

## MGA - Production Analysis

### data universe

Information made available based on the works in progress and published by the factory that contain planned work (activities and references) with or without production (executions).

The data allocated to the analysis menus are updated daily at 07:00.

### menus

#### Evolution

Set of graphs that provide information for the purposes of comparison and monitoring of the temporal evolution of the work carried out.

#### Macro Analysis

Set of schedules that provide and illustrate the planned and executed times and possible deviations from the different perspectives of the planned and performed work.

#### Micro Analysis

Set of layouts in table format that provide the details of the information associated with the perspectives of the work carried out and planned in the factory.

### prospects

Universe of data and calculation of indicators are distributed and adapted to the different perspectives possible to visualize the information: Works, Operation Stations, Operations, Operators and Equipment.

### Menu Structure: Evolution

Indicators and data distributed by State, Hours, Temporal Evolution, Planning and Quality. In each case the indicator is made available if applicable in the perspective under analysis. Each layout of this menu has the following structure:



Initial section with options for the indicators to be visualized and the filters that can be applied to the chart in question. A second section with the selected chart and the respective indicators present in it and a third section with the data presented in a table (coincident with what is shown in the selected chart). This table can be exported in EXCEL or PDF format.

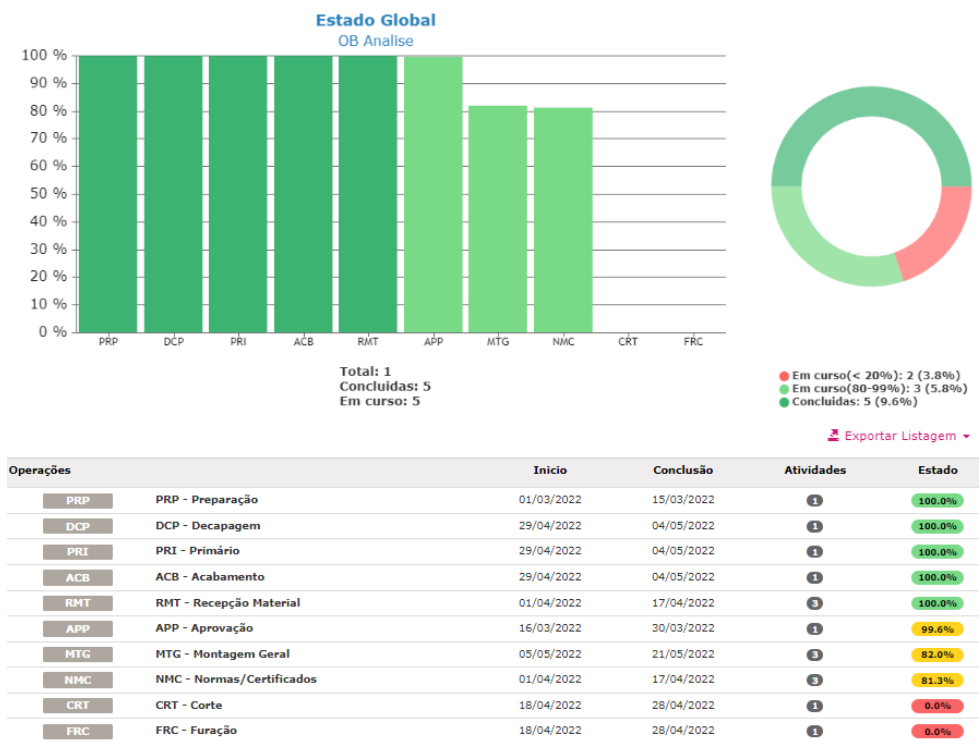
## Status - Outlook

Displays the global status of ongoing and published works<sup>1</sup> and operations associated with them<sup>2</sup>. Allows you to view works by customer<sup>1</sup> and operations by work, entity or process.

It provides the following indicators:

- State of execution of works<sup>1</sup> and operations<sup>2</sup>;
- total number of works<sup>1</sup> and operations<sup>2</sup>;
- number of works<sup>1</sup> and operations<sup>2</sup> completed and to be completed;
- Period (with start and end date)
- No. associated activities
- Structuring weight<sup>1</sup>
- owner of work<sup>1</sup>

