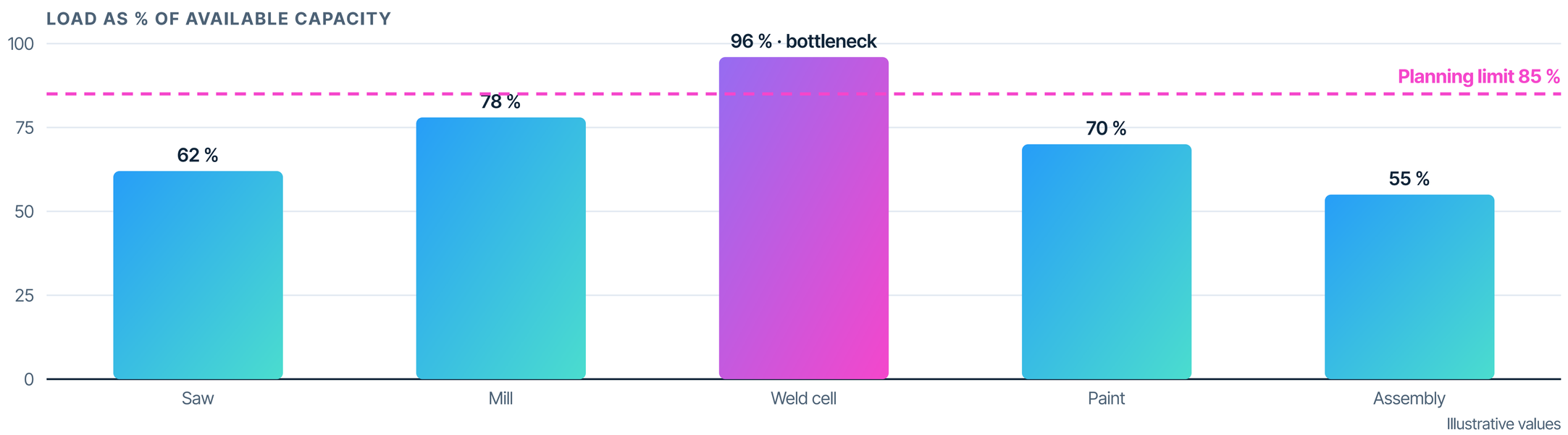
PRODUCTION & MANUFACTURING

Capacity vs Utilization

Capacity is what a resource can produce in the available time. Utilization is the share of that capacity actually loaded. The most loaded resource is the bottleneck.

01 THE CORE MODEL

LOAD PER RESOURCE · BOTTLENECK MARKED



Capacity

The output a resource can deliver in available time at its standard rate.

Utilization

Load ÷ available capacity, in percent.

Bottleneck

The resource with the highest load; it limits system output.

02 HIGH IS NOT ALWAYS GOOD

Queues grow sharply as utilization approaches 100 %.

IDLE — OVERLOADED

LOW UTILIZATION

- − Paid capacity is not used
- \+ Room to absorb variation
- \+ Short queues and lead times

VERY HIGH UTILIZATION

- \+ Assets fully used
- − Queues and lead times explode
- − No buffer for breakdowns or rush orders

03 WORKED EXAMPLE

WELD CELL FROM THE CHART · ILLUSTRATIVE FIGURES

PLANNED LOAD		AVAILABLE		UTILIZATION		ACTION
72 h	÷	75 h	=	96 %	→	Offload 10 h
weld hours this week		two shifts, net of breaks		the bottleneck		to a second fixture

04 MANAGEMENT TAKEAWAYS

01 — Plan below 100 %

Leave a buffer at bottlenecks for variation and urgent work.

02 — Raise bottleneck capacity first

An hour gained elsewhere does not raise output.

03 — Report utilization with lead time

Showing both stops the push for 100 % everywhere.

05 COMMON MISTAKE

LIMITATION

Maximizing utilization everywhere

Running every resource near full load builds queues and lengthens lead time without raising output.