

Veloc Planning System Overview And Business Preparation.

Introduction

Many years of experience has shown us that a systems implementation can be complex, expensive, time consuming and fraught with difficulties. Although Veloc is a complex and multidimensional planning and scheduling tool we have tried to make the implementation as simple as possible by breaking down the implementation into straightforward steps.

With an appropriate level of planning and preparation we believe that “Go Live” should be achievable within weeks. A target of one month is not unachievable.

At a macro level we have just 3 steps (hence 1, 2, 3 Go) and these are then each also broken down into a number of other steps. At each stage we provide a degree of support appropriate to each implementation.

The macro level steps are

- 1. Business and people preparation.*
- 2. Dataset building and testing.*
- 3. Managing the inputs and outputs.*

At each step, as a registered user, you can call on support from Veloc by using the website Support Helpdesk Functionality.

Additionally, of course, we are able to supply implementation consultants who can assist or lead your implementation process. We will happily provide a quote for these services.

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Veloc Key Functionality

Before beginning – An explanation of Veloc Planning Logic and Concepts

The Veloc suite is more than 10 years old and is well established with a number of clients who wanted a user friendly, stable, fast, effective forecasting, planning and sequencing system that would not exhaust the IT nor financial resources and would provide support for effective business decision making.

The system used MS Excel as its user interface but it IS NOT a series of spreadsheets with formulas. The system logic is professionally coded and uses industry standard data and system stability methods coupled with some unique and highly effective algorithms. This provides the benefits of a user environment which is familiar, easy to extract information coupled with the stability and support you would expect from a “big system” solution.

Veloc Planning begins with finished products and then plans all the way through the Bill of Materials providing full planning logic at all stages and therefore improves dramatically on traditional MRP.

At all stages from forecasting through to detailed product sequencing the system provides effective reporting which is able to readily support business decision making through an S&OP or IBP process.

Veloc is a Finite Capacity Planning and Scheduling system.

After extensive consultations with both our own clients and throughout a number of industries we have decided to separate the Infinite Capacity Planning and Finite Capacity Planning parts of the system. The initial planning is finite capacity with the exception that where capacity is insufficient on a particular resource production will be moved to the alternate resources for that item in priority order.

In order to ensure that the optimum first pass plan is achieved the MPS logic has been carefully designed to ensure that priority is given to items which cannot be accommodated on multiple resources.

Both Infinite Capacity Planning and the Finite Capacity Algorithms can be applied to both top level items only or completely through the Bill of Materials.

Many aspects of the planning algorithms are user customisable via the User Settings

Infinite Capacity Planning or Pass 1 Planning - Multi Level Master Scheduling Overview

Multi-Level Master Scheduling deals with the manufacturing environment where purchased components are manufactured, potentially into part finished, or sub assembly parts, through to the

finished product which is sold. The discussion here is restricted to those aspects which relate to the operation of Veloc.

The Multi-Level capability of Veloc is based on a number of important assumptions about the business:

It is assumed that the intermediate level, part finished items:

- Have a unique Item code.
- May potentially, but not necessarily, be sold in their own right (e.g. spares sales)

The relationship between the purchased parts, the part finished, and the finished products is typically contained within a hierarchical definition known as a Bill of Materials, a Parts List, a Recipe, and many other names. In Veloc, this relationship is defined on the Product Component Structure table of the Master Product Database.

The Multi-Level MPS algorithms generate the MPS for all Items, including those identified on a Bill of Materials in the Product Structure table

Finite Capacity Planning

Once the finite capacity plan has been run there are two finite capacity planning algorithms which can be activated from the Capacity Charts.

Finite Capacity Planning - Recovery

Where Capacity is exceeded in the immediate future and it is not possible to forward schedule production thereby stock building to avoid the capacity shortfalls the recovery algorithm will allow the user to resolve the issue.

Recovery Rules are pre agreed and set in the system whereby TMS can be trimmed by 3 levels of risk defined for each SKU. The system will then trim production for each SKU at each level (beginning with those that have the most impact on capacity) until a capacity solution is found or until all SKU's have been taken down to the lowest level of risk allowed.

If a capacity solution hasn't been found then the user will be informed and it may be necessary to allow the system to trim further – or even to zero (meaning sales are made to order). If it is necessary to trim below zero – then essentially you are determining which SKU's will not be supplied.

These rules are therefore used to progressively apply more extreme solutions until a capacity fit is found. Once a capacity fit has been achieved the system will then proceed to recover stocks back to TMS across subsequent buckets as soon as possible and will inform the user if this has not been possible. This whole process takes a few minutes only so that solutions to immediate capacity issues can be rapidly achieved.

