

# 3.05/ Number of Failure Mode Effects and Criticality Analysis (FMECA) and impact

## 1/ Definition

The number of FMECA and their impact permit to :

- Check that the feedback and the continuous improvement loop is well done
- Check if the feedback and the continuous improvement loop has a utility
- Verify the impact of the actions taken after the FMECA

## 2/ Objective / Target

The goal is to have actions which have an impact on the problems detected thanks to the FMECA

An action without impact on an identified problem after a FMECA analysis should be record in order to improve the FMECA sessions.

## 3/ Formula

See 5/ Calculation example

## 4/ Frequency

Monthly

## 5/ Calculation example

This indicator is calculated manually thanks to the excel file below (figure 1).

As a example, Rheinberg decided to create its own calculation rules (see figure 2) which permit to fill the excel file.

Then it's displayed in MECANO (see figure 3).

| Current Year :           |                              | 2016                |   |  |  |   |     |
|--------------------------|------------------------------|---------------------|---|--|--|---|-----|
| Update only yellow cells |                              | Strategic           |   | Effctiveness   |  |   |     |
| RHEINBERG                |                              | 1.10.<br>curr       | 3.6.<br>Nb  | 3.6.<br>Nb   | 3.13.<br>Nb  | 3.13.<br>Nb   |     |
| SITE CODE                | YEARMONTH                    | Spend versus budget | Number of problem solving studies (Focused improvement) | Number of problem solving studies (Focused improvement) Target | Number of critical analysis with an FMECA analysis | Number of critical analysis with an FMECA analysis Target |     |
|                          | Unit                         | €                   | Nb  | Nb   | Nb   | Nb  |     |
|                          | Relevant to the site (Y/N) ? | Y                   | Y   | Y  | Y  | Y   | Y   |
| RBG                      | 201601                       |                     | 8   | 0,01   |  | 42,5  | 40  |
| RBG                      | 201602                       |                     | 23,5  | 20,01  |  | 45  | 55  |
| RBG                      | 201603                       |                     |   | 40,01  |  | 71,25   | 70  |
| RBG                      | 201604                       |                     |   | 60,01  |  |   | 85  |
| RBG                      | 201605                       |                     |   | 80,01  |  |   | 100 |
| RBG                      | 201606                       |                     |   | 100,01   |  |   | 115 |
| RBG                      | 201607                       |                     |   | 120,01   |  |   | 130 |
| RBG                      | 201608                       |                     |   | 140,01   |  |   | 145 |
| RBG                      | 201609                       |                     |   | 160,01   |  |   | 160 |
| RBG                      | 201610                       |                     |   | 180,01   |  |   | 175 |
| RBG                      | 201611                       |                     |   | 200,01   |  |   | 190 |
| RBG                      | 201612                       |                     |   | 220,01   |  |   | 205 |

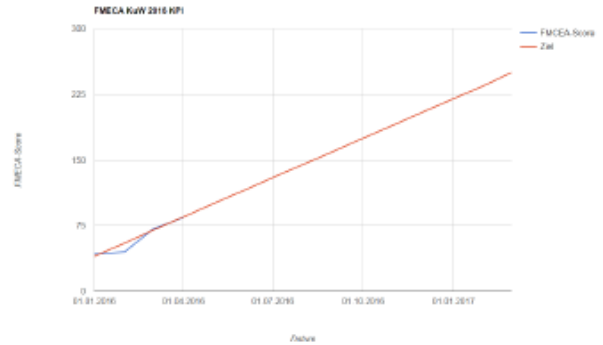
Figure 1

## Implementation of suggested KPI's for the tracking of the activities

FMECA-Score = sum ( Effort ) + 20% bonus in case of replication  
(3.13 in MECANO-Catalogue)

Effort for the steps of each FMECA (man-hours):