1 – Work perspective, 2 – Operation perspective

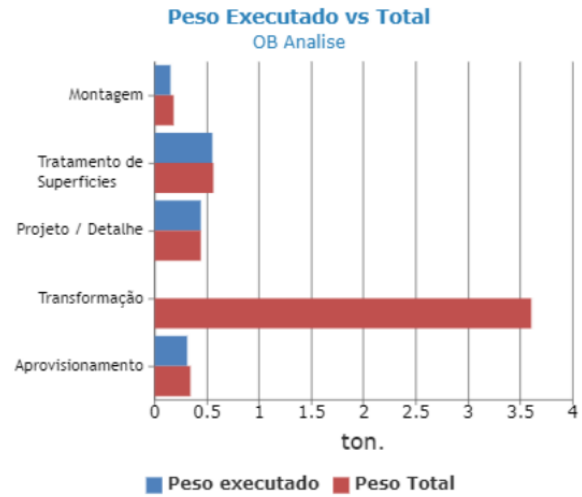
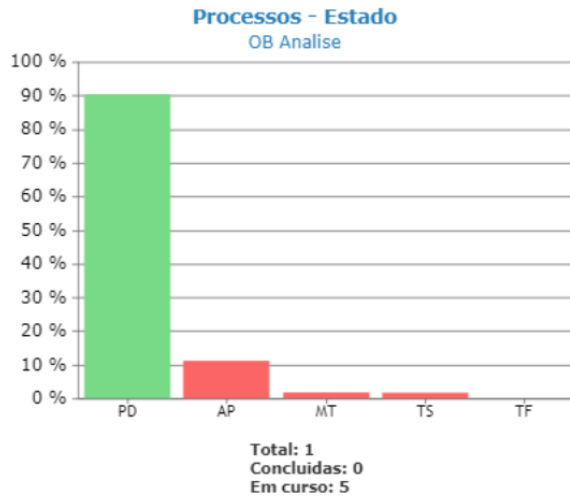


## Status - Processes

Presents the global status of the processes in the factory in the universe of works in progress and published<sup>1</sup> and operations associated with them<sup>2</sup>. Allows viewing the status of processes for a selected job<sup>1</sup> or selected operation<sup>2</sup> as well as for a specific entity. It provides the following indicators:

- State of execution of the works processes<sup>1</sup> and operations<sup>2</sup>;
- Period (with start and end date)
- No. associated activities
- Executed and total weight associated with the process;
- Weighted weight associated with the process based on the weights assigned to the activities of the work<sup>1</sup>.

1 – Work perspective, 2 – Operation perspective



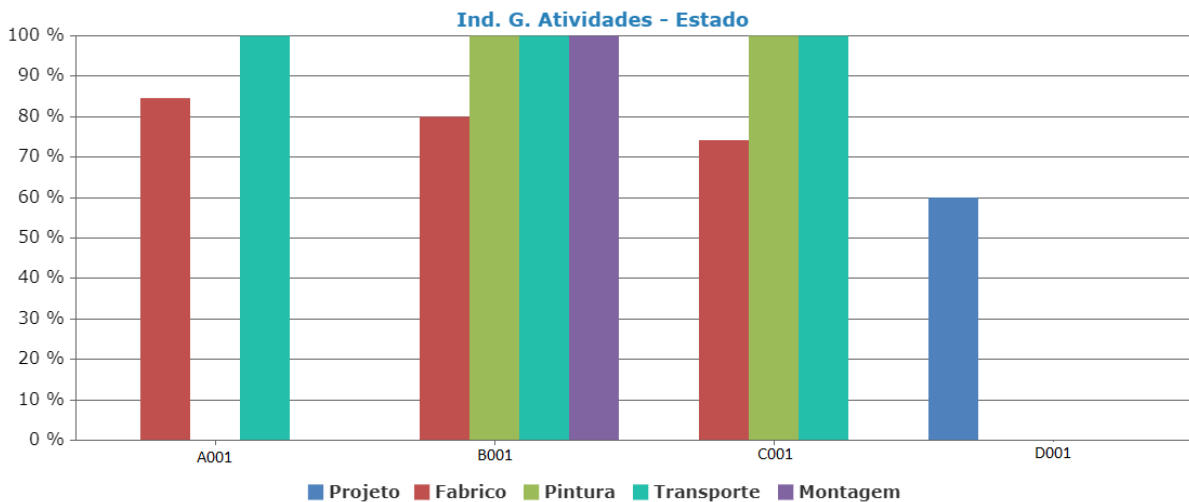
[Exportar Listagem](#)

Processo	Início	Conclusão	Atividades	Estado
PD	05/10/2015	13/05/2022	152	90.5%
AP	16/11/2015	19/07/2022	154	11.3%
MT	21/03/2016	21/05/2022	126	1.9%
TS	24/11/2015	03/06/2022	118	1.8%
TF	18/11/2015	10/08/2022	188	0.0%

Status - Indicators

It presents the global status of the global activity indices associated with the works with the possibility of selecting a work and/or a specific entity.