Finite Capacity Planning – Optimisation

Where a capacity shortfall is in the future selecting Optimise will progressively forward schedule production – always respecting maximum stock or Shelf Life rules until a solution is found. If no solution is possible the user will be informed so that capacity increases can be applied in buckets leading up to the shortfall and Optimisation rerun.

Again the whole process takes minutes so that the user rapidly achieves solutions.

Of course it would be possible to link recovery and optimisation for all resources and indeed to trigger the routines immediately following Infinite MPS but it is our view and that of our clients that this is suboptimal and a better solution is to allow the user full visibility of the results of Infinite Capacity MPS before applying Finite Capacity Algorithms

For more detail on this as well as Scheduling processes and chart interaction etc. please refer to the Veloc User Manual. It is highly recommended that before implementing the system at least one project member is trained by Veloc in the use of the system as in the interactive training environment many questions can be answered quickly and easily.

The first steps in this section should come before the system/ vendor is selected and then once this has been accomplished the later stages should be carried through. It is vital for the success of the remaining stages of the implementation that the steps in this stage are completed thoroughly.

Let's look at the functionality in a little more detail.

Sales Forecasting

Included in the Veloc license is our sister product Simple Forecasting. This module takes historic sales and projects a statistical forecast which can then be modified by the user for promotional and other activity, individual events etc. Additionally there is also methodology to identify and apply seasonality to the forecast.

The module can handle both individual items and also groups such as customers, geographical locations, warehouse network locations, product groups and so on. The output from the forecasting module can be directly imported into the main planning system Veloc Planning

