

# Architectural brief essay sample

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## Production systems

An apparel production system is an integration of material handling, production processes, personnel and equipment that directs workflow and generates finished products. Three types of production systems commonly used to mass produce apparels are: \* Progressive bundle system

\* Unit production system

\* Modular production system

Each system requires an appropriate management philosophy, material handling methods, floor layout and employee training. Firms may combine or adapt these systems to meet their specific production needs. Firms may use only one system, a combination of systems for one product line or different systems for different product lines in the same plant. Work Flow

Many parts of garment assemble is sequential, therefore, each operation is dependent on previous operation. This has significant implications in planning work flow and assembly. Work flow is the movement of material and garment parts through the conversion processes. It can be impacted by any part of a production process and constraint that develop. A slow operator, a machine that malfunctions, or flawed fabric may all be constraints to work flow. Balancing

Balancing is the process of planning a smooth work flow with a steady supply of work for each operation. Balancing involves planning and scheduling input based on the demand for finished parts and products.

## Operator's cycle time

Lean defines cycle time as the time it takes to do a process. The other

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variations of the term: operator cycle times, machine cycle times, or automatic machine times  
NEED OF PROJECT

## REVIW OF LITERATURE

## PRODUCTION PLANNING

Production planning is an integrative process of coordinating the demand for finished goods with available resources. Production planning may work many months ahead of planning delivery to ensure that specific materials, production capacity and reliable quality management are available when needed. \* Long Term Production Planning:

Long term production planning(month or selling period) is based on forecasts, merchandise plans, and budgets. \* Short Term Production Planning

For days or weeks is based on customer order.

## WORK FLOW

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## PRODUCTION SYSTEMS

The production process involves myriad steps and depends on the talent and skill of many individuals. It is a team effort. Apparel making is not conducive

precision mass production. Frequent style changes and varying degrees of fabric work ability force continual adjustment in the manufacturing process standardized equipment is difficult to design and implement and production is therefore dependent on skilled workers. An apparel production system is an integration of material handling, production processes, personnel and equipment that direct work flow and generates finished product. Three types of production systems that are commonly used to mass produce apparel or are: PROGRESSIVE BUNDLE SYSTEM

The progressive bundle system(PBS) gets its name from the bundles of garments parts that are moved sequentially from operation to operation. BUNDLES consists of garment parts needed to complete a specific operation or garment component for example an operation bundle for pocket setting might include shirt fronts and pockets that are to be attached. Bundle sizes may range from 2 to a 100 parts. Some firms operate with a standard bundle size while other firms vary bundle sizes according to cutting orders, fabric shading, size of pieces in the bundles, and the operation that has to be completed. Some firms use a dozen or a multiple of a dozen because their sales are in dozens. Bundles are assembled in the cutting room where the cut parts are matched up with corresponding parts and bundle tickets. Bundle tickets consist of a master list of operations and corresponding coupons for each operations. Each bundle receives a ticket that identifies the style number, size, shade number, list of operation for routing and the piece rate for each operation. Operators retain a corresponding segment of the bundle coupon for each bundle they complete.

At the end of the work day, bundle coupons are turned in, and the earned time from completed bundle tickets is totaled to determine the operator's compensation. Firms may use electronic bundle tickets or smart cards that accompany each bundle and that are swiped at each workstation along with their own identification card. This reduces paper work, facilitates access to information, and eliminates lost bundle tickets. Bundles of cut parts are transported to sewing room and given to the operator schedule to complete the operation. One operator is expected to perform the same operation on all the pieces in the bundle, retie the bundle, process the coupon and set it aside until it is picked up and moved to the next operation. A PBS may require a high volume of work in process because of the number of units in the bundles and the last buffer of backup work that is needed to insure a continuous work flow for all operators. The firm's material handling system facilitates bundle movement between operations. UNIT PRODUCTION SYSTEM

A unit production system (UPS) of garments production is a type of line layout that uses an overhead transporter system to move garment components from work station to work station for assembly. All the parts for a single garment are advanced through the production line together by means of a hanging carrier that travels along an overhead conveyor. The overhead rail garments production system consists of the main conveyor and accumulating rails for each work station of garments. The overhead conveyor operates much like a railroad track. Carriers are moved along the main conveyor and switched to an accumulating rail at the work station where an operation is to be performed. At the completion of an operation the

operator presses a button, and the carrier moves on to the next operation. Most unit production systems of garments production are linked to a computer control center that routes and tracks production and provides up-to-the-minute data for management decisions.

The automatic control of work flow sorts work, balances the line, and reduces claims of favoritism in bundle distribution in garments production. Electronic data collection provides payroll and inventory data, immediate tracking of styles, and costing and performance data for prompt decisions. Processing begins at a staging area in the sewing room of garments. Cut parts for one unit of a single style are grouped and loaded directly from the staging area to a hanging carrier. Loading is carefully planned so minimal handling is required to deliver garment parts in precisely the order and manner that they will be sewn. When possible, garments operations are completed without removing the parts from the carrier. Varied sizes and types of hanging carriers are available for different types of garments products. Automated garments handling replaces the traditional garments production system of bundling, tying and untying, and manually moving garment parts. Unit production systems eliminate most of the lifting and turning needed to handle bundles and garment parts.

