



Introduction
Office add in "Sixsigmablackbelt Analysis"
version 1.0 / 06.07.2022

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Reseller

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Purpose of the Excel add in

The add-in enables easy analysis and evaluation of process capability and measuring systems. The add-in offers templates that can be supplemented and changed with your own values. The results are then calculated and displayed in charts.

Short description of the add in

In the "Sixsigmablackbelt Analysis" add in we currently provide you with the templates and calculations for:

- Machine capability
- Measurement System Analysis Type 1
- Measurement System Analysis Type 2 (ANOVA)

Further applications are in preparation.

The mentioned procedures are used across all industries / regions and company sizes. The procedures are based on the recognized procedures in the automotive sector, Bosch and AIAG 4th.

Service

For each procedure, one push of a button is all it takes to create template. After you change data, the data is calculated at the push of another button and the charts are updated.

All templates can be customized by you to your personal needs in terms of formatting, inserting logos and the other possibilities of Excel. The adapted templates can be saved by you and edited again at any time.

All Excel functionalities are available. In the support section, the templates are available in other languages.

What happens to your data if you stop using the add in?

If you no longer use the add-in, you can only no longer execute new calculations. All existing tables and calculations remain present and unchanged. Your tables can therefore also be used by anyone who does not use the add-in.

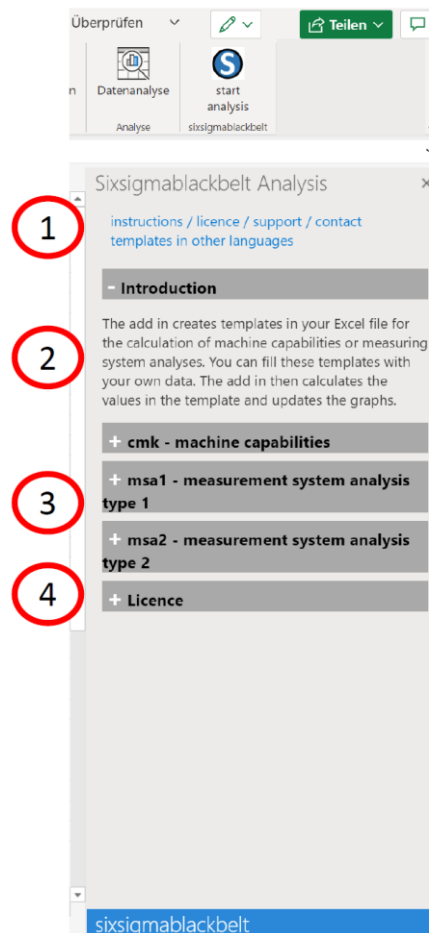
Continuous improvement

Without a license, the number of calculated values in the template is limited. With a license, you can calculate the total number of values.



Home

After starting the add-in, the add-in opens and the following Taskpane becomes visible.



The points contain the following content

Point 1:

This point contains 2 links.

One link leads to the page with information about the "instructions / licence / support / contact".

The second link leads to the page with templates in alternative languages.

Point 2:

Point 2 describes the introduction. The add in will be described here shortly.

Point 3:

Here are the 3 individual modules listed

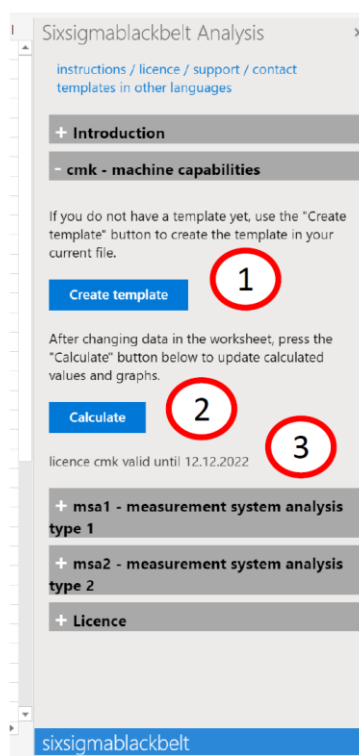
- cmk – machine capabilities
- msa1 – measurement system analysis type 1
- msa2 – measurement system analysis type 2

Point 4:

The information about the license is included in this point

Templates – Example cmk - machine capabilities

After opening the sub-item "cmk – machine capabilities" you get the following Taskpane



Point 1:

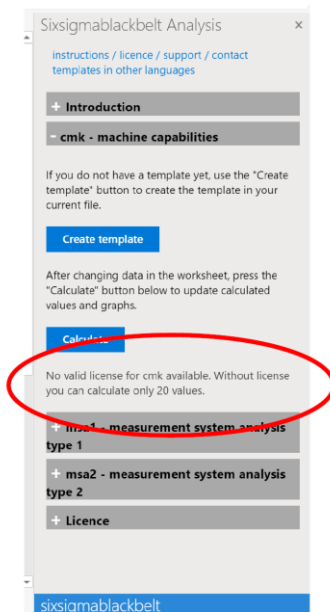
Pushing the "Create template" button creates a new worksheet and creates a predefined template in this worksheet.