Fig 1. The forecasting item interface

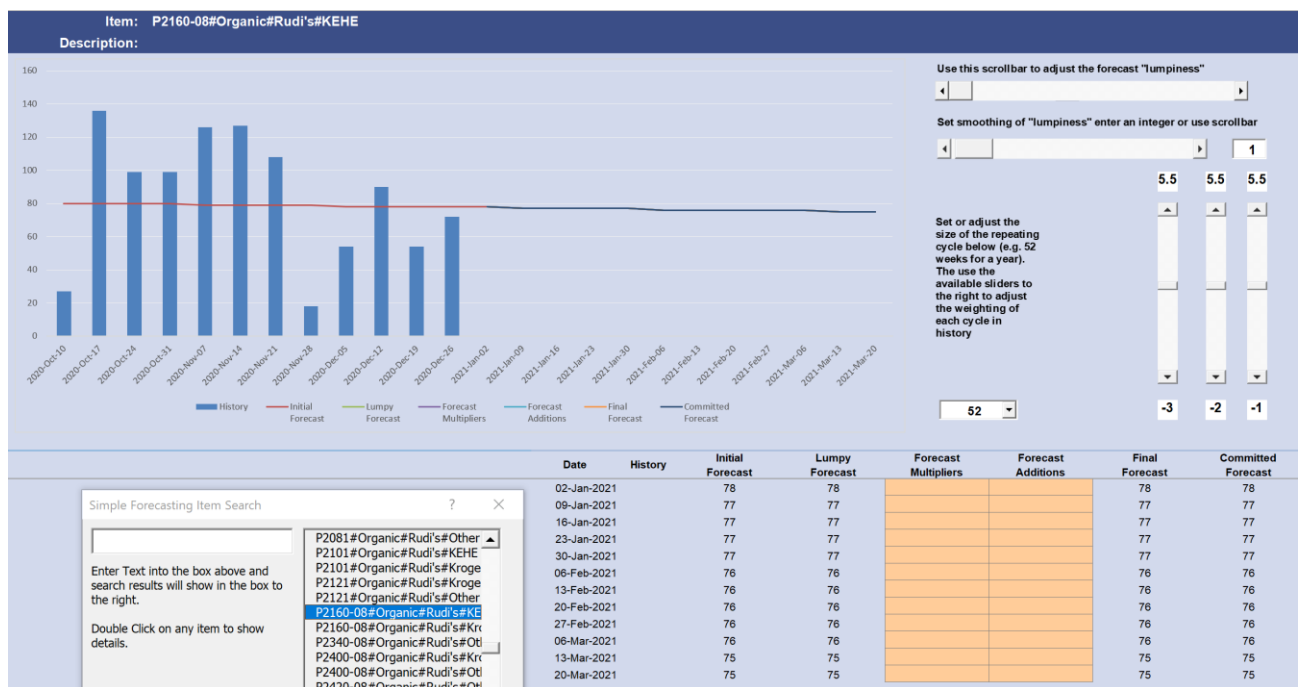
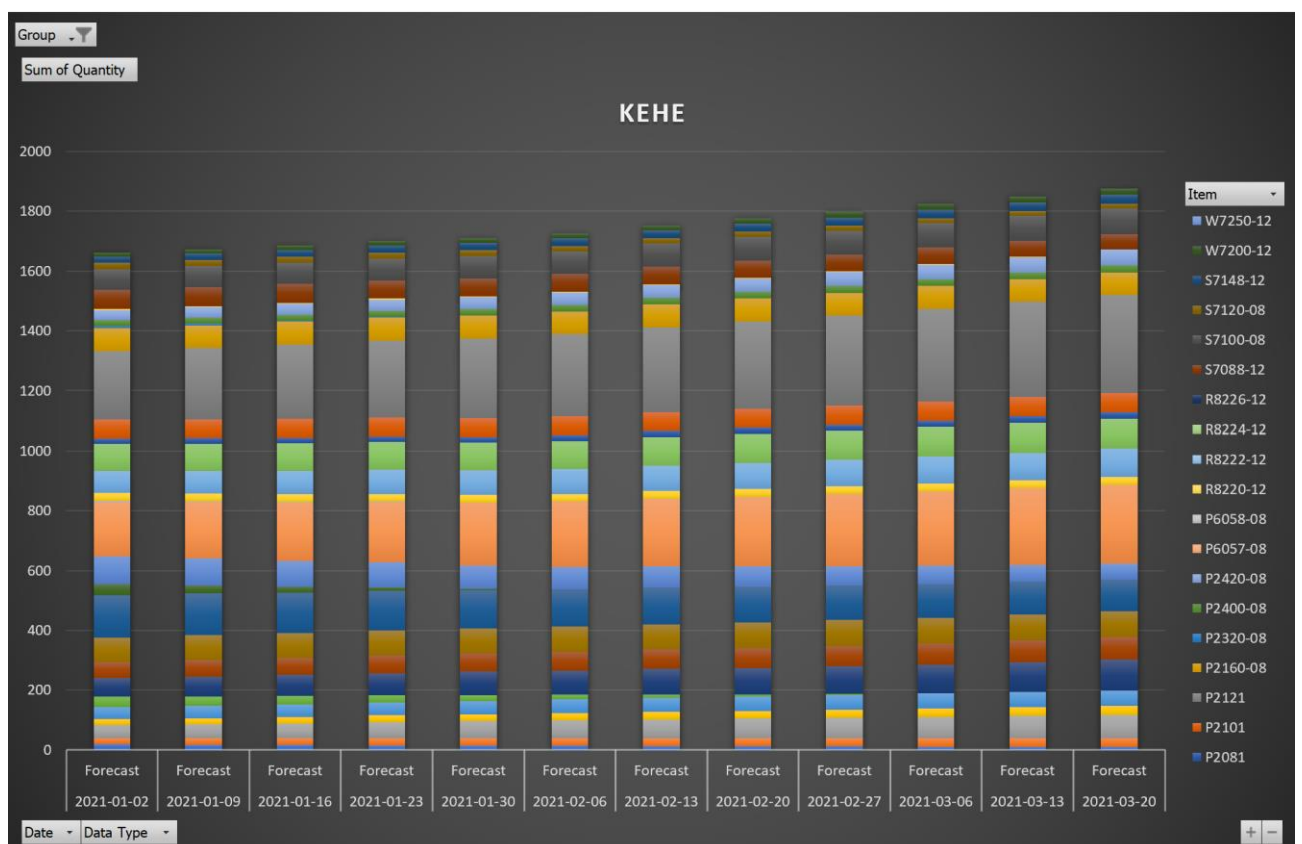


