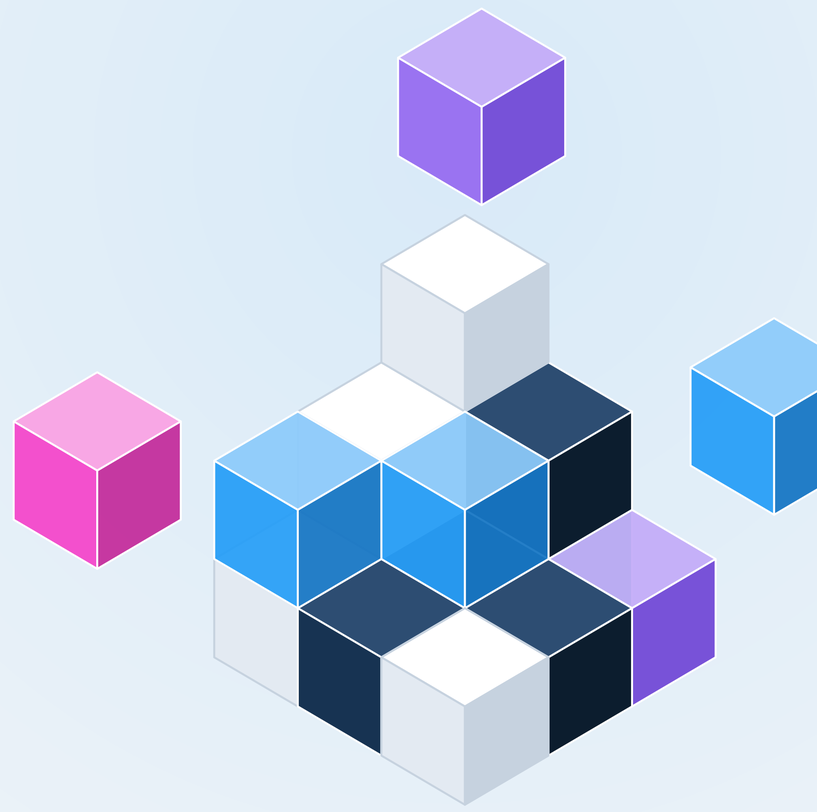
PRODUCTION & MANUFACTURING

One-Piece Flow vs Batch Production

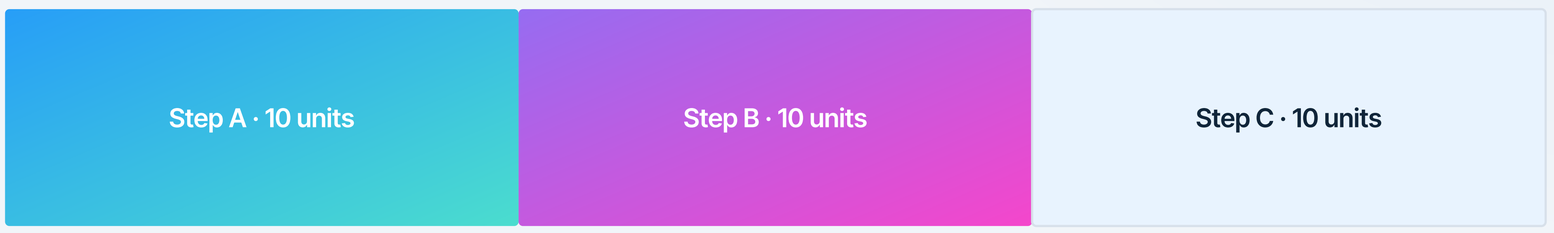
In batch production every step finishes the whole lot before passing it on. In one-piece flow each unit moves to the next step as soon as it is done.



01 THE CORE MODEL

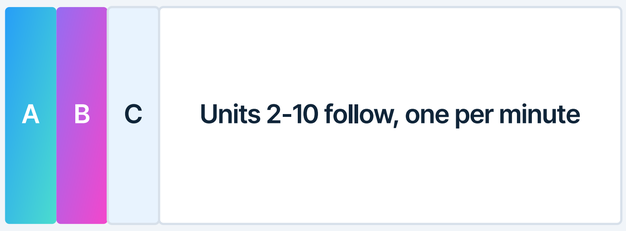
10 UNITS · 3 STEPS OF 1 MIN EACH

Batch of 10
Lot moves as a whole



30 min
first unit done at 21 min

One-piece flow
Each unit moves at once



12 min
first unit done at 3 min

- **Batch and queue**
  Each step processes the whole batch before passing it on.
- **One-piece flow**
  Each unit moves to the next step as soon as it is finished.
- **Transfer batch**
  The quantity moved between steps; it can be smaller than the run size.

02 CHOOSING THE FLOW

Flow wins on lead time; batches win only where setups dominate.

BATCH — FLOW

BATCH PRODUCTION

- \+ Fewer changeovers where setups are long
- − Long lead time, mostly waiting
- − Defects found after a whole batch

ONE-PIECE FLOW

- \+ Short lead time, little WIP
- \+ Defects found on the very next unit
- − Needs balanced steps and reliable machines

03 WORKED EXAMPLE

ORDER OF 10 UNITS THROUGH 3 STEPS OF 1 MIN EACH

BATCH LEAD TIME
30 min
10 + 10 + 10 min

·

FLOW LEAD TIME
12 min
3 min + 9 units × 1 min

=

REDUCTION
60 %
same work content

04 MANAGEMENT TAKEAWAYS

01
Start with a cell
Place steps side by side so units can move one at a time.

02
Shrink the transfer batch first
Moving smaller lots between steps is often possible before full flow.

03
Fix setups and reliability
Long changeovers and breakdowns force batches back in.

05 COMMON MISTAKE

LIMITATION
Forcing flow through long setups
One-piece flow through a step with long changeovers kills capacity. Reduce setup time first.