Throughput & Capacity Optimisation (TCO)

Eliminating Bottlenecks & Unlocking Hidden Capacity

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1. Executive Context

Manufacturing and operational systems frequently experience **bottlenecks and capacity imbalance** that limit overall throughput.

Even when installed capacity appears adequate, hidden constraints can arise from:

- Uneven process loading
- Production flow disruptions
- Equipment utilization imbalances
- Excess work-in-progress accumulation
- Inefficient production sequencing

These issues reduce overall system productivity.

Throughput & Capacity Optimization (TCO) focuses on identifying system constraints and rebalancing operational capacity.

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2. Engagement Objective

To improve operational throughput by:

- Identifying system bottlenecks
- Rebalancing capacity across operations
- Improving production flow synchronization
- Unlocking hidden operational capacity

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3. TCO Framework

Phase 1 – Production Flow Diagnostic

Objective

Identify true system constraints.

Activities

- End-to-end value stream mapping
- Cycle time vs takt time analysis
- Capacity loading assessment
- WIP accumulation mapping
- Equipment utilization analysis

Deliverables

- Bottleneck identification report
- Capacity imbalance analysis
- Production flow diagnostic

Phase 2 – Constraint Analysis

Objective

Understand root causes of bottlenecks.

Activities

- Throughput analysis
- Resource utilization studies
- Queue time analysis
- Production sequencing review

Deliverables

- Constraint hierarchy map
- Bottleneck root cause analysis
- Improvement opportunity map

Phase 3 – Throughput Optimization

Objective

Improve throughput without major capital investment.

Interventions

- Production line balancing
- Workflow synchronization
- Resource allocation optimization
- Production sequencing improvements

Deliverables

- Throughput improvement roadmap
- Capacity rebalancing plan
- Production flow redesign

Phase 4 – Capacity Architecture & Sustainability

Objective

Ensure long-term operational balance.

Activities

- Capacity planning models
- Throughput monitoring dashboards
- Operational governance mechanisms
- Continuous improvement initiatives

Deliverables

- Capacity architecture blueprint
- Throughput monitoring framework
- Continuous improvement roadmap

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4. Expected Business Impact

Area	Outcome
Throughput	Increased
Capacity Utilization	Improved
Lead Time	Reduced
Work-in-Progress	Reduced
Operational Efficiency	Enhanced