Fig 2. The Forecasting Pivot Report for S&OP



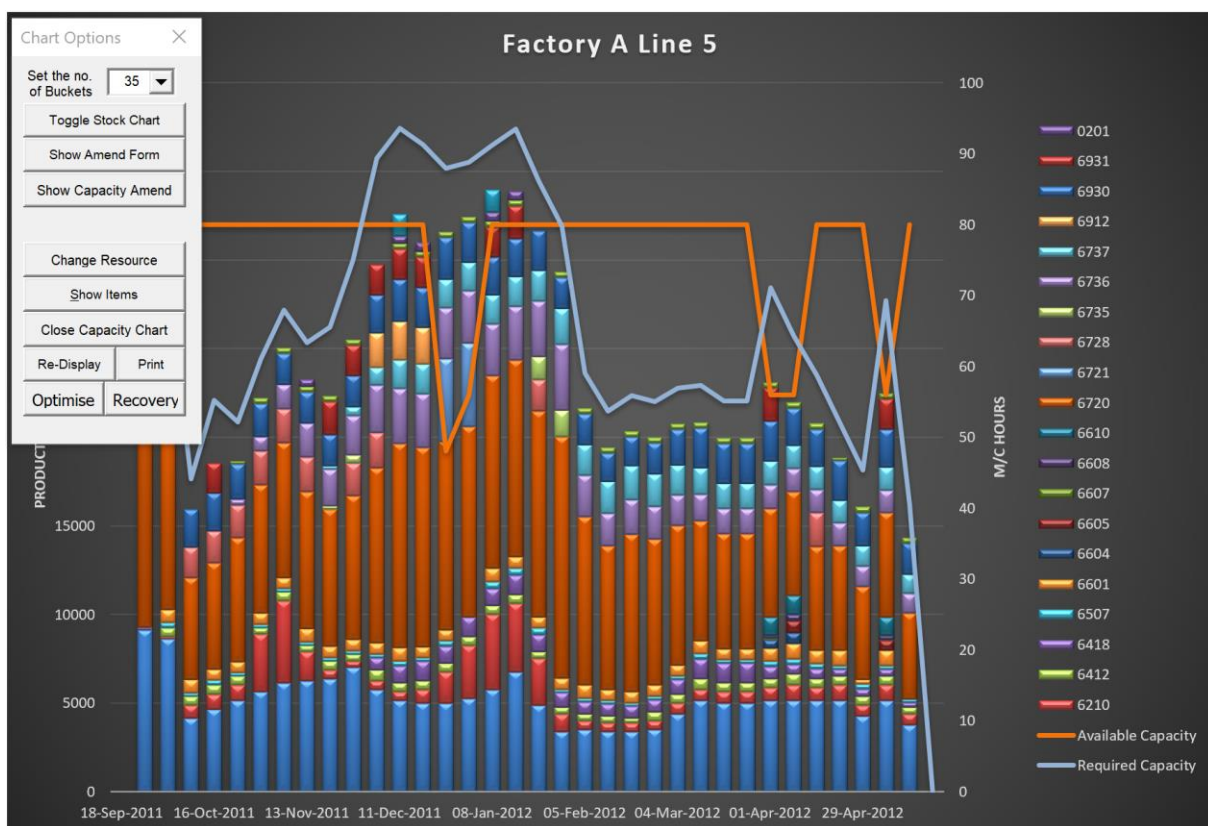
Capacity Planning

The first phase of planning is to establish in the medium and long term whether the business has sufficient capacity. Production capacity, labour resources, warehousing resources etc.

The first planning pass of the Veloc system will provide an initial view of where capacity is exceeded. The planner can then decide whether there is a need to manipulate capacity or to manage production to maintain supply through changing inventory holding.

The system has 3 Finite Capacity algorithms which the planner can implement via easy to use graphical interfaces.

