**Questions for the Case: Executive Shirt Company Inc.**

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Q 1: Construct the process flow diagram of the current production process of regular shirts at the Executive Shirt Company Inc.

Q 2: Compute the process cycle times of each of the processes involved in the production of regular shirts. Identify the bottleneck process (or processes).

**Table 1: Calculations for the current production processes:** The table below shows the computation of the measures for the current production process of regular shirts:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Measures** | **Formula** | **Computations** |
| a | Actual Cycle Time (min/shirt) | 1/(Flow Rate) | 1/(800 shirts/day) = 1/800/(8\*60) shirts/min = 480/800 = **0.60 min/shirt** |
| c | WIP Inventory (shirts) |  | 196 batch\*60shirts per batch = **11,760 shirts** |
| b | Manufacturing Lead Time (days) | MLT = Cycle Time \* WIP | 0.60\*11,760 =7056 min = 7056/8\*60 = **14.7 days** |
| d | Production Capacity (shirts/day) | 1/cycle time of bottleneck | 1/(0.50 min/shirt) = 2 shirts/min = 2\*8\*60 = **960 shirts/day** |
| e | Capacity utilization | Flow rate/capacity | 800/960 = **83.3%** |
| f | Direct labor content (min/shirt) | Sum (column 2 of exhibit 3) + labor content of cutting | 25.51 + 4\*0.25(for cutting) = **26.51** min/shirt |
| g | Direct labor utilization | Labor content per shirt/available labor per shirt | 26.51/(64\*8\*60)/800 = **69%** |
| h | Direct labor cost ($/shirt) | Total labor cost per day/shirts produced per day  **OR**  (Labor content per shirt \* wage rate per hour)/utilization | (64\*6\*8)/800 **=$3.84**  **OR**  **(26.51\*6/60)/0.69** |

Q 3: Construct the process flow diagram of the current production process of **regular and custom shirts** based on Mike’s plan. Compute the process cycle times of each of the processes. Identify the bottleneck process (or processes).

Q 4: Study the calculations in Table 1 and compute the following measures for Mike’s Plan for the production process of regular and custom shirts:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Measures** | **Formula** | **Computations** |
| a | Actual Cycle Time (min/shirt) |  |  |
| c | WIP Inventory (shirts) |  |  |
| b | Manufacturing Lead Time (days) |  |  |
| d | Production Capacity (shirts/day) |  |  |
| e | Capacity utilization |  |  |
| f | Direct labor content (min/shirt) |  |  |
| g | Direct labor utilization |  |  |
| h | Direct labor cost ($/shirt) |  |  |

Q 5: Compare the current plan and Mike’s plan for the regular shirts. What are your recommendations? (Maximum of 100 words).

Q 6: Refer to the Ike’s plan of separating the custom-shirt production line from the standard-size shirts. Compute the process cycle times of each of the processes in the Ike’s custom-shirt production line and the standard-size shirt production line. Identify the bottleneck process (or processes).

Q 7: Compute the following measures for the production process of **regular shirts** as per **Ike’s plan**:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Measures** | **Formula** | **Computations** |
| a | Actual Cycle Time (min/shirt) |  |  |
| c | WIP Inventory (shirts) |  |  |
| b | Manufacturing Lead Time (days) |  |  |
| d | Production Capacity (shirts/day) |  |  |
| e | Capacity utilization |  |  |
| f | Direct labor content (min/shirt) |  |  |
| g | Direct labor utilization |  |  |
| h | Direct labor cost ($/shirt) |  |  |

Q 8: Compute the following measures for the production process of **custom shirts** as per **Ike’s plan**:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Measures** | **Formula** | **Computations** |
| a | Actual Cycle Time (min/shirt) |  |  |
| c | WIP Inventory (shirts) |  |  |
| b | Manufacturing Lead Time (days) |  |  |
| d | Production Capacity (shirts/day) |  |  |
| e | Capacity utilization |  |  |
| f | Direct labor content (min/shirt) |  |  |
| g | Direct labor utilization |  |  |
| h | Direct labor cost ($/shirt) |  |  |

Q 9: Compare Ike’s plan for the regular shirts and custom shirts with the current plan (regular shirts) and Mike’s plan (regular and custom shirts). What are your observations and recommendations? (Maximum of 100 words).

Q 10: Provide a detailed comparative cost analysis (for a shirt) for all the plans using the information in the case and by making reasonable assumptions (if necessary).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Cost*  *Components* | *Original Plan*  *Regular Shirt* | *Mike’s Plan*  *Regular Shirt* | *Mike’s Plan*  *Custom Shirt* | *Ike’s Plan*  *Regular Shirt* | *Ike’s*  *Custom Shirt* |
| Raw Materials |  |  |  |  |  |
| Direct Labor |  |  |  |  |  |
| Material Handling Labor |  |  |  |  |  |
| Other Indirect Costs |  |  |  |  |  |
| Inventory Carrying Costs |  |  |  |  |  |
| TOTAL |  |  |  |  |  |

Q 11: The case describes Ike’s plan for the custom shirts. The company feels that the further improvements can be made to **Ike’s custom-shirt plan** by balancing the workload at the stations. Using the following additional information about the operations and their sequences, prepare a plan that rebalances the production line for **custom shirts under Ike’s plan**. Determine the workstation utilization and the line efficiency of the production line as per the proposed plan.

|  |  |  |  |
| --- | --- | --- | --- |
| **Activity. No.** | **Operations** | **Immediate predecessor** | **Precedence Relations** |
| 1 | Cutting | ---- | -- |
| 2 | Make Collar | Cutting | (1,2) |
| 3 | Make cuffs | Cutting | (1,3) |
| 4 | Make sleeves | Cutting | (1,4) |
| 5 | Make front | Cutting | (1,5) |
| 6 | Make back | Cutting | (1,6) |
| 7 | Join shoulder | Make front, make back | (5,7), (6,7) |
| 8 | Attach color | Make collar, join shoulder | (2,8), (7,8) |
| 9 | Attach sleeves | Make sleeves, join shoulder | (4,9), (7,9) |
| 10 | Stitch down sleeves | Attach sleeves | (9,10) |
| 11 | Sew side seam | Attach sleeves | (9,11) |
| 12 | Attach cuffs | Make cuffs, stitch down sleeves | (3,12), (10,12) |
| 13 | Hem bottom | Sew side seam | (11,13) |
| 14 | Inspect | Hem bottom, attach collar, attach cuffs | (8,14), (12,14), (13,14) |
| 15 | Iron | Inspect | (14,15) |
| 16 | Fold, pack | Iron | (15,16) |