Point 2:

By pushing the "Calculate" button, the data in the current worksheet is calculated and the charts are updated

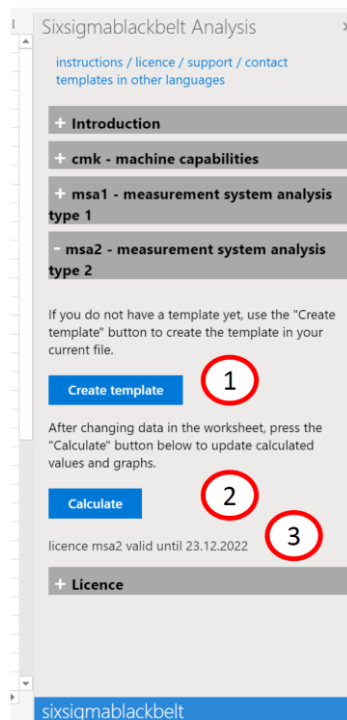
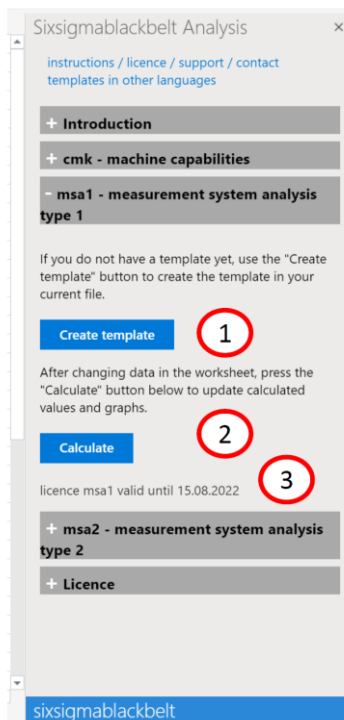
Point 3:

Point 3 shows whether a license is available for this point. If no license exists, the following text is displayed.



The same display and functionality as in the menu "cmk - machine capabilities" can also be found under the menu items:

- msa1 – measurement system analysis type 1
- msa2 – measurement system analysis type 2





Menu item "Licenses" without log in

If the user is not logged in, he will get the following representation

Sixsigmablackbelt Analysis

- + cmk - machine capabilities
- + msa1 - measurement system
analysis type 1
- + msa2 - measurement system
analysis type 2
- Licence

[instruction / licence / support / contact](#)

user log in

user e-mail *

 1

user key *

 2

Log in 3

user log out

Log out 4

user logged in e-mail

 5

user logged in key

 6

no licence available 7

No licence for actual user available

Point 1:

The User E-mail field has no value

Point 2:

The User Key field has no value

Point 3:

"Log in" button after values have been entered in the two upper fields

Point 4:

If a user is logged in, he can log out by pushing the "Log out" button

Point 5:

If a user is logged in, his user e-mail appears here

Point 6:

If a user is logged in, his login key appears here

Point 7:

Currently no user is logged in, so no licenses can be displayed



Menu item "Licence" with login

If the user has logged in with his e-mail and his user key, he receives the following information.

Sixsigmablackbelt Analysis

- + Introduction
- + cmk - machine capabilities
- + msa1 - measurement system analysis type 1
- + msa2 - measurement system analysis type 2
- Licence

[instruction / licence / support / contact](#)

user log in

user e-mail * 1

user key * 2

3

user log out

4

user logged in e-mail 5

user logged in key 6

licence	valid until	reference
msa1	15.08.2022	ref21321
msa2	23.12.2022	ref21321
cmk	12.12.2022	ref21321

licence for actual user available

Point 1:

The User E-mail field has the value just entered.

Point 2:

The User Key field has the value just entered.

Point 3:

"Login" button after values have been entered in the two upper fields

Point 4:

If a user is logged in, he can log out by pressing the "Logout" button

Point 5:

The user e-mail of the currently logged in user is visible.

Point 6:

The user key of the currently logged in user is visible.

Point 7:

The licenses with for the currently logged in user are displayed.



Using a template - menu item - cmk - machine capabilities

If the user wants to make a calculation of the machine capabilities, he opens the corresponding menu item.