Fig 3. Capacity Plan before Optimisation

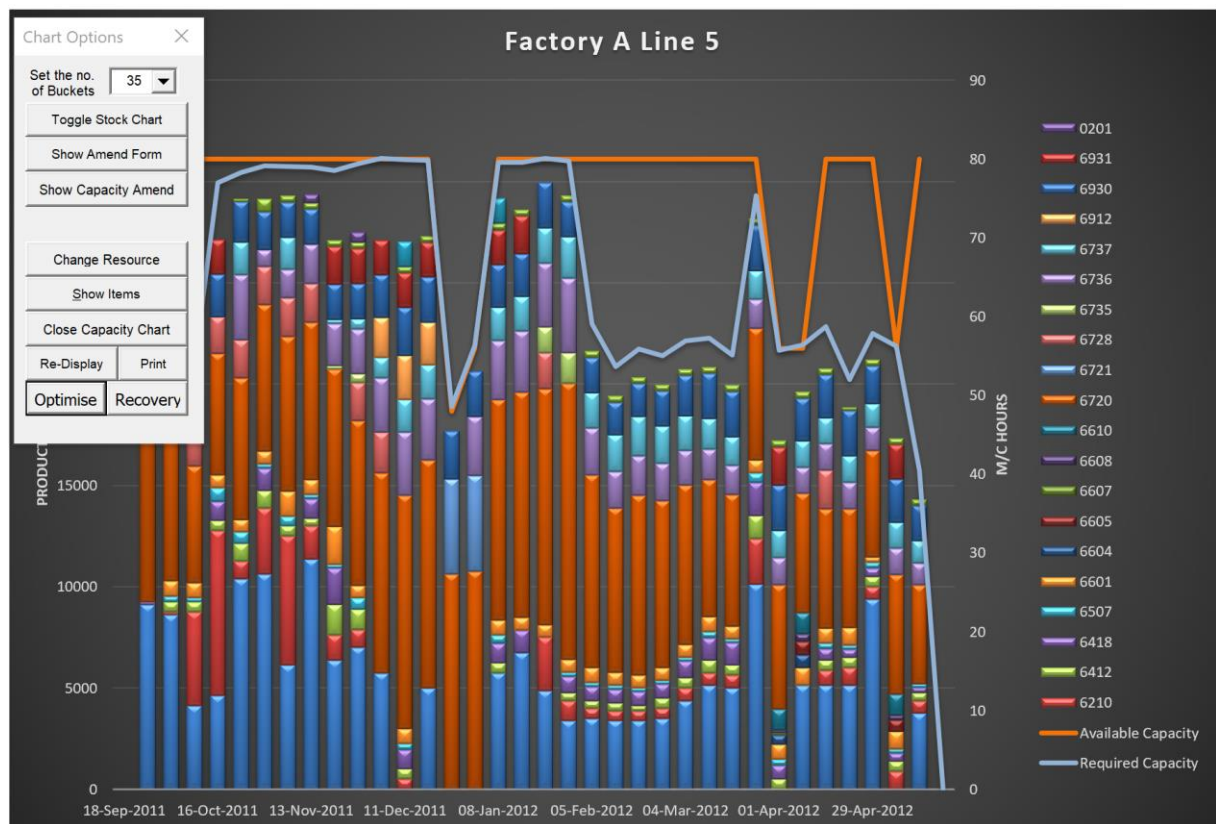


1. Optimisation

This allows production to be brought forward in a balanced way to make use of periods with available capacity to meet the demand in periods where demand exceeds capacity. Production will also be transferred between resources where this is applicable.

The end result is, as far as possible a capacity fitted production plan which optimally meets projected demand. Use of this algorithm in good time ensures effective use of resources and will flag where a solution is just not possible so that additional capacity must be found or demand constrained. Timescales are typically weeks out to 12 to 18 months.

Fig. 4 Capacity Plan after Optimisation (Note that production now fits capacity in every time bucket).



2. Recovery

Despite the above there will always be short term events which result in capacity being exceed here and now. (Breakdowns, sudden and unplanned demand increases, catastrophic loss of inventory etc.)

This algorithm will then allow a risk balanced approach to be taken to provide the best possible recovery to “normal” planning and inventory parameters in the shortest possible time.

3. Trimming

Where a capacity shortage extends beyond the immediate this algorithm will “trim” production in a balanced and controlled way (driven by user parameters) to manage the risks of short supply in the best possible way and will provide a recovery plan in the best possible timescale.

Capacity Definition

In the Veloc system capacity can be defined as hours, labour, volume, tonnage etc. so the system can

readily be adapted to plan truck loads as well as factory production.

TMS – Doubly dynamic

An important element of planning is to use Target Minimum stocks effectively. Veloc uses dynamic TMS defined as days of cover so that actual physical inventory requirements are automatically adjusted with varying demand.

Additionally the TMS of any item or group can be adjusted for any period, for example if there is a period of higher demand variability than normal due to promotional activity, seasonality etc.

TMS can also be applied to ALL components, semi finished, raw material and packaging items providing “MRP” logic which is massively more effective than traditional MRP.

Lead-times, Maturing times

Another key element of planning is to understand lead-times both of raw materials and packs but also internally and where maturing or quality inspection means that materials are not available immediately after receipt or production.

Shelf Life

The Veloc planning system is widely used in the food industry – both ambient or frozen and also short shelf life. In this sector it is vital to be able to see and manage potential shelf life issues.

With Veloc Planning you are able to both identify shelf life risks in time to alleviate or eliminate them but are also assured that the plans fully and properly reflect where inventory does become unusable.

Outputs – S&OP support

One of the most effective areas of the Veloc system is the effectiveness of reporting. Most S&OP and other business processes (even with the most expensive, high end ERP systems) rely on reports produced in MS excel. With Veloc we embrace this and produce the reports our users have told us they need directly into excel. No longer are you at the mercy of spreadsheet errors etc. but you still have the ease of use of information presented in this way.

There are a number of capacity and other reports which not only provide information but also act as an interface to control the plans and forecasts.

Then there are detailed production reports, exception reports, Interrogatable inventory reports all available at the click of a button.

