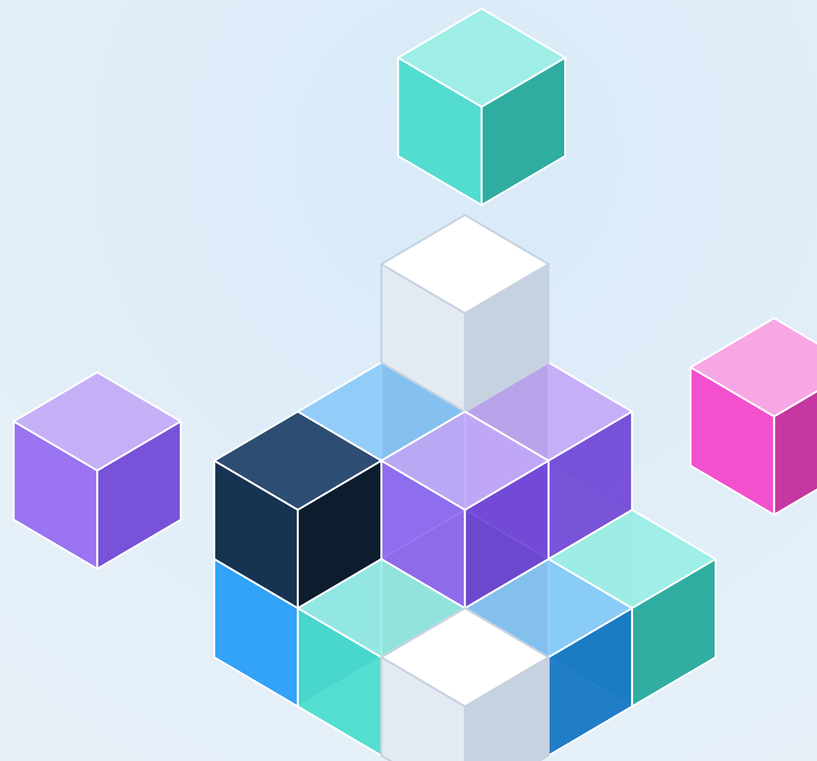
PRODUCTION & MANUFACTURING

Little's Law in Manufacturing

Little's Law links three measures of any stable system: average work in process equals average throughput times average lead time.



01 THE CORE MODEL

ONE EQUATION · THREE LEVERS

LITTLE'S LAW

Lead time = WIP ÷ Throughput

INPUT
Arrivals
Work released into the line

→

WIP
Work in process
Units started but not yet finished

→

THROUGHPUT
Completions
Average units leaving per day

→

LEAD TIME
Time in system
Average days from start to finish

WIP
Units started but not finished, counted at one moment in time.

Throughput
Average rate of completed units leaving the system.

Lead time
Average time a unit spends in the system from start to finish.

02 USING THE LAW

At a given output rate, lead time falls only if WIP falls.

MORE WIP — LESS WIP

HIGH WIP

- − Long and unpredictable lead times
- − Quality problems found late
- − Capital tied up in half-finished goods

CAPPED WIP

- + Shorter, more predictable lead times
- + Faster feedback on defects
- − Needs stable flow to keep output

03 WORKED EXAMPLE

MACHINING LINE · ILLUSTRATIVE FIGURES

WIP **600 units** (counted on the floor) ÷ THROUGHPUT **200 / day** (average completions) = LEAD TIME **3 days** (average time in system)

WIP capped at 300 →

NEW LEAD TIME **1.5 days** (same throughput)

04 MANAGEMENT TAKEAWAYS

01
Count WIP physically
A floor count reveals queues that system data often misses.

02
Cap WIP to cut lead time
Kanban or CONWIP limits make the law work for you.

03
Use averages, not promises
The law holds for long-run averages of a stable system.

05 COMMON MISTAKE

LIMITATION
Applying it to unstable periods
When WIP is growing or demand shifts, short-term averages mislead. Use stable periods for the calculation.