

# Two-dimensional classification of products and theoretical calculations of inventory parameters generates higher service levels and lower inventory costs

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LUND. The international company Sandvik SRP have during the spring of 2020 replaced their inventory control system which have made it possible to improve their method of classifying and controlling products for the aftermarket<sup>1</sup>. An improved classification method can result in both a lower cost and improved service for the customers, making it a win-win situation. Research of implementing other classification criteria than the currently used ones have resulted in a recommendation that will improve the service and lower the inventory cost with almost 40%.

Supplying products like service and replacement parts often requires high service levels as they can be vital for the customers own production or business. Though, as the demand of these types of products often is fluctuating, it is difficult to control the inventory so that costs will be held down while still guaranteeing adequate service levels. This is an area of improvement at Sandvik SRP as inventory cost ties up capital and prevents the company from investing resources in other areas.

Analyses of the current inventory control method have resulted in new proposed methods where *frequency of orders* and *cost per unit* are used as the two classification criteria additionally to implement a new way of calculating inventory parameters. By introducing these changes, the inventory cost can be decreased with over 30% while service levels have increased for important products.

## I. PROBLEM

With the currently used classification method, there are a lot of excess inventory, which is not reflected in the obtained service levels. This indicates that the current classification method does not have a preferable service-cost relationship, i.e. the cost is too high for the achieved service levels. The set up for controlling the inventory of the aftermarket at Sandvik SRP today is mainly based on historical consumption of how often items are ordered (frequency) and the financial size of the orders (volume value). The study has primarily focused on researching if the products at Sandvik SRP could be better classified and controlled by using other criteria than frequency and volume value. Could new classification criteria improve the stock levels and the service-cost relationship?

<sup>1</sup>Aftermarket = Market for replacement products and service parts

<sup>2</sup>Reorder point = The inventory level for an item when a new order should be placed

## II. METHOD

Comparison of classification criteria found in theory and criteria proposed by Sandvik SRP resulted in five criteria. The effects of implementing each criteria in the classification method were investigated and the analyses of the results resulted in a final recommendation for possible new classification methods. Furthermore, the inventory parameters *reorder point*<sup>2</sup> and *service levels* were calculated from theoretical definitions in the analyses of the new criteria. These definitions were different from the definitions currently used by Sandvik SRP.

## III. CONCLUSION

The result of the study indicates that the best service-cost relationship is obtained when only the frequency of orders and cost per unit criteria are used in the classification method. The other three investigated criteria resulted in higher inventory costs and lower service levels.

Furthermore, the use of the theoretical definitions of reorder points and service levels, and the new classification criteria resulted in significantly improved outcome. Compared to the current classification method, where the criterion volume value and Sandvik SRP's definitions are used, the inventory cost was considerably lower and the service levels were improved.

## IV. FUTURE

While the analysis showed that the two-dimensional classification method proposed in the study was the best solution, some of the criteria investigated were defined by the authors themselves. It is therefore important to note that other definitions of these criteria may have resulted in a different conclusion. A proposition of a future research could be to investigate if there is a good way of including a criterion more focused on the criticality of items from customers' perspective and the priority of customers.

## V. ACKNOWLEDGEMENT

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