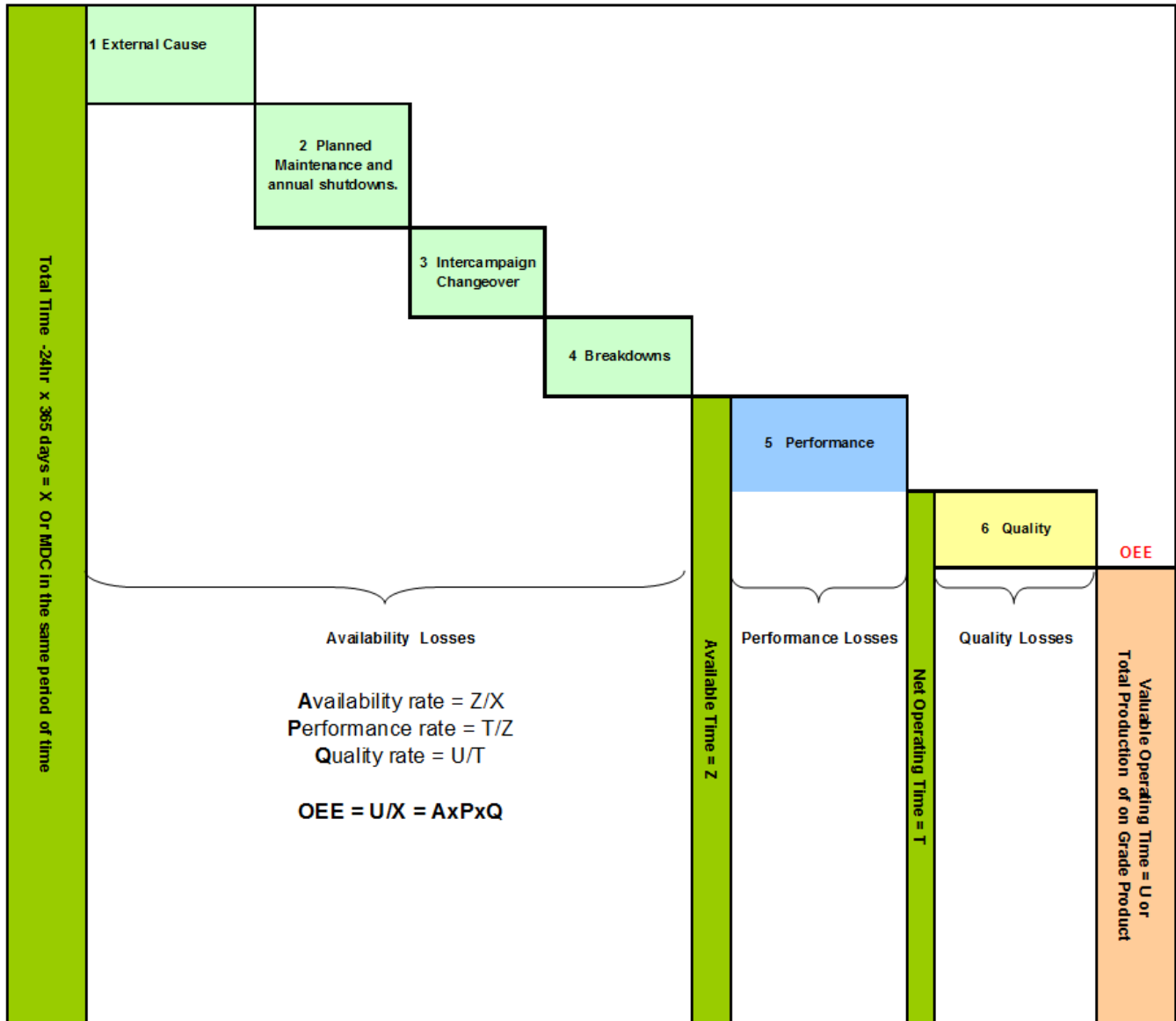


## 3.01/ OEE losses

### 1/ Definition

Overall Equipment Effectiveness is the ratio of actual good production (planned grade products) over the production that could have been achieved in the same time period.

- Maximum production is at bottleneck.
- The total time is based on 24hr x 365 days
- It is the product of the availability, performance rate, and quality rate. It is a comprehensive indicator of a plant's condition that takes into account operating time, performance and quality.  
The performance rate is determined against a Maximum Demonstrated Capacity (MDC) in order to express all losses in terms of either "time" or "quantity".



| Loss Family         | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 6. Productions losses types                  |                                                                                                                                                                                                                                                                  | quantity | Time |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------|
| Availability Losses | Is a measurement of the constraints that reduce the time that the equipment can produce product, whether planned or unplanned or from any source based on a 24hr day, 365 day's per year.                                                                                                                                                                                                                                                                                                                                                             | 1.External Causes                            | All external causes out of responsibilities of the Production Unit :<br>lack of sales, lack of supplies due to suppliers or carriers' failures (material and energy), force majeure, general strike (i.e. not specific to the site like national strike).        | Q1       | T1   |
|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2. Planned Maintenance and annual shutdowns. | Yearly Turnaround (TAR), Preventive & predictive maintenance, legal inspection.                                                                                                                                                                                  | Q2       | T2   |
|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3. Intercampaign Changeovers                 | All losses related to Changeover will be in this category: standard time (if not included in MDC), deviation from standard.                                                                                                                                      | Q3       | T3   |
|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4. Breakdowns                                | Technical Breakdown (equipment failures).                                                                                                                                                                                                                        | Q4       | T4   |
| Performance Losses  | The performance rate is the quantity of material produced during the running time, versus the quantity of material that could have been produced when taking into account the Maximum Demonstrated Capacity for that same time period.                                                                                                                                                                                                                                                                                                                | 5. Performance                               | Process/ technology/ operation: low speed / cycle time not respected, lack of supplies due to internal failures (missing orders, wrong planning...), local strike (i.e. specific to the site or to the workshop), absenteeism. Environmental and safety reasons. | Q5       | T5   |
| Quality             | Product that meets it's planned specification (Right First Time)<br><br>Products, not meeting the original planned specification, but still useful to sell at a lower grade or different market should be considered rework due to the fact that while product was run and is sellable, the effectiveness of the line has reduced as the original planned product still needs to be produced for the customer.<br><br>(We have not effectively used our equipment to supply our customer; therefore we have not added maximum value to the business.) | 6. Quality                                   | Scrap, and 'Below Aimed Quality Standards                                                                                                                                                                                                                        | Q6       | T6   |

## 2/ Objective / Target

Measure the technical performance and capacity utilization of a manufacturing asset and hence to judge the effectiveness with which an asset is being used to add value to the business.

It allows the analysis of all the sources of capacity losses, whatever their origin may be.

## 3/ Formula

$$OEE = AVAILABILITY \times PERFORMANCE \times QUALITY$$

## Monthly

The calculation of this KPI is made thanks a manual input excel file (picture below).

You have to fill the file as indicated in the red square. The calculation is automatic.

[illegible]