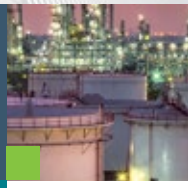


Image Source: Demand Driven Institute





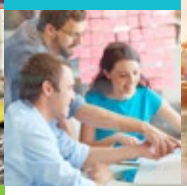
LEADING ORGANIZATIONS ARE CHOOSING DEMAND DRIVEN MATERIAL REQUIREMENTS PLANNING

DDMRP methodology that works with existing ERP systems to better plan for, and meet, market expectations by achieving the following:

- **Reduces reliance on forecasts**
- **Eliminates shortages**
- **Solves availability problems with Lean implementations**
- **Works with complex Bills of Materials**
- **Reduces inventories while improving customer service**
- **Compresses lead times**
- **Allows for an integration path with traditional master planning and S+OP processes**

ABOUT SYSPRO




SYSPRO software is an award-winning, best-of-breed Enterprise Resource Planning (ERP) software solution for cost-effective on-premise and cloud-based utilization.

Industry analysts rank SYSPRO among the finest, best-in-class enterprise-resource planning solutions in the world. SYSPRO powerful features, simplicity of use, scalability, information visibility, analytic/reporting capabilities, business process and rapid deployment methodology are unmatched in its sector.

SYSPRO, formed in 1978, has earned the trust of thousands of companies globally. SYSPRO's ability to grow with its customers and its adherence to developing technology, based on the needs of customers, is why SYSPRO enjoys one of the highest customer retention rates in the industry.

NEXT STEPS:

If you want to learn how SYSPRO can help improve material requirements to meet your customer demands, contact us today at info@syspro.com or +27 (11) 461-1000.

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