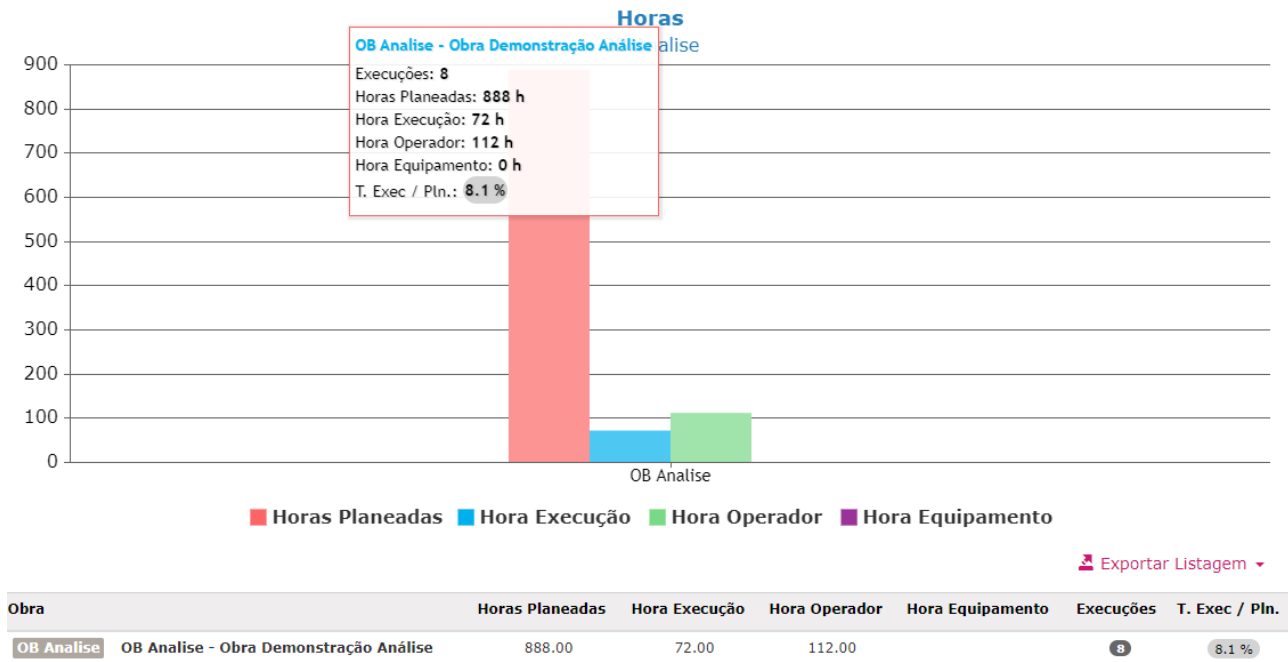
Análise Evolução - Obras



Obra	PRJ	FAB	PNT	TRP	MTG
A001	0.0%	84.6%	0.0%	100.0%	0.0%
B001	0.0%	80.0%	100.0%	100.0%	100.0%
C001	0.0%	74.2%	100.0%	100.0%	0.0%
D001	60.0%	0.0%	0.0%	0.0%	0.0%

## Hours - Perspective

Shows the planned and executed hours, number of executions and execution rate compared to the planned by the items of the different perspectives. With the possibility to select an entity, a process or a specific item from the chosen perspective.

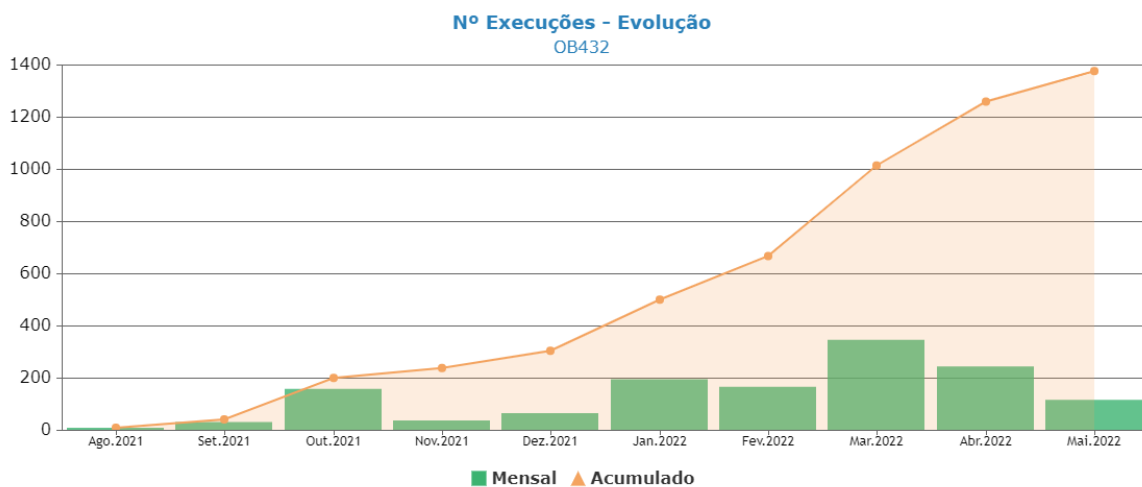


## Hours - Processes

It presents the planned and executed hours, number of executions and execution rate compared to the one planned by the items from the different perspectives, distributing the same indicators by processes (associated with activities related to the chosen perspective). With the possibility to select an entity or a specific item from the chosen perspective. It provides the same indicators described above.

## Temporal Evolution - Executions

It presents the temporal evolution of the number of executions associated with activities from the chosen perspective. The temporal distribution is presented monthly and it is possible to choose a specific year or an entity or even a specific process. It also presents an accumulated that passes through the sum of the amounts of executions of each month.

