
Shelving and racking technology:

Ergonomic aspects score high

A versatile, modular tube system reduces travel routes at assembly workstations and provides easier access to supply stocks.

The scene is the same in many production plants: The new machine has been put into operation, the operators have been trained and are motivated to get started. However, not much later, the verve dies away, because the expected success does not show immediately.

Often enough, the reason is that the new facility has not been sufficiently integrated into the company's material flow process.

Workstations and machines need to be continuously supplied and materials must be carried off, if an investment is to earn money. Likewise, prefabricated materials and consumables picked in storage areas need to be transported to assembly workstations, pre-assembled parts and components must be transferred to intermediate storage areas and to final assembly and in distribution areas or warehouses, certain order positions need to be picked for re-distribution. The question which arises is whether there are appropriate, standardised devices which can be used for storage and transport? If the answer is yes, could these devices meet the individual requirements of very different applications?

Solutions are available, but they did not prove very efficient in practical use. Time and again, they had to be adapted and rebuilt in order to be in line with the Kaizen philosophy which is particularly applied in production and assembly areas to optimise operations in a continuous improvement process (CIP).

Ergonomics give a boost to productivity

A study on the improvement of assembly workstations, made several years ago by the Fraunhofer Institute of production technology and automation at Stuttgart, showed that optimum ergonomic conditions, minimum reach distances and the ideal positioning of supplies and devices allow productivity gains of up to 15 % – and this at little expense. The study came to the conclusion that the ideal solution would be a modular tube system consisting of as few components as possible which would allow companies to build their individual storage or transport rack, assembly workstation or auxiliary unit adapted to their specific application.

Such modular tube systems do exist, but they are either too complicated in their component structure or assembly and/or reconfiguration are very time consuming. Or they are not versatile enough as far as configuration and refitting options, application and use are concerned. Moreover, existing tube systems differ a lot in their applicability in storage areas, as order preparation unit or mobile supply rack. The same applies to the possibility of integrating robust roller tracks to allow live storage. Often enough, ergonomic aspects which would ensure economic and safe picking of parts and components at the assembly station have not been considered during the systems' development – which, later on, results in a loss of efficiency and time.

Choice of standard kits

The results of this study prompted BITO-Lagertechnik Bittmann GmbH to think about new storage and supply solutions for workstations and assembly lines. BITO can now present their ERGO line, a modular tube system based on tubes with the same tube diameter. Moreover, all components have been designed to fit the same size. This has the advantage that all components are compatible and that ERGO assemblies can be realised with just a few components.

The product which BITO presented to the general public at the CeMAT at the end of May is supplied with tubes of one diameter only (available in two standard colours) and twelve standard components. Accessories such as adapters, roller tracks, castors and levelling feet allow a customised rack design and easy reconfiguration to suit the requirements of production and assembly zones or of other intralogistics applications.

For use in the electronic industry, BITO also provides an ESD version. In view of rough handling in industrial environments, the tubes which have a diameter of 28.6 mm are available with a wall thickness of 1 and of 2 mm. The robust steel tubes are epoxy-coated, the connectors are nickel plated and varnished. As a rule, customers themselves assume assembly which requires only very few tools.

Low cost option

Combined with roller tracks, a simple storage or supply rack can be transformed into a live storage system which speeds up assembly. Once a bin or container is empty and has been fed out of the lane, operators will have immediate access to new parts within reach distance from the next bin in the lane. The system has many more advantages: ergonomic and short access routes and permanent availability of parts and pre-assembled modules and small components, versatility in use and reconfiguration as well as proper storage and transport of components to avoid damage.

The ERGO system helps companies to implement the Kaizen philosophy with a relatively small technical and financial effort. This does not only apply to production and assembly companies, but also to distribution and service businesses where several items pertaining to an order are picked in advance. Final order collation is done at a later point in time. Even at this phase of the operational workflow, the BITO ERGO system provides design options for special purpose racks to support the packaging process.

Picture underlines:



The modular tube system BITO ERGO consists of twelve standard components. Accessories such as adapters, roller tracks, castors or levelling feet allow a customised design and easy reconfiguration.



Layout example of a live storage rack for small parts

Photos: BITO-Lagertechnik

ENDS

EDITORS NOTES:

BITO-Lagertechnik Bittmann GmbH

The company, headquartered at Meisenheim/Germany, specialises in storage and workshop equipment as well as in order picking systems. The range of products includes shelving and racking, bins and containers as well as warehouse and workshop equipment and accessories for use in any industry. BITO customers benefit from buying single source standard products as well as project specific solutions, all developed and produced by BITO. The medium-sized enterprise owns production plants in Germany and in India, 14 subsidiaries in West and East European countries and sales offices in Austria, Russia and Dubai. With a staff of 700, a turnover of 125 million EUR was achieved in 2007.

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