- Preparation
- FMECA-session
- Post processing



| Übersicht der FMECA für den Bereich KUV |                           |            |             |           |            |                                 |                        |                                    |                      | FMECA-score            | 84,25  |
|---|---------------------------|------------|-------------|-----------|------------|---------------------------------|------------------------|------------------------------------|----------------------|------------------------|--|
| Sektor                                  | Bereich                   | P&I        | Starttermin | Endtermin | Status / % | Anzahl der bearbeiteten Blätter | Gesamtzahl der Blätter | Anzahl der bearbeiteten Equipments | Anzahl der Sitzungen | Anzahl der Mannstunden | Arbeitsblatt                                     |
| GN3                                     | Rauchgassystem            | Rb 0107429 | 28.09.15    | 01.12.15  | 100,00%    | 1                               | 1                      | 2                                  | 3                    | 9                      | <a href="#">FMECA GN3 Rauchgassystem</a>         |
| GN3                                     | Gas Luft                  | Rb 0107432 | 01.12.15    | 03.02.16  | 100,00%    | 1                               | 1                      | 5                                  | 4                    | 42                     | <a href="#">FMECA GN3 Gas Luft</a>               |
| GN3                                     | Speisewasser: Schlave 1+2 | Rb 0107431 | 04.02.16    | 10.02.16  | 100,00%    | 1                               | 1                      | 3                                  | 3                    | 11,05                  | <a href="#">FMECA GN3 Speisewasser Schlave 1</a> |
| GN3                                     | Ue1, Ue2, Dampfnetz       | Rb 0107438 | 01.12.15    | 04.03.16  | 100,00%    | 1                               | 1                      | 5                                  | 3                    | 6,5                    | <a href="#">FMECA GN3 Ue1, Ue2, Dampfnetz</a>    |
| GN3                                     | Trommel                   | Rb 0107437 | 01.12.15    | 10.02.16  | 100,00%    | 1                               | 1                      | 3                                  | 3                    | 9,2                    | <a href="#">FMECA GN3 Trommel</a>                |

Figure 2

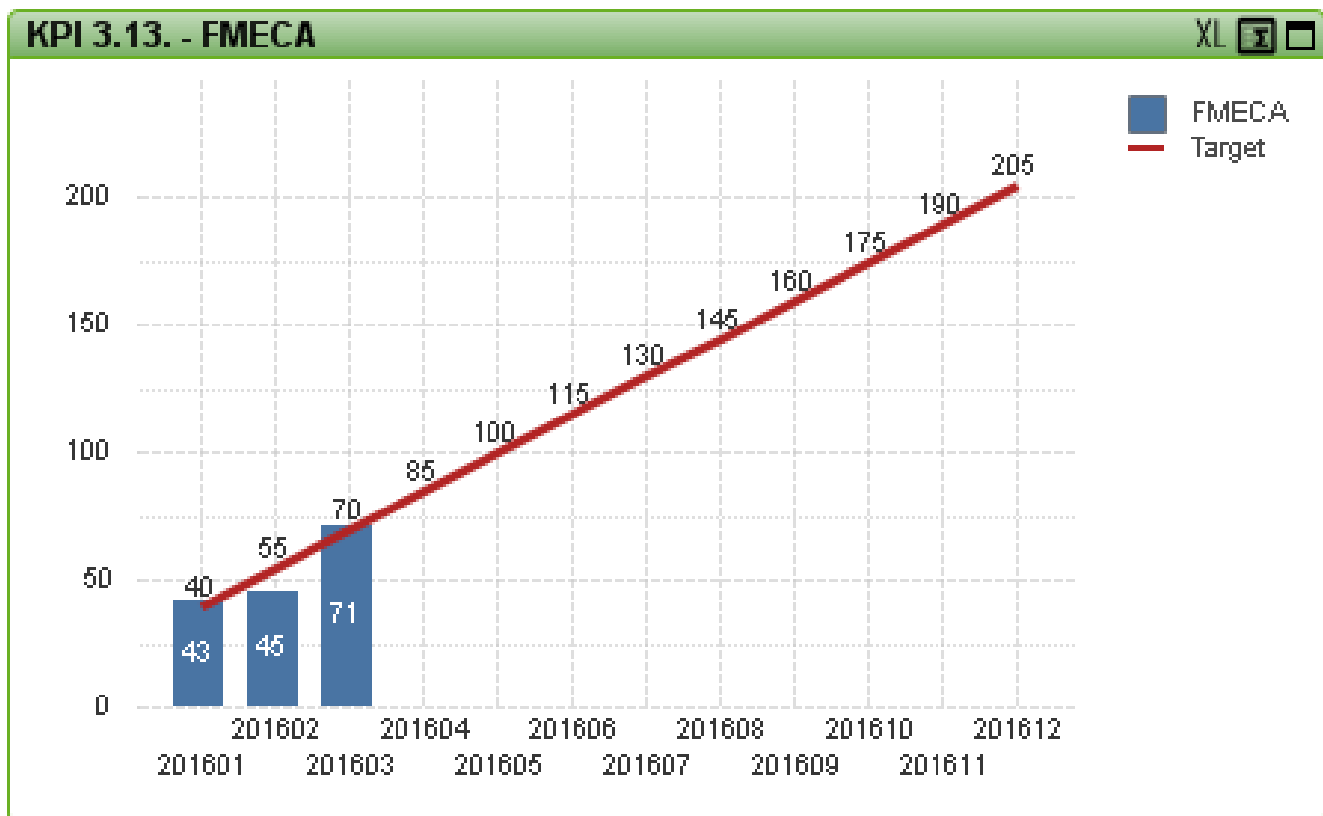


Figure 3