The need for bundle tickets and processing operator coupons is also eliminated when an integrated computer system monitors the work of each garments operator. Individual bar codes or electronic devices are embedded in the carriers and read by a bar code scanner at each workstation and control points in garments factory. Any data that are needed for sorting and

processing such as style number, color shade, and lot can be included.

Integrated garments production systems have on-line terminals located at each work station to collect data on each operation. Each garment operator may advance completed units, reroute units that need repair or processing to a different station of garments, and check their efficiencies and earnings. Garments operator may signal for more inventory or call for a supervisor if assistance is needed. The terminals at each station enables central control center to track each unit at any given moment and provide garments management with data to make immediate decisions on routing and scheduling.

Garments operators of the UPS control center can determine sequences of orders and colors to keep operators supplied with work and to minimize change in equipment, operations, and thread colors. A unit garments production system can control multiple routes and simultaneous production of multiple styles without restructuring production lines in garments. The control center may perform routing and automatic balancing of work flow, which reduces bottlenecks and work stoppages. Each operator as well as the control center is able to monitor individual work history. Data can be collected on the amount of time an garments operator works, time spent on each individual unit, number of units completed, the operator who worked on each unit, and the piece rate earned for each unit in garments. The system of garments production will calculate the earnings per hour, per day, and the efficiency rate of each garments operator. Advantages of Unit Production System

Benefits of a unit garments production system depend on how a production system is used and the effectiveness of management. Throughput time in the sewing room can be drastically reduced when compared to the progressive bundle system of garments production because works in process levels are reduced. Garments operator productivity increases. Direct labor costs are reduced because of prepositioned parts in the carriers and elimination of bundle processing. Indirect labor costs may be reduced by elimination of bundle handling and requiring fewer supervisors. Quality is improved because of accountability of all garments operators and immediate visibility of problems that are no longer concealed in bundles for extended periods of time. The central control system in garments production makes it possible to immediately track a quality problem to the operator that completed the operation. Other benefits that are realized are improved attendance and employee turnover and reduced space utilization.

#### Disadvantages Unit Production System

Considerations for installing a UPS include costs of buying equipment, cost of installing, specialized training for the production system, and prevention of downtime. Down time is a potential problem with any of the garments production systems, but the low work in process that is maintained makes UPS especially vulnerable. MODULAR PRODUCTION SYSTEM

A modular garments production system is a contained, manageable work unit that includes an empowered work team, equipment, and work to be executed. Modules frequently operate as minifactories with teams responsible for group goals and self-management. The number of teams in a



plant varies with the size and needs of the firm and product line in garments. Teams can have a niche function as long as there are orders for that type of garments product, but the success of this type of garments operation is in the flexibility of being able to produce a wide variety of products in small quantities in garments. Many different names are currently used to identify modular garments production systems, including modular garments manufacturing, cellular garments manufacturing units, compact work teams, flexible work groups, self-directed work teams, and Toyota Sewing System (TSS) in garments. The basic premise is similar among these production systems, although the organization and implementation may vary.

The number of employees on a team, usually 4 to 15, varies with the product mix. A general rule of thumb is to determine the average number of operations required for a style being produced and divide by three. Team members cross-trained and interchangeable among tasks within the group. Incentive compensation is based on group pay and bonuses for meeting team goals for output and quality. Individual incentive compensation is not appropriate for team-based garments production. Teams may be used to perform all the operations or a certain portion of the assembly operations depending on the organization of the module and processes required. Before a firm can establish a modular production system, it must prioritize its goals and make decisions that reflect the needs of the firm.

With a team-based system operators are given the responsibility for operating their module to meet goals for throughput and quality. The team is responsible for maintaining a smooth work flow, meeting production goals,

maintaining a specified quality level, and handling motivational support for the team. Team members develop an interdependency to improve the process and accomplish their goals. Interdependency is the relationship among team members that utilizes everyone's strengths for the betterment of the team. Material Handling

Material handling is concerned with the efficient movement of goods through the conversion process. From the time fabric is unloaded from the truck until finished garments are packaged and shipped, storage and movement of materials and work in progress must be planned and tracked to facilitate throughput. Handling materials does not add value to a product, but it affects work flow and productivity. Handling costs can be reduced by eliminating as much handling as possible and reducing the distance materials are moved. Three aspects of material handling need to be planned and evaluated: 1. Handling and processing of incoming goods.

2. Movement of work in progress.

3. Distribution of the finished product.

Handling incoming goods may involve unloading trucks, inventorying, tagging, moving, shading, testing and storing. Each firm has its own procedure for handling materials as they are received. Efficient material handling and management in the receiving stage can reduce costs during production. Materials that are adequately labeled, inspected, and tested for verification of specifications can be accessibly stored for immediate use. Large inventory of materials increase the handling required and storage costs.