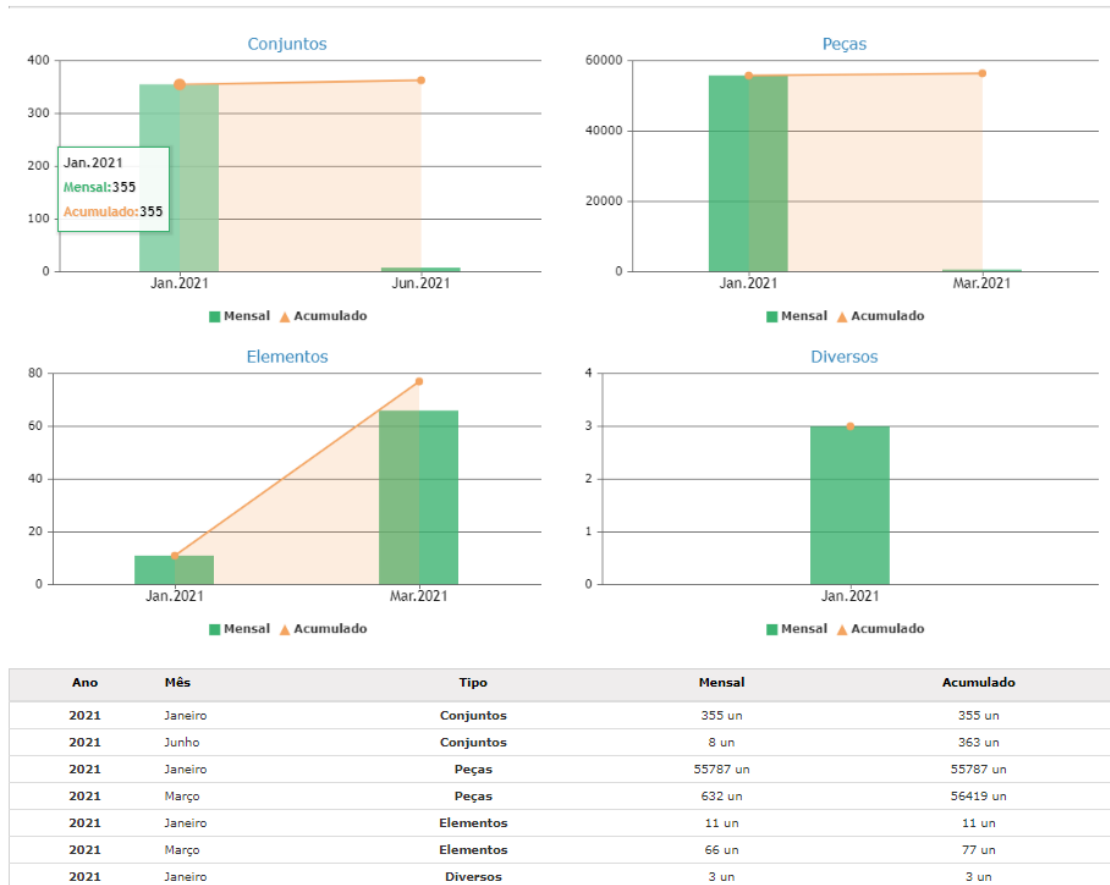


## Temporal Evolution - Quantity / Weight / Surface Area

It presents the temporal evolution of the executed quantity, executed weight or executed surface area associated with executions of activities from the chosen perspective. The temporal distribution is presented monthly and it is possible to choose a specific year or an entity or even a specific process. It also presents an accumulated that passes through the sum of the amounts of hours executed each month. To make the monthly distribution of these indicators, the formula used is the following:

In this type of indicators, the information presented in the charts is divided by element type.

### Análise Evolução - Operação



### Temporal Evolution - Hours

It presents the temporal evolution of the number of hours of execution associated with executions of activities from the chosen perspective. The temporal distribution is presented monthly and it is possible to choose a specific year or an entity or even a specific process. It also presents an accumulated that passes through the sum of the amounts of hours executed each month.

