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Member of PGSI Group

VMetric®

Spares and Inventory Optimisation



Authorised Distributer of TFD Software Suite



VMetric®

Is your organisation chronically short of the spare parts it needs to keep critical systems in operation while your warehouse bulges with stocks that never move? This all-too-common problem invariably stems from inadequate analysis of requirements, resulting from a lack of appropriate analytical tools. The solution seldom lies in costly, full-blown supply chain management solutions that take a long time to implement and have only a marginal effect at best.

Investment in spare parts should be expected to perform to the same standards as other investments. The business case for acquisition or adjustment of a parts inventory should show that the proposed range and distribution of parts minimises the cost of achieving an operationally justified level of system performance.

Both the military and companies engaged in aero-space and defense business have long recognised the importance of using analytical models of sufficient power to determine optimal spare parts solutions for weapon systems. Other government bodies use such models too.



Commercial use is less well advanced but growing, notably in aviation where airlines are finding they can maintain their accustomed service levels with inventory reductions 40% to 50%.

The VMetric® family of spare parts optimisation models leads the world in capability and flexibility. The VMetric® optimising engine was developed by Dr. Craig Sherbrooke, creator of the VARIMETRIC system used by the US Air Force.



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Model

The model can also run to a budget, a desired fill rate, an on-time departure rate, a lost production target, an average delay time target, the slope of the availability versus cost curve, a shortage cost target, or some combination of these and other measures of effectiveness. Advanced options include powerful demand analysis routines and built-in simulation features to enable testing of stock solutions in realistic scenarios.

VMetric® addresses a wide variety of sparing challenges. The standard initial provisioning problem, starting with no stock, a performance goal and a limited budget is the most obvious. But you can also study periodic “top up” additions to existing stock, as well as geographic redistribution of existing or augmented stock. This can be modeled in different ways without changing the input data sets, simply by selecting the appropriate run-time options.

VMetric® is available as a stand-alone tool, as a component of the TFD Logistician's Work Station, and as the strategic planning element of the TFD Supply Chain Optimisation system.

The VMetric Method

VMetric® uses a multi-step marginal analysis procedure, each iteration resulting in selection of the part and location that yields, in light of earlier selections, the greatest reduction in expected backorders per rand.

The procedure takes into account: operational plans or schedules, expected part demand patterns, lead times, buying and selling prices, existing stocks, minimum and maximum stock constraints, assessed shortage costs, effects on the availability of higher assemblies, criticality to system operation, opportunities for lateral supply, and whether cannibalisation of particular parts is permissible.

The output of marginal analysis is a set of cost-effectiveness curves of the kind described above. Since each point is the end of an optimal sequence of part selections, a stock solution considered too costly can be adjusted, without sacrificing optimality, simply by backtracking along any one of the curves until further reduction in effectiveness becomes unacceptable. Along with recommended stock levels the model reports Economic Order Quantity (EOQ) values such as order quantities, reorder points and a variety of other parameters commonly used in inventory management.

Connectivity

Through the TFD Database VMetric® can share data with the MAAP® Total Ownership Cost model and EDCAS®, the world standard for level of repair and front-end analysis. TFD can also provide interface tools for extraction of data from many sources – such as MIL-STD 1388-2B data exchange files, corporate databases or spreadsheets.

