

OEE Studio v5

Calculating Duration

MIN-MAX-AVG

This Tool-Tip will guide you through the process of creating the MIN-MAX-AVG Duration of Events in OEE Studio.

Deb-Tech Systems, Inc. & Production Improvement Systems Ltd.

Debbie.Olk@DebTechSystems.com

Russell@ProductionImprovement.com

1-800-975-3181 x2

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Tool-Tip – Min-Max-AVG

We now have a new Result Type for Custom Defined Fields

- This provides the ability to format the **Duration** field as HH:MM:SS

Result Type

Boolean

Date and Time

Date Only

Decimal

Integer

String

Currency

Custom Date Interval

Duration

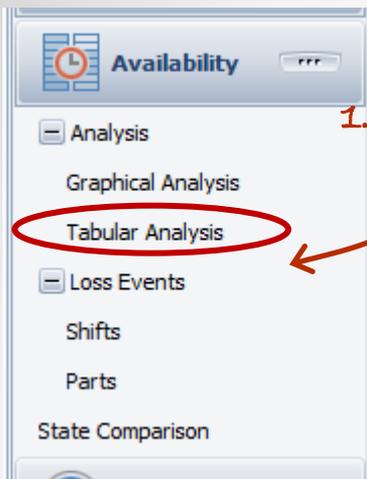
Duration Reason ... MIN MAX AVG Drop Column Fields Here

Grand Total						
Device	Reason	Duration	Reason Count	MIN	MAX	AVG
Bartelt5	Cartoner Downtime	09h 53m 38s	57	00h 00m 00s	01h 00m 14s	00h 10m 25s
	Pouching Knifes	05h 56m 33s	24	00h 03m 07s	01h 29m 09s	00h 14m 51s
	Repack	04h 50m 07s	21	00h 00m 00s	00h 58m 51s	00h 13m 49s
Bartelt5 Total		20h 40m 18s	102	00h 00m 00s	01h 29m 09s	00h 12m 10s

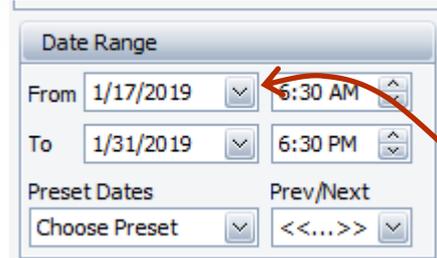
Creating the Report

The process is the same whether you select

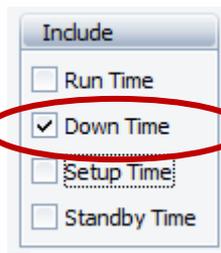
Availability – Tabular Analysis or
Availability - Loss Events – Shift or
Loss Events – Parts.



1. Select Availability - Tabular Analysis



2. Select the Date Range



3. Select Down Time

4. Click Apply/Refresh to view your data. >>>

St...	Loss Reason	Grand Total		
		Duration (Sum)	Reason Count	
t5	Down	Butler Downtime	03h 06m 34s	31
		Carton Checkweigher Down	00h 06m 40s	2
		Cartoner Downtime	09h 53m 38s	57
		Combi Scales / Conveyor	00h 10m 42s	3
		Conditioner Downtime	00h 56m 07s	13
		Feeding System Downtime	04h 09m 22s	43
		Late Downtime	00h 02m 48s	5
		Material Not Available	02h 37m 30s	12
		None	02h 10m 38s	40
		Pickoff Assembly	00h 06m 47s	2
		Pouch Checkweigher Down	00h 31m 59s	6
		Pouching Fill Heads	00h 57m 39s	7
		Pouching Knives	05h 56m 33s	24
		Pouching Machine Down	02h 36m 25s	27
		Pouching Seal Bars	02h 33m 18s	21
		Repack	04h 50m 07s	21
		Rework	04h 27m 00s	20
		X-ray Downtime	00h 33m 37s	7
		Down Total	45h 47m 24s	341
t6	Down	Butler Downtime	01h 20m 49s	19
		Carton Checkweigher Down	00h 03m 26s	1
		Cartoner Downtime	11h 36m 25s	101

Creating the MIN Calculation

At the bottom of the screen, you will find the Click here for Printing, etc option.

[Click here for Printing, Exporting, Field Selection and Layout Settings.](#)

Select the **Define Custom Fields** Option – select **Duration** and **Min**

Layout

- Set Font
- Save Layout
- Restore Layout
- Revert to Default Layout

Fields

- Show and Hide Fields
- Define Custom Fields**

General

- Print / Export

Field Description: MIN

Result Type

- Boolean
- Date and Time
- Date Only
- Decimal
- Integer
- String
- Currency
- Custom Data Interval
- Duration**

Summary Type

- Count
- Sum
- Min**
- Max
- Average
- Std Dev
- Std Dev P
- Var
- Var P

The smallest value.

Append Summary Type to the Field Description

If the Field Description is "Cost" and the Summary Type is "Sum", the field will display as Cost (Sum) if this option is chosen. Otherwise it will simply display as "Cost".