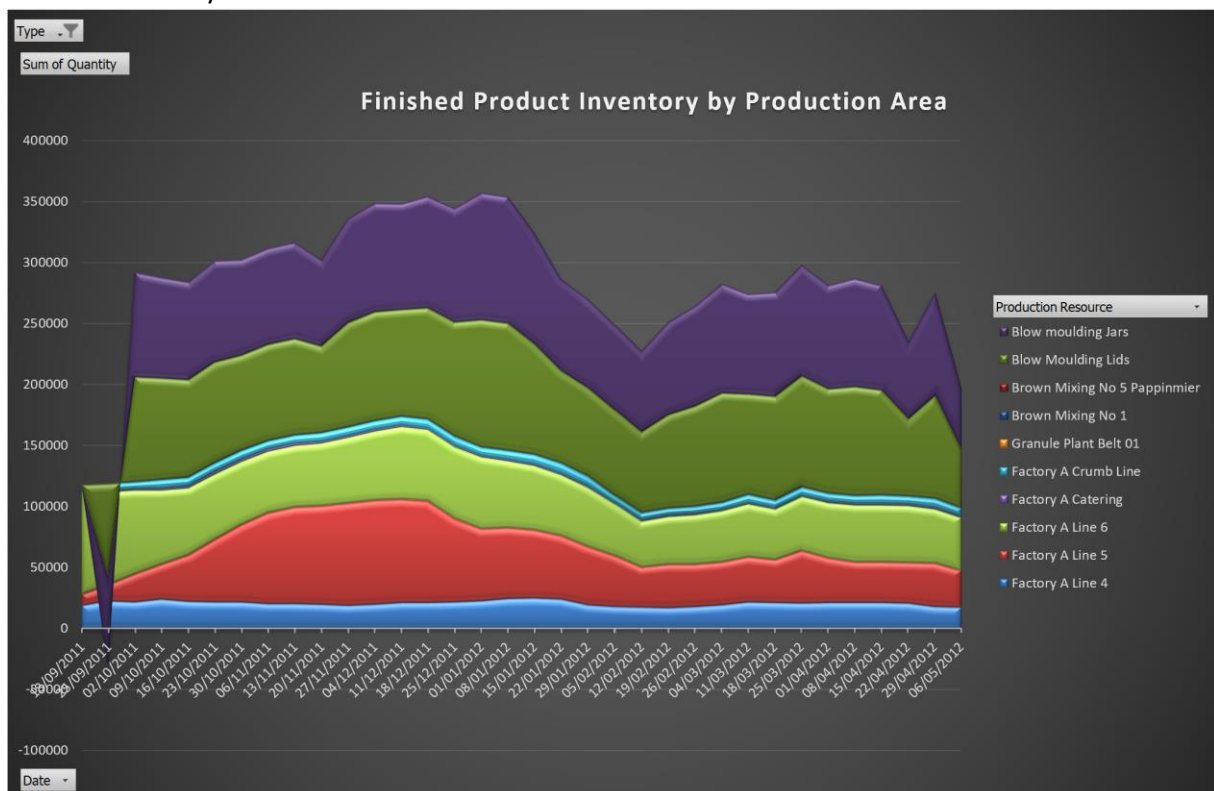
In addition we have many reports which can be manipulated in a number of ways to provide drill down interfaces directly usable in business meetings. Our Veloc Pivot Report is often the only report the planner needs to communicate all aspects of the plan – production, capacities, inventory, projected service etc.etc.

Fig. 5 The Veloc Pivot Report – A highly interactive report showing capacity, inventory, production and much more, all in one report.

1. Capacity



2. Inventory



Short Term Planning and Execution

In the immediate time horizon planning becomes detailed execution instructions and in this phase Veloc has many functions which allow for great accuracy and for the planner to keep control.

Forecast Consumption

Where actual orders overlap with forecasts it's vital that the actual demand is the best possible view. Veloc has a standard forecast consumption algorithm but also a range of user definable functions to ensure that each customer and each environment is properly reflected.

Opening Stock, Committed production, locked production, time fences

The system takes in full details of the opening position of the plan so that the forward position properly reflects the current live position. All of these inputs can be imported from outputs of ERP or other systems so that there is no requirement for error prone copying and pasting or retyping.