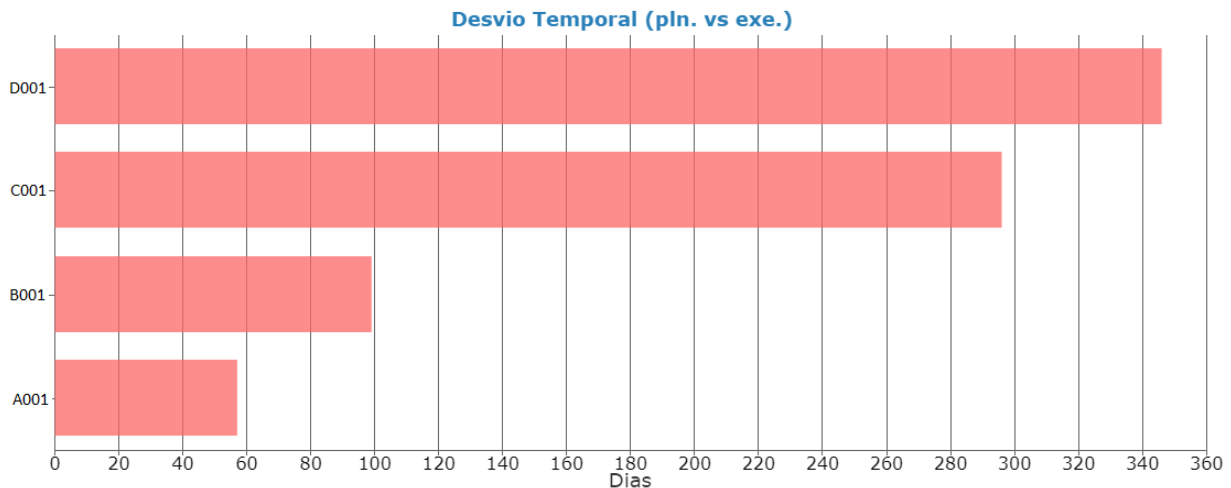
### Planning - Perspective

Displays the time deviation between planned and executed dates for the items of the chosen perspective (Job or Operation). It provides the following indicators:

- Planned start date of the oldest activity
- Planned end date of the most recent activity
- Difference between the aforementioned dates (time duration of planning)
- Earliest run start date
- Latest run end date
- Difference between the aforementioned dates (time duration of executions)
- Deviation start date (which occurs when the most recent date of execution is greater than the most recent planned date, with the day after the most recent planned date being considered as the start of the deviation)

- branch end date (which occurs when the most recent date of execution is greater than the most recent date planned, with the most recent date executed being considered the end of the branch)
- Difference between the aforementioned dates (time duration of the deviation)

### Análise Evolução - Obras



Obra		Previsto			Executado			Desvio		
		Início	Conclusão	Duração	Início	Conclusão	Duração	Início	Conclusão	Duração
A001	Obra A	25-07-20	13-11-20	112	14-09-20	09-01-21	118	14-11-20	09-01-21	57
B001	Obra B	17-06-20	05-10-20	111	12-01-21	12-01-21	1	06-10-20	12-01-21	99
C001	Obra C	20-07-20	31-08-20	43	22-07-20	23-06-21	337	01-09-20	23-06-21	296
D001	Obra D	05-03-20	28-03-20	24	05-03-20	09-03-21	370	29-03-20	09-03-21	346

#### Planning - Processes

Displays the time deviation between planned and executed dates for the processes associated with the items of the chosen perspective (Work or Operation). It provides the same indicators described above in the “Planning – Outlook” chart by process.

#### Planning - Positive (Perspective)

Displays the positive temporal deviation between planned and executed dates for the items of the chosen perspective (Job or Operation). It provides the same indicators described above in the “Planning – Outlook” chart by perspective. By positive deviation it is understood that the work was carried out in its entirety before the planned date.

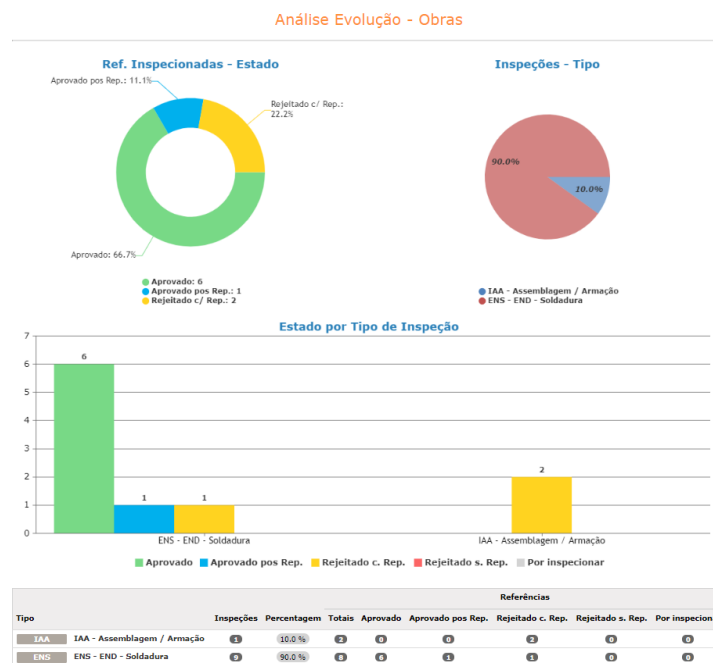
#### Planning - Positive (Processes)

Displays the time deviation between planned and executed dates for the processes associated with the items of the chosen perspective (Work or Operation). It provides the same indicators described above in the “Planning – Outlook” chart by process. By positive deviation it is understood that the work was carried out in its entirety before the planned date.

