



Insight in our competencies

There are many causes for inefficient and inadequate production: Changes in unit numbers, the product spectrum, the gradual emergence of rigid but now obsolete structures and many more. Ultimately this leads to high inventories, extended throughput times, excessive delivery periods and permanent rescheduling of ongoing production. The implementation and consistent application of lean production principles can help to achieve fundamental optimisation and continuous improvements. Our project experience has shown that production strategies in planning and control that are adapted to the material flow – for instance the introduction of a pull system – can significantly affect process efficiency. The interface between production and logistics, especially in material supply and replenishment control, is another integrative building block on the way to efficient production within an excellent factory.

Insight in current topics

Production control strategies to reduce throughput times

A production network comprising final assembly, pre-assembly and various manufacturing areas is characterised by heterogeneous conditions in regard to productivity (OEE), capacities, increasing variance and customer-specific requirements. In most cases this will lead to long throughput times that are caused in particular by idle time between the production units, significant inventory of semi-finished products (WIP) and unnecessary handling steps within the logistics. The solution is to introduce pull control and other control principles within lean production. They allow synchronised control of final assembly in accordance with customer wishes and hence compensate for high variance and short-term fluctuations in requirements. Upstream pre-assembly and part deliveries are controlled by a pull system, for instance Kanban and supermarket function. Levelled production should be introduced in order to ensure optimum utilisation of system capacities in areas of manufacturing that affect productivity (e.g. machining, thermal treatment, painting). One of the ways of achieving this is through Heijunka control, which purposely levels workloads from upstream Kanban control and elsewhere, before assigning them to system capacities. Suitable IT applications are used to support these control principles.

Operational excellence in assembly through implementation of lean manufacturing

Detailed and profound value stream analysis delivers a good first impression of weaknesses and optimisation potential in the flow of material and information. Simultaneous implementation of ABC/XYZ classification and the analysis of master and dynamic data create transparency in regard to volumes and workloads in pre- and final assembly zones. Restructuring can be used to introduce segmentation, e.g. into fast sellers and exotic products, that modifies the arrangement of the factory layout to suit the material flow. Introduction of flow manufacturing is another established method if sufficient unit numbers and value added content are in demand. Experience has shown that the allocation of assembly volumes per cycle, the number of assembly stations (cycles), the length of lines, the layout of workstations per cycle and the synchronisation of pre-assembly are challenging planning tasks. Then there is the suitable provisioning of material to support minimised workload assembly, for instance using preconfigured sets and push-through rack storage for small parts. The production of suitable layout variants is the final step in the planning task. Our project experience has shown that an entire package of planning tasks is necessary in order to achieve a state of excellence, but also that expertise acquired in other industries can easily be adapted. Here, for instance, we have already translated solution methodologies from the automotive industry for use in medical technology or mechanical engineering.

Competencies of ebp-consulting – A selection

We analyse your company and help you to optimise and design your production and assembly zones. The application of lean production philosophy allows us to support you in multiple ways. We help you to realise efficient production and assembly with minimal throughput times. In this regard, we focus on lean value added processes, irrespective of whether they relate to individual workstations, production and assembly lines or production planning and control (PPC).

1. Assembly, pre-assembly

- Ergonomic workplace design, also according to 5S
- Planning of handling and assembly equipment
- Planning of lines and workstations, also in insular design
- Optimisation of production and assembly processes
- Line balancing and planning of cycle volumes
- Headcount planning
- Segmentation of assembly lines and stations

2. Production strategies

- Introduction and modification of production systems
- Production organisation
- Segmentation of manufacturing
- Introduction of order-oriented production (make-to-order)
- Introduction of kaizen/CIP
- Make-or-buy analysis
- Definition of customer order uncoupling, i.e. postponements strategies (late configuration)

- Optimisation of work organisation
- Development of headcount deployment concepts
- Implementation of process optimisation and the material flow, as well as in planning and control, to achieve operational excellence (OpEx)

3. Planning and control

- Introduction of pull control
- Establishment of order centres
- Optimisation of production planning and control
- Batch size optimisation
- Introduction of Heijunka boards for production levelling
- Optimisation of scheduling processes and scheduling parameters
- Master data cleansing
- Optimisation of water management processes and systems
- Optimisation of capacity planning and tool selection
- Definition of requirements and preparation of specifications for IT applications and system modifications
- Support during modification/optimisation ERP, MES and APS systems by different vendors, including SAP, Microsoft Dynamics, Infor

4. Lean production

- Enhancement of machine utilisation (OEE optimisation)
- Optimisation of retooling, SMED/quick changeover
- Implementation of value stream analysis and design
- Introduction of flow manufacturing (one-piece flow)
- Implementation of Toyota production principles: One-piece flow, pull principal, zero defects, clocked production
- Application of lean methods/techniques Poka yoke, jidoka, minomi, chaku chaku
- Application and implementation of Six Sigma

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