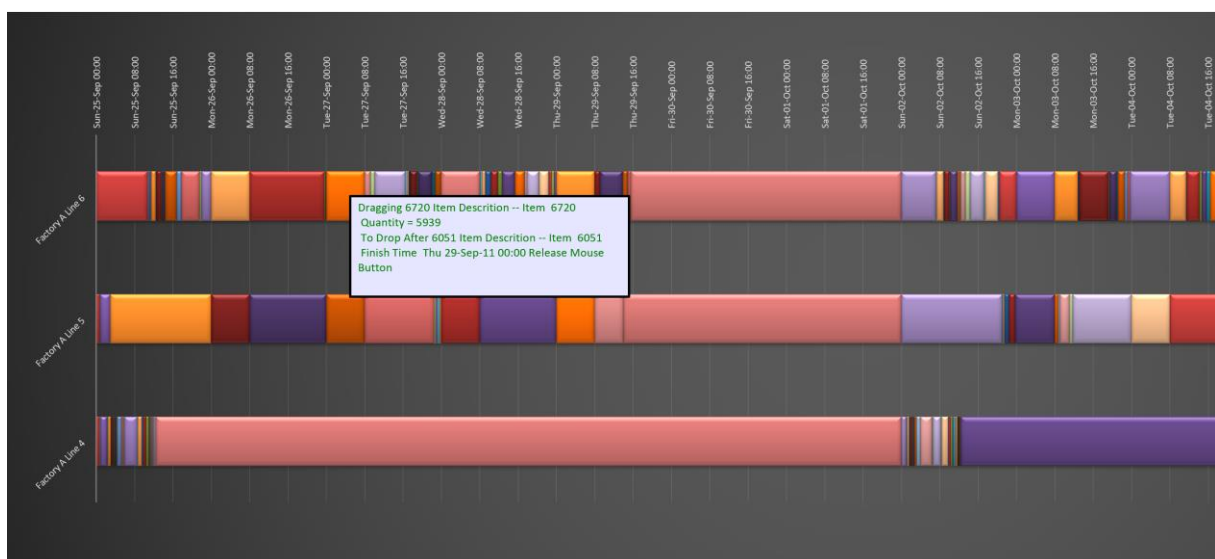
Sequencing

When it comes to communicating the current requirements to manufacturing Veloc first provides functionality to sequence production optimally. The system incorporates detailed, user definable, sequencing rules as well as either simple or complex changeover times, cleaning and other preparation requirements etc.

In addition we provide a simple “drag and drop” user interface allowing the scheduler to manipulate the system produced sequence efficiently. This allows the planner or scheduler to produce detailed outputs for control of manufacturing operations.

Finally we provide an output which allows for live updating which can be fed back into the sequencing module to keep track of whether production is proceeding according to plan.

Fig 6. Veloc Sequence Interface.



For more information

Please see:

<http://veloc-planning.com/index.php/veloc-functionality/dynamic-safety-stock>

<http://veloc-planning.com/index.php/veloc-functionality/weekly-to-daily-sales-profiling>

<https://www.linkedin.com/pulse/immediate-capacity-shortfall-prevention-cure-steve-allanson/>

For a more detailed introduction to the Veloc planning system please contact

Stevea@veloc.co.uk to arrange an online demonstration.

Business and People Preparation

The Business Need

The very first stage must be to define the need for the business.

Veloc provides production and capacity planning in the short term (operational plans and schedules), medium term and long term (capacity planning, what if planning and schedule evaluations). As well as products and production the system allows for management of components, sub-assemblies, materials and labour.

It provides tools for achieving these things throughout a single factory or multiple locations and throughout a Bill of Materials. Time horizons and buckets can be minutes, hours, days, months, years etc.

But....

Let's first take a step back from even this stage and look at the business need in terms of issues and/or benefits required, this is likely to be at the heart of the desire to implement a system.

Some of the benefits the business may want/ need could include:-

- *Reduced or optimised inventory levels*
- *Improved service*
- *Reduced manufacturing costs*
- *Reduced waste/ write off*
- *Reduced labour costs*
- *Improved manufacturing efficiency*
- *Reduced planning overhead costs*
- *Increased speed of planning*
- *Improved capacity management*

There may be many others but it is important in each case to agree with the system vendor what the benefits being pursued are and how the system is going to deliver or help to deliver the benefits. If the delivery of the benefit(s) is dependent on other things than the system itself then the other elements should be agreed and included in the implementation plan.

Veloc can deliver or help to deliver all of the above and many more benefits and the first step of our 123 Go program is to ensure these are properly specified.

Before proceeding to the next step you should produce a clear and concise description of the business need in terms of benefits, the need in terms of functionality that will drive those benefits and how the system/ other business processes will deliver the benefits.

The Project Scope and Key Functionality

- What is the project team? Who is project lead? What is the required timescale to Go Live?

- Is the system to cover one location or several?
- How many products?
- Top level only or multi-level (multi components and/ or raw materials)?
- What is the mode of operation of the supply chain – make to order, make to stock or a mix of both?
- How many people will operate the system and will they have a common set of functionality or just one set? (e.g. will there be some users who can just look at outputs whilst others can variously plan, schedule, change parameters etc.?) □ How many production resources?
- What is the capacity measure (hours, machine hours, man hours)?
- What is the planning bucket size? (Veloc can handle multiple bucket sizes in one dataset but we do not recommend this as we have found it leads to confusing messages). There may be several different datasets for different purposes – each using common base data but with different bucket sizes and time horizons)
- Define interfaces (input and output) required. These will be configured in stage 3 but it is important to specify here.
- Any other key scope or functionality definitions should be described and agreed with the vendor.
- Do you need the ability to flex any of the following across the time horizon
 - Run rates
 - Changeover times
 - Machine efficiencies
 - TMS (you might need/ want higher TMS cover in periods of promotional activity)

At the end of this step you should produce a full description of scope and required functionality as well as defining the team, project leader and timescale. This should be agreed internally and with the system vendor.