#### Quality - Perspective (Work)

It presents a set of information associated with the quality and the works in progress and published by the factory. It allows viewing the indicators for a specific audited entity and/or for a specific work. It provides the following indicators:

- Inspection status of references that have been associated with inspections of a work or factory and respective percentage proportion
- Total number of references and inspections by inspection state
- Percentage ratio of the total number of inspected references by state compared to the total number of inspection references
- Number of inspections and associated references per type of inspection of a given work or for the total of the factory per audited entity or for all
- Percentage ratio by type compared to the total
- Distribution of reference quantities by inspection state associated with inspection types



In all graphs, it is possible to select the year to filter the information by year, taking into account the following conditions:

- Graphs allocated to the State
  - Filter applied to planning dates (of activities with references and without executions)
  - Filter applied to execution dates (when activities have executions, the execution date prevails over the one planned for the calculation) in summary:
    - Quantity executed by execution date
    - Estimated amount compared to what was executed + planning date without executions
    - Execution status: executed quantity / forecast quantity
- Graphs related to Hours and temporal evolution - year filters by execution date
- Graphs related to planning and deviations - year filters by planning dates
- Graphs related to Quality - year filters by inspection date

## Main list

The list of items associated with the perspective in question is made available in the form of a schedule, carried out and any deviations. In the case of works perspectives, the dates considered are those planned in the activities associated with the works, in the others, the dates of activities associated with the chosen perspective are considered. In this metric, it is possible to previously select the entity (supplier) and the temporal metric for which the data are intended to be visualized.

- Expected schedule: Range of days between the earliest start date and latest completion date of the prospect's activities.
- Run schedule: Range of days between the earliest start date of an execution and the latest finish date of an execution associated with the perspective activities.
- Deviation schedule: occurs when the most recent date of execution is greater than the most recent planned date of the activities and is defined as the interval of days between:
  - Most recent planned date of prospect activities (considered the start of the deviation)
  - Most recent date of execution of the perspective activities (considered as the end of the deviation)

When the temporal metric filter is applied and the respective option selected:

- Diary - start and end date
- Monthly – month and year
- Quarter – quarter and year
- Semester – semester and year
- Annual - year

All indicators are updated based on activities whose dates are “within” the selected viewing period. The filtering criterion is the dates associated with the executions in the works and when there are no executions, the planned dates associated with the activities already with associated references are considered.

**Obras Macro Análise** Dados atualizados a: 20/05/2022 13:07

1/52 1/1 Exportar

Procurar em obras

analise Procurar Limpar

Ref.	Título	Cronogramas		Estado					
Tip.				Quantidade	Peso	A. Sup.			
OB Análise	Obra Demonstração Análise	Previsto	01-03-22	<div style="width: 82%;"></div>	21-05-22	82	28.3%	75.9%	61.8%
		Executado	20-05-22	<div style="width: 2%;"></div>	21-05-22	2			
Pavilhão	Desvio								

## Details

When selecting an item from the main list, the details of the item presents a set of associated indicators. Also in each item, it is possible to obtain the details and the distribution of information by processes with schedules calculated in the same way in relation to the main list and the details of each process (associated with activities of the selected perspective item).



OB Analise	Obra Demonstração Análise	Previsto	01-03-22	21-05-22	82	28.3%	75.9%	61.8%
		Executado	20-05-22		2			
Pavilhão		Desvio						

### Detalhes

Exportar

Referência	OB Analise	Atividades	10	Executado	Quantidade	1447 un	5111 un	28.3%
Título	Obra Demonstração Análise	Referências	278		Qtd/Hora	20.1 un/h	5.76 un/h	
Tip.	Pavilhão	Postos	6		Peso	728.59 ton	960.53 ton	75.9%
Hora Operador	4d 16h	Operações	11		Peso/Hora	10.12 ton/h	1.08 ton/h	
Hora Equipamento	0h	Execuções	8		A.Sup.	4502.32 m2	7280.77 m2	61.8%
Hora Execução	3d	Responsáveis	1		A. Sup./Hora	62.53 m2/h	8.2 m2/h	
Hora / Planeamento	37d	Operadores	10					
T. Exec / Pln.	8.10 %	Equipamentos						

Projeto	Fabrico	Pintura	Transporte	Montagem
99.8%	7.9%	100.0%	0.0%	82.0%
100.0%	72.8%	100.0%	0.0%	20.2%
100.0%	10.9%	100.0%	0.0%	36.7%
2	4	1	-	3

### Processos

				Estado			
		Quantidade	Peso	A. Sup.			
PD	Projeto / Detalhe	01-03-22	30-03-22	30	99.8%	100.0%	100.0%
		20-05-22	20-05-22	1			
		31-03-22	20-05-22	51			
AP	Aprovisionamento	01-04-22	17-04-22	17	90.6%	86.2%	100.0%
		20-05-22	20-05-22	1			
		18-04-22	20-05-22	33			
TS	Tratamento de Superfícies	29-04-22	04-05-22	6	100.0%	100.0%	100.0%
		20-05-22	21-05-22	2			
		05-05-22	21-05-22	17			

AP	Aprovisionamento	01-04-22	17-04-22	17	90.6%	86.2%	100.0%
		20-05-22	20-05-22	1			
		18-04-22	20-05-22	33			

