Conveyor Speed

How-to guide: what the workbook does, how to use it and what every number means. mfgcalcs.com

Conveyor Speed

Check every conveyor through an oven, washer or tunnel: the speed the part rate needs, the fastest speed that holds the target dwell, and whether the belt setting sits between them.

For: Process and manufacturing engineers, finishing and coating supervisors, and line technicians setting conveyor speeds.

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Quick start

1. On Setup, type your plant.
2. On Conveyors, give each conveyor a row: zone, product, required parts per hour, part pitch, zone length, target dwell and the current belt setting.
3. Fix anything the Check column names.
4. Open the Dashboard: each conveyor's speed window against its setting, and the zones that cannot hold dwell at the rate.

What is in the workbook

Start Here	Read this first: what the workbook does and how to use it.
Setup	Plant.
Conveyors	One row per conveyor through a process zone: rate, pitch, zone and dwell in; speed window, dwell and fit of the setting out.
Dashboard	Every conveyor's speed window, from the speed the rate needs to the fastest that holds dwell, against its belt setting.
Method	How every number is calculated, with assumptions, limits and sources.
Verify	Self-check: the workbook's formulas recomputed on fixed inputs against an independent reference.

What each number means

Quantity	How it is calculated	Units
Parts per minute	Throughput / 60.	parts/min
Throughput speed	Parts per minute x part pitch / 12.	ft/min
Dwell speed	Zone length x 60 / target dwell.	ft/min
Speed margin and status	Dwell speed - throughput speed; Within limits when the rate speed is no faster than the dwell speed.	ft/min, -

Quantity	How it is calculated	Units
Dwell at throughput speed and achieved	Zone length x 60 / throughput speed; / target dwell.	s, %
Setting in window and dwell at setting	Yes when throughput speed <= setting <= dwell speed; zone length x 60 / setting.	-, s
Max rate at target dwell	Dwell speed x 12 / pitch x 60.	parts/h

Assumptions, limitations, sources and the self-check (the Verify sheet, which recomputes the workbook's formulas on fixed test inputs) are in the workbook. The last page shows the Dashboard with the example data for Marlowe Finishing, a fictional business.

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Engineering estimates for planning and improvement work. Verify the results against your own process, data and standards before you rely on them.

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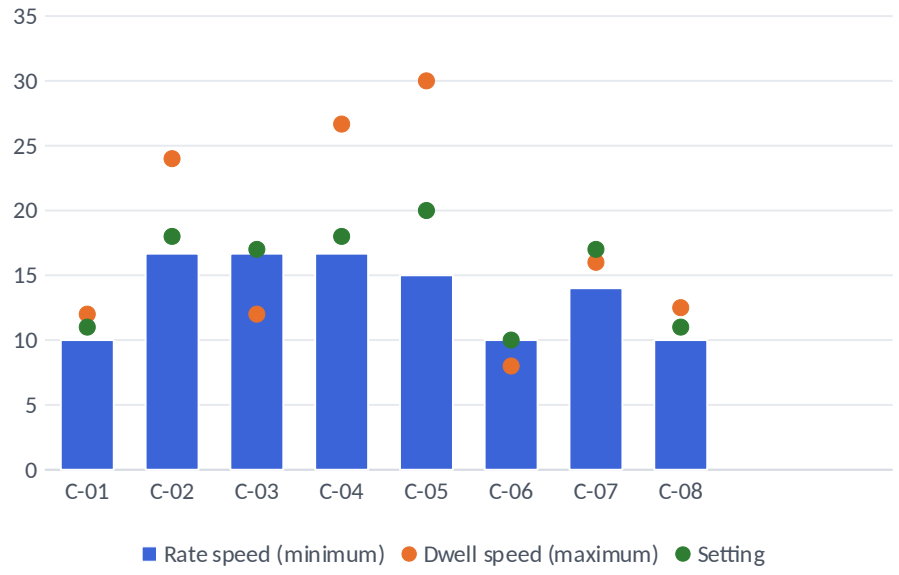
Every conveyor's speed window, from the speed the rate needs to the fastest that holds dwell, against its belt setting.

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Marlowe Finishing (example): 8 conveyors through process zones. Speeds in ft/min, dwell in seconds.

CONVEYORS	CANNOT HOLD DWELL AT THE RATE	SETTINGS OUTSIDE THE WINDOW	LOWEST SPEED MARGIN (FT/MIN)
8	**2**	**3**	**-4.7**
Rows on Conveyors	Rate speed above dwell speed	Too slow for the rate or too fast for dwell	Dwell speed - rate speed

Speed window and belt setting (ft/min)



Dwell achieved at the required rate