Hide Field

Use Summary Values

Field Area

- Data Area
- Row Area
- Column Area
- Filter Area

Enterprise		Location		Plant		Line	
Availability		OEE		Device 0		Grand Total	
Area 0	Shift 0	Device 2	Device 3	Availability	OEE	Availability	OEE
Packaging	Shift 1	47.3	33.9	46.7	35.2	47.0	34.5
	Shift 2	0.0	0.0	0.0	0.0	0.0	0.0
	Shift 3	58.1	41.0	65.1	47.5	61.6	44.3
	Shift 4	3.9	3.1	10.9	8.8	5.8	4.7
Packaging Total		37.7	26.9	45.3	33.6	41.2	30.0

Cancel Proceed to Expression Editor >>

Expression editor

[Duration]

Functions Operators Fields Constants

[Asset]
[AVG]
[Device]
[Duration]
[End Time]
[Enterprise]
[Lead]
[Location]
[MAX]
[Mechanic]
[MIN]
[Operator 1]
[Operator 2]

Field Information
Caption: Duration
The type of this field is: System.Int32

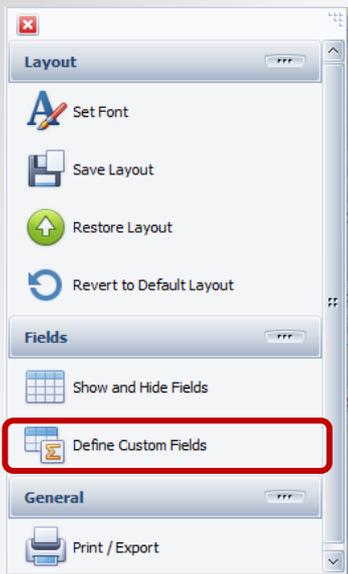
OK Cancel

Creating the MAX Calculation

At the bottom of the screen, you will find the Click here for Printing, etc option.

[Click here for Printing, Exporting, Field Selection and Layout Settings.](#)

Select the **Define Custom Fields** Option – select **Duration** and **Max**



The 'Options' dialog box is shown with the following settings:

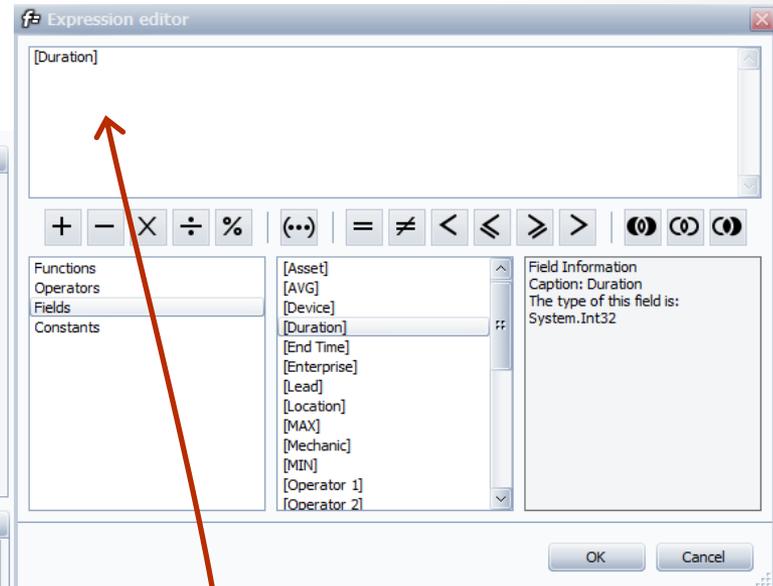
- Field Description: MAX
- Result Type: Duration (highlighted with a red box)
- Summary Type: Max (highlighted with a red box)
- Other options: Boolean, Date and Time, Date Only, Decimal, Integer, String, Currency, Custom Date Interval, Append Summary Type to the Field Description, Hide Field, Use Summary Values.

Text in the dialog: "If the Field Description is 'Cost' and the Summary Type is 'Sum', the field will display as Cost (Sum) if this option is chosen. Otherwise it will simply display as 'Cost'."

The 'Field Area' dialog box shows a data table with the following structure:

		Device 2		Device 3		Grand Total	
Area	Shift	Availability	OEE	Availability	OEE	Availability	OEE
Packaging	Shift 1	47.3	33.9	46.7	35.2	47.0	34.5
	Shift 2	0.0	0.0	0.0	0.0	0.0	0.0
	Shift 3	58.1	41.0	65.1	47.5	61.6	44.3
	Shift 4	3.9	3.1	10.9	8.8	5.8	4.7
Packaging Total		37.7	26.9	45.3	33.6	41.2	30.0

The 'Field Area' dialog box also includes a 'Data Area' section with buttons for 'Enterprise', 'Location', 'Plant', and 'Line'. The 'Availability' and 'OEE' buttons are highlighted with a red oval. The table data is also highlighted with a red oval. At the bottom, there are 'Cancel' and 'Proceed to Expression Editor >>' buttons.



Creating the AVG Calculation

At the bottom of the screen, you will find the Click here for Printing, etc option.