### Detalhes

Exportar

Abreviatura	AP	Atividades	3	Executado	Quantidade	310 un	342 un	90.6%
Designação	Aprovisionamento	Referências	17		Qtd/Hora	12.92 un/h	2.51 un/h	
Hora Operador	1d	Postos	2		Peso	517.66 ton	600.56 ton	86.2%
Hora Equipamento	0h	Operações	2		Peso/Hora	21.57 ton/h	4.42 ton/h	
Hora Execução	16h	Execuções	2		A.Sup.	267.9 m2	267.9 m2	100.0%
Hora / Planeamento	5d 16h	Responsáveis	1		A. Sup./Hora	11.16 m2/h	1.97 m2/h	
T. Exec / Pln.	0.12 %	Operadores	3					
		Equipamentos						

Present indicators:

- Perspective/Process Item Description
- Status of perspective/process
- Operator time
- Time Equipment
- Execution time
- Planning time
- Execution rate compared to planned (T. Exec / Pln.)
- Executed quantity
- Average amount executed per hour
- executed weight
- Average weight performed per hour
- surface area
- Average surface area run per hour
- Number of works, activities, references, posts, operations, executions, responsible, operators, equipment counters (available according to the chosen perspective)
- **Global activity indices** with the description of the index and respective accounting of activities and status by each index where applicable.

## Menu Structure: Micro Analysis

### Main list

It provides detailed information for each perspective. It contains the same macro analysis indicators (with the same formulas applied) adding all the information associated with each perspective with listings of all the content associated with each item of the selected perspective. It provides information with the possibility of selecting the entity (supplier associated with the activities of the perspective), by typology (in the works perspective), by temporal metric and by process (in the operations perspective).

When the temporal metric filter is applied and the respective option selected:

- Diary - start and end date
- Monthly – month and year
- Quarter – quarter and year
- Semester – semester and year
- Annual - year

All indicators are updated based on activities whose dates are “within” the selected viewing period. The filtering criterion is the dates associated with the executions in the works and when there are no executions, the planned dates associated with the activities already with associated references are considered.

**Obras** Micro Análise Dados atualizados a: 20/05/2022 13:07

Ref.	Título	Quantidade	Peso	A.Sup.	Pesos						H Exe	
Familia					Peso Estruturante						H Ope	
OB Analise	Obra Demonstração Análise	28.3%	75.9%	61.8%	10	278	6	11	8	1	10	72 h
Pavilhão		1447 un	20.1 un/h	728.59 ton	10.12 ton/h	4502.32 m2	62.53 m2/h	43.04 / 55.10 ton.			112 h	

All listed indicators are “tailored” to the entity filter (if selected) and to the temporal filter. The following indicators are available in the main list:

- Item description of the chosen perspective)
- Run quantity, run weight and run surface area indicators
  - State (when applicable)
  - Executed
  - Foreseen
  - Qty/hour
  - weight/hour
  - area/time
- Number of works, activities, references, posts, operations, executions, responsible, operators, equipment counters (available according to the chosen perspective)
- Structuring weight executed and total structuring weight of the work (when only one value appears, it means that all the structuring weight is carried out)
- Execution Time and Operator Time

## Details

- Provides the detailed information of an item from a perspective. Each detail panel contains the indicators described above distributed by the different dimensions with information associated with the chosen item.

OB Analise   Obra Demonstração   28.3%   75.9%   61.8%   10   278   6   11   8   1   10   72 h

Pavilhão   Análise   1447 un   20.1 un/h   728.59 ton   10.12 ton/h   4502.32 m2   62.53 m2/h   43.04 / 55.10 ton.   112 h

**Detalhes**

**Atividades** 10

  1/1   Exportar

Filtrar Atividades

Limpar

Índ.	Atividade	Início	Quantidade		Peso		A.Sup.		H Exe
Proc.	Conclusão								H Ope
2.2	Aprovisionamento 2	08/04/22	100.0%		100.0%		100.0%		4 2 2 2 1 3
AP	Aprovisionamento	10/04/22	68 un	4.25 un/h	22.49 ton	1.41 ton/h	202.34 m2	12.65 m2/h	24 h
2.3	Aprovisionamento 3	15/04/22	100.0%		100.0%		100.0%		8 2 2 2 1 3
AP	Aprovisionamento	17/04/22	126 un	7.88 un/h	228.93 ton	14.31 ton/h	65.24 m2	4.08 m2/h	24 h
2.1	Aprovisionamento 1	01/04/22	78.4%		76.3%		100.0%		5 2 2 2 1 3
AP	Aprovisionamento	03/04/22	116 un	7.25 un/h	266.25 ton	16.64 ton/h	0.32 m2	0.02 m2/h	24 h
<span style="font-size: 0.8em;">Totais - Atividades: 3 - Horas/Oper.: 6 h - Qtd Total: 310 un - Peso: 517.66 ton - Área de superfície: 267.9 m2</span>									

**Referências** 278

**Postos** 6

**Operações** 11

Separator - Works, Activities, References, Revisions performed, Stations, Operations, Executions, Persons in Charge, Operators, Equipment

Second level of observation with the aforementioned indicators distributed by the dimension selected in the tab (eg: tab – activities, the indicators are visualized by activity). Then each tab contains a 3rd level that corresponds to the detail of the information present in the indicators (eg an activity has 4 references, the references tab within the activity provides a list of the 4 references associated with the activity). In the “Reviews carried out” tab, there is information on references that have undergone revisions but which, before being revised, already had work performed on them.

