

LEAN

Throughput Time – TP (AKA Lead Time or Manufacturing Cycle Time): Key measure in delivery performance or good or services.

$$TP = \text{Process time} + \text{Inspection Time} + \text{Move Time} + \text{Queue Time}$$

Process Time (AKA Value-Added Time): The time worked on the product. The time it takes a company to actually produce the product. Example: Machining the product, assembly of the product, etc.

Inspection Time: The time it takes to ensure the quality of the completed product.

Move Time: The time where materials or work-in-process are moved from one work station to another.

Queue Time: The period of time which a product awaits transfer to workstation undergoes further inspection and subsequent manufacturing processes.

Manufacturing Cycle Efficiency (MCE), (AKA Value Added Ratio)

$$MCE = \frac{\text{Process time (AKA Value-Added Time)}}{\text{Throughput Time}}$$

Delivery Cycle Time: The time between acceptance of an order from a customer to the ultimate delivery of the product to the customer.

Cycle Time: Average time between completion of units.

Example: Manufacturer produces 100 units of product per 40 hour work week. Average throughput rate is 1 unit per 0.4 hours.

$$60 \text{ min per hour} \qquad 60 \times 0.4 = 24 \text{ minutes}$$

ANSWER - The cycle time is 24 minutes on average