Integration with the business

At this point it is important to define the planning processes (operational and medium term strategic) and how they will fit with the rest of the business processes.

The Importance of this step should not be underestimated. A planning system is only a tool with which to deliver results. The use of the tool with an effective process which is right for the business in question is paramount.

One does not buy a spade and expect it to dig the garden on its own!

Integration for operational process:-

- How often is planning carried out/ to cover what timescale?
- How are results of planning communicated and to whom/ how frequently
- Is there a “locked or fixed” time at the front of the planning horizon if so how long and what is the procedure should the need arise to override it?
- If issuing paper or spread sheets as outputs how are you going to control the documentation to ensure all live issues are the latest version etc.?

- How do you get forecast data/ actual orders – at what dates/ times and what horizons are covered?
- How is defined capacity agreed?
- How are changeover times agreed?
- How are optimal sequences defined/ agreed?
- How is capacity consumption (run rates/ production rates/ labour levels) defined/ agreed? What is the procedure for updating the system?
- Where is data held/ updated? (In the planning system or other central place – e.g. ERP system)?
- How/when is data transferred between systems?

Integration for Strategic Processes:-

- How does the planning system provide input to the S&OP/IBP process?
- What inputs to S&OP are required and in what format?
- What is the process for feeding back KPI's such as run rates/ changeover times?
- What are the timings of inputs/ what timescales are required?
- Do you need to show “amber” capacity consumption (e.g. items/ volumes that are not finalised at present)?
- Do you need to show promotional volumes and capacity consumption separate from ongoing volume?

At the end of this step you should produce a document and table which shows exactly how the system will interface with the current business systems/ processes along with details of the required inputs and outputs (times, formats, data inclusion etc.) N.B. All Veloc system imports follow a file specification as defined in the appendices of the Veloc User Manual. Whilst other file formats can easily be accommodated these would require specific user functionality and provision for this should be made in the scope/ costing of the project.

Business IT preparation.

- You need to make a number of decisions about system deployment and prepare the platform accordingly.
- Veloc requires a Windows 10 or newer operating system (either 32 bit or preferably 64 bit) and Office 365 for the interface.
- If deployed on a stand alone user machine this should be at least intel i5 with a minimum of 12GB of memory (preferably 16GB). The system uses very little storage space – around 500MB and each user dataset is typically less than 100MB.
- If you want to deploy on a server please contact Veloc Ltd to discuss requirements
- Veloc users will require access to the following domains:
 - Sartsolutions.co.uk – for system login.
 - Veloc.co.uk and veloc.uk for system updates. We post updates on these domains which do not have associated websites for added security.

- Are you going to deploy on:-
- One single desktop machine
- A server with the configuration that the system runs on the server using server resources
- A server and runs on individual desktops using desktop resources (N.B. all desktops will need the system specification for hardware and software)
- Are you going to have multiple users logging into the system?
- Will you need more than one level of user – if so you need to specify user levels and set up administrator/ user/viewer levels accordingly (by default the system has administrator / user/ viewer levels but more can easily be added at implementation time or thereafter. □
Will you be using the Veloc default database or will you require SQL server?

At the end of this stage you should have a clear system brief and IT should have been provided with what is required so that they can make appropriate purchases etc.

People Preparation.

Although coming last in this section it is imperative that this part of the process is not underestimated. It is the people who will be using the system and who will ultimately determine the success or otherwise of the project.

It is worth spending some time planning for and executing people involvement and training to gain sign on to both any new operating methods/ ways of working and also to the benefits that are expected to result.

Briefing

All users of the system and also those from whom information is required or who will be using outputs of the system should be briefed thoroughly on the system, the planned benefits and any new ways of working/ new information (including changed formats).

Let's use the word stakeholder as a shortcut to define all these interested parties

Involvement

You should agree with all stakeholders what stages of involvement will occur and when/ how this will happen.

You should agree what aspects are available for consultation and what are given.

Training

All users of the system should at this stage undergo initial system training and familiarisation using standard demonstration data. We recommend a full day at this stage so that a thorough grounding can be accomplished and any issues/ concerns highlighted and brought into the scope of the project.

At the end of this step you should have agreed an involvement process, should have briefed all interested parties and should have carried out a full days system familiarisation with all prospective system users.

On completion of all of the above stages you will now be ready to move onto the second stage of building the dataset and testing the data.