## Glossary indicators

**NOTE:**the indicators presented are provided in the perspective when applicable, and the universe considered for the calculation of the indicator in each case takes into account the perspective and the existing relationships between that perspective and the content to be considered for the calculation of each indicator.

### Period (start and end date)

Taking into account the activities planned for the work (with references) the start date corresponds to the earliest date planned in the activities of the work and the end date corresponds to the most recent completion date planned in the activities of the work.

### No. of Works

Number of works in progress and published at the factory. Works that have work carried out (i.e. executions associated with their references and activities) and works that, although they do not have work carried out, have activities and references already planned to be carried out, are considered.

### Number of Works completed

Number of works in progress and published with execution status = 100%.

### No. of Operations

Number of operations associated with planned references within works in progress and published activities (already planned references with or without associated executions).

### Number of completed operations

Number of operations with running status = 100%.

### No. of Activities

Number of activities with planned references (with or without executions) associated with works in progress and published from the factory.

### No. of References

Number of references planned (with and without executions) and associated with works in progress and published from the factory.

### Number of Executions

Number of executions associated with activities with planned references associated with works in progress and published from the factory.

### No. of Posts

Number of operating stations associated with executions of activity references associated with works in progress and published from the factory.

### No. of Responsible

Number of people in charge associated with executions of activity references associated with works in progress and published from the factory.

**No. of Operators**

Number of operators associated with executions of activity references associated with works in progress and published from the factory.

**No. of Equipment**

Number of equipment associated with executions of activity references associated with works in progress and published from the factory.

**Planned Hours**

Sum of the hours planned in the activities taking into account their start and end dates. Each day is considered as 8 hours of work.

**Execution hours**

Sum of hours associated with executions.

**Operator hours**

Sum of hours associated with runs with associated operators and multiplying this sum by the number of operators. For example: 1 run of 8 hours with 2 associated operators is equivalent to 16 operator hours.

**Equipment hours**

Sum of hours associated with executions with associated equipment and multiplying this sum by the number of equipment. For example: 1 run of 8 hours with 2 associated devices is equivalent to 16 hours of equipment.

**T. Exec / Pln**

Percentage ratio between the number of hours executed and the number of planned hours associated with works in progress and published.

**Executed quantity**

Sum of the executed quantity associated with the reference executions.

**executed weight**

Sum of the quantity executed associated with the executions of references multiplied by their projected unit weight.

**executed surface area**

Sum of the quantity executed associated with the executions of references multiplied by their projected surface area.

**planned quantity**

Sum of the project quantity associated with the planned references taking into account the assigned operations scheme (sum of the quantity \* number of operations in the scheme).

**Total / planned weight**

Sum of the project quantity associated with the planned references, taking into account the assigned operation scheme (sum of the quantity \* number of operations in the scheme) multiplied by the projected unit weight of the references.

**Planned Surface Area**

Sum of the project quantity associated with the planned references taking into account the assigned operations scheme (sum of the quantity \* number of operations in the scheme) multiplied by the projected unit surface area of the references.

### **Structural weight of the work**

The structural weight of the work is obtained through the sum of the total weight projected for the references of the work whose type is Sets, Elements, Accessories or Miscellaneous.

### **Qty/Hour**

Average amount executed per hour of execution. Relationship between the number of references executed associated with executions and the sum of execution hours associated with these executions.

### **weight/hour**

Average weight performed per hour of execution. Ratio between the executed weight of references associated with executions and the sum of execution hours associated with those executions.

### **Area/Time**

Average surface area executed per hour of execution. Relationship between the executed surface area of references associated with executions and the sum of execution hours associated with those executions.

### **Planned Qty/Time**

Average of planned quantity per planned hours. Relationship between the planned amount of references associated with activities and the sum of planned hours associated with those activities.

### **Weight/Planned Time**

Average of planned weight per planned hours. Relationship between the planned weight of references associated with activities and the sum of planned hours associated with those activities.

### **Planned Area/Time**

Average planned surface area per hour of execution. Relationship between the surface area planned in the activities of the works and the sum of planned hours associated with these activities.

### **Execution status - Quantity**

Percentage ratio between the executed quantity and the planned quantity of the applied dimension. Dimension means work, activity, reference or operation depending on where the indicator is displayed.

### **Execution status - Weight**

Percentage ratio between the executed weight and the planned weight of the applied dimension. Dimension means work, activity, reference or operation depending on where the indicator is displayed.

### **Execution status - Surface Area**

Percentage ratio between executed surface area and planned surface area of the applied dimension. Dimension means work, activity, reference or operation depending on where the indicator is displayed.