[Click here for Printing, Exporting, Field Selection and Layout Settings.](#)

Select the **Define Custom Fields** Option – select **Duration** and **Average**

The screenshot shows the software interface with several panels. The 'Layout' panel on the left has 'Define Custom Fields' highlighted with a red box. The 'Options' panel below it has 'Field Description' set to 'AVG', 'Result Type' set to 'Duration', and 'Summary Type' set to 'Average'. The 'Field Area' panel at the bottom shows a table with 'Availability' and 'OEE' columns highlighted. A red arrow points from the 'Proceed to Expression Editor' button at the bottom to the 'Expression editor' window on the right.

Options

Field Description: AVG

Result Type:

- Boolean
- Date and Time
- Date Only
- Decimal
- Integer
- String
- Currency
- Custom Date Interval
- Duration

Summary Type:

- Count
- Sum
- Min
- Average
- Std Dev
- Std Dev P
- Var
- Var P

The average of the values.

IMPORTANT: for OEE items (OEE, Availability, Performance and Quality) this will give less accurate results as these need to be averaged at a component level.

Field Area

		Enterprise		Location		Plant		Line	
		Availability		OEE					
Area	Shift	47.3	33.9	46.7	35.2	47.0	34.5		
Packaging	Shift 1	0.0	0.0	0.0	0.0	0.0	0.0		
	Shift 2	58.1	41.0	65.1	47.5	61.6	44.3		
	Shift 3	3.9	3.1	10.9	8.8	5.8	4.7		
	Shift 4	37.7	26.9	45.3	33.6	41.2	30.0		
	Packaging Total								

The 'Expression editor' window shows the field name '[Duration]' in the top text area. Below it is a toolbar with mathematical operators (+, -, ×, ÷, %) and logical operators. A list of functions is visible, including [Asset], [AVG], [Device], [Duration], [End Time], [Enterprise], [Lead], [Location], [MAX], [Mechanic], [MIN], [Operator 1], and [Operator 2]. The 'Field Information' panel on the right shows 'Caption: Duration' and 'The type of this field is: System.Int32'. The 'OK' and 'Cancel' buttons are at the bottom.

Completing the Report

The new fields appear in the Data Area.

PivotGrid Field List

Drag fields between areas below:

- Filter Area
 - Enterprise
 - Location
 - Type
- Row Area
 - Device
 - State
 - Loss Reason
- Column Area
- Data Area
 - Duration (Sum)
 - Reason Count
 - MIN
 - MAX
 - AVG

Defer Layout Update Update

Enterprise Location Type

Drop Column Fields Here

		Grand Total					
De...	State	Duration (Sum)	Reason Count	MIN	MAX	AVG	
- Line 5	- Down	Butler Downtime	03h 06m 34s	31	00h 00m 00s	00h 13m 16s	00h 06m 01s
		Carton Checkweigher Down	00h 06m 40s	2	00h 03m 10s	00h 03m 30s	00h 03m 20s
		Cartoner Downtime	09h 53m 38s	57	00h 00m 00s	01h 00m 14s	00h 10m 25s
		Combi Scales / Conveyor	00h 10m 42s	3	00h 03m 04s	00h 04m 04s	00h 03m 34s
		Conditioner Downtime	00h 56m 07s	13	00h 03m 08s	00h 07m 09s	00h 04m 19s
		Feeding System Downtime	04h 09m 22s	43	00h 00m 00s	00h 27m 04s	00h 05m 48s
		Late Downtime	00h 02m 48s	5	00h 00m 01s	00h 01m 04s	00h 00m 34s
		Material Not Available	02h 37m 30s	12	00h 00m 12s	01h 20m 34s	00h 13m 08s
		None	02h 10m 38s	40	00h 00m 00s	00h 21m 39s	00h 03m 16s
		Pickoff Assembly	00h 06m 47s	2	00h 03m 07s	00h 03m 40s	00h 03m 24s
		Pouch Checkweigher Down	00h 31m 59s	6	00h 03m 11s	00h 12m 04s	00h 05m 20s
		Pouching Fill Heads	00h 57m 39s	7	00h 02m 40s	00h 29m 06s	00h 08m 14s
		Pouching Knives	05h 56m 33s	24	00h 03m 07s	01h 29m 09s	00h 14m 51s
		Pouching Machine Down	02h 36m 25s	27	00h 00m 00s	00h 17m 36s	00h 05m 48s
		Pouching Seal Bars	02h 33m 18s	21	00h 03m 05s	00h 40m 34s	00h 07m 18s
		Repack	04h 50m 07s	21	00h 00m 00s	00h 58m 51s	00h 13m 49s
		Rework	04h 27m 00s	20	00h 00m 00s	00h 37m 08s	00h 13m 21s
		X-ray Downtime	00h 33m 37s	7	00h 03m 08s	00h 07m 20s	00h 04m 48s
		Down Total	45h 47m 24s	341	00h 00m 00s	01h 29m 09s	00h 08m 03s

Graphing the Report

Click on the MIN, MAX and AVG column headings to automatically graph the results.

