

10. OEE Calculation Reference

User manual

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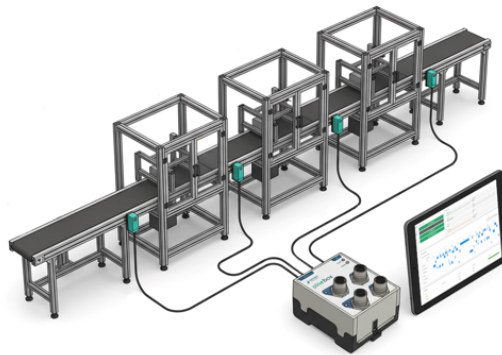
 CedarInsight

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10. OEE Calculation Reference

This chapter documents exactly how CedarInsight computes its figures, so every displayed value can be audited. All analysis views, reports and the AI Assistant use the same calculation functions; figures are consistent everywhere.

10.1 Data captured per production run

Quantity	Source
Actual quantity (units in)	Input-stage counter × units-per-count [PBX]
Good quantity (units out)	Output-stage counter × units-per-count [PBX]
Defect quantity	Defect/Reject-stage counter; can be corrected by the operator at run end (5.2.4)
Target quantity	Entered at changeover
Running time	Total time in states <i>Running</i> and <i>Running Slow</i> (from state events)
Unplanned downtime	Total time in state <i>Down</i>
Planned production time	Wall-clock run duration (start → end)
Ideal cycle time	From the product (or program default) configuration

10.2 Availability

$$\text{Availability} = \text{Running time} / (\text{Running time} + \text{Unplanned downtime})$$

Availability relates run time to operating time. Time in *Planned Stop*, *Changeover* and *Draining* is not an availability loss, only unplanned *Down* time reduces Availability. This follows the standard OEE definition in which planned stops are excluded from the loss calculation.

10.3 Performance

$$\text{Performance} = (\text{Ideal cycle time} \times \text{Actual quantity}) / \text{Running time}$$

Performance compares the time the production *should* have taken at ideal speed with the time it actually ran. Slow cycles and minor stops (shorter than the stage timeout) reduce Performance. The value is capped at 100%.



Performance is only as accurate as the configured **ideal cycle time** ([chapter 7.2](#)).

10.4 Quality

$$\text{Quality} = \text{Good quantity} / \text{Actual quantity}$$

Good quantity is the output-stage count; actual quantity is the input-stage count. Operator corrections of the defect quantity at run end are reflected here.

10.5 OEE

$$\text{OEE} = \text{Availability} \times \text{Performance} \times \text{Quality}$$

10.6 Aggregation across runs

When several runs are combined (period views, grouping by product/program, reports), the factors are weighted, not simply averaged:

Factor	Aggregation
Quality	Volume-weighted: $\Sigma \text{ good} / \Sigma \text{ actual}$ over all runs
Availability	Time-weighted: $\Sigma \text{ running} / \Sigma (\text{running} + \text{unplanned downtime})$
Performance	Running-time-weighted mean of the per-run values, mathematically equal to $\Sigma (\text{ideal cycle} \times \text{count}) / \Sigma \text{ running time}$
OEE	Recomputed from the three aggregated factors: $A \times P \times Q$

This means a long run influences the aggregate more than a short one; a simple arithmetic mean of run OEEs would distort the result.

10.7 OEE colour scale

OEE values are colour-coded throughout the application. The default bands:

Band	Default threshold	Colour
Excellent	$\geq 85 \%$	dark green
Good	$\geq 75 \%$	light green
Fair	$\geq 60 \%$	yellow
Poor	$\geq 40 \%$	orange
Critical	$< 40 \%$	red

The thresholds are configurable under *System* → *System* → *OEE Thresholds* ([chapter 9.1](#)).