The screenshot shows the Sixsigmablackbelt software interface. On the left is a blank spreadsheet with columns A through W and rows 1 through 38. On the right is a sidebar menu titled "Sixsigmablackbelt Analysis". The menu includes links for "instructions / licence / support / contact" and "templates in other languages". The main menu item is "cmk - machine capabilities". Below it, there is a "Create template" button and a "Calculate" button. A note states: "If you do not have a template yet, use the 'Create template' button to create the template in your current file." Another note says: "After changing data in the worksheet, press the 'Calculate' button below to update calculated values and graphs." At the bottom of the sidebar, there are options for "msa1 - measurement system analysis type 1", "msa2 - measurement system analysis type 2", and "Licence".

If he does not yet have a template from previous calculations, he has the possibility to create a template via the button "Create template".

A new worksheet is created with the template.

The screenshot shows the Sixsigmablackbelt software interface with a completed calculation for process and machine capability. The main area displays a "process and machine capability" worksheet. The worksheet includes a table of input data, a "sample chronological" chart, a "histogram", and a "probability plot". The "histogram" shows a distribution of data points with a normal distribution curve overlaid. The "probability plot" shows a scatter plot of data points with a straight line overlaid. The "sample chronological" chart shows a line graph of data points over time. The worksheet also includes a table of calculated values and a table of observed performance in ppm. The sidebar menu is visible on the right, showing the "cmk - machine capabilities" menu item and the "Calculate" button.

The user now has the option to change values in the blue cells that are his input cells.

By pressing the "Calculate" button, the key figures are calculated and the charts are updated.

The user can then continue to use the worksheet.

This also applies in the same way to the worksheets of the two methods.



- msa1 – measurement system analyses type 1
- msa2 – measurement system analyses type 2

Measurement System Analysis Type 1: Cg / Cgk

Gage		Master / Reference		Feature	
Designation:		Designation:		Designation:	
Number:	6,0000	Number:	6,0000	Number:	6,0000
Resolution:	0,0010	Actual value:		Nominal size:	5,3700
Test reason:		Unit:		Unit:	Tolerance
		U-Cal:	0,0020	Calculated with:	3 * sg

The blue cells values could be changed, the grey ones are calculated

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50
6,0010	6,0010	6,0020	6,0020	6,0020	6,0010	6,0000	6,0010	6,0000	6,0020
6,0020	6,0010	6,0000	6,0020	6,0000	6,0010	6,0010	6,0000	6,0010	6,0010
6,0010	6,0000	6,0010	6,0020	5,9990	6,0000	6,0010	6,0000	6,0020	6,0020
6,0010	5,9990	6,0020	6,0020	6,0020	5,9990	6,0020	5,9990	6,0010	6,0010
6,0020	6,0010	6,0020	6,0000	6,0020	6,0010	5,9990	6,0020	6,0010	6,0010

Specification values	Measured values	Statistical values	Systematic error
sm	6,0020	sg mid	6,0009
xm - 0,1*TT	5,9960	xg mid - 3*sg	5,9979
xm + 0,1*TT	6,0080	xg mid + 3*sg	6,0039
0,2*TT	0,0120	R	0,0060
T	0,0600	n	50,0000

Minimum requirement for the test equipment Cg > 1,33

Measurement System Analysis Type 2 Anova (AIAG 4th, Bosch)

Gage/Gauge		Feature		Reference Standard	
Design:		Objective:		Design:	
Number:		Number:		Number:	
Resolution:		Drawings:		Nom. size:	
Approver:		Unit:		Unit:	
Act. date:		USL:	4,00	Tolerance:	8,00
Approver:		SL:	4,00		

Test procedure description: All blue cells can be changed, all grey cells are calculated

Result MSA 1		Number of parts n	10	Measurement system is	
Protocol nr.		Number of appors k	3	capable to	10%
The Gage/Gauge is		Condition n*k*3 > 30	90	acceptable to	30%
				not acceptable at	30%

Part nr.	Appraiser j=1			Appraiser j=2			Appraiser j=3		
	Smith	Watson	Holmes	Smith	Watson	Holmes	Smith	Watson	Holmes
i=1	0,29	0,41	0,64	0,08	0,25	0,07	0,04	-0,11	-0,15
i=2	-0,56	-0,68	-0,58	-0,47	-1,22	-0,68	-1,38	-1,13	-0,96
i=3	1,34	1,17	1,27	1,19	0,94	1,34	0,88	1,09	0,67
i=4	0,47	0,50	0,64	0,01	1,03	0,20	0,14	0,20	0,11
i=5	-0,80	-0,92	-0,84	-0,56	-1,20	-1,28	-1,46	-1,07	-1,45
i=6	0,02	-0,11	-0,21	-0,20	0,22	0,06	-0,29	-0,67	-0,49
i=7	0,59	0,75	0,66	0,47	0,55	0,83	0,02	0,01	0,21
i=8	-0,31	-0,20	-0,17	-0,63	0,08	-0,34	-0,46	-0,56	-0,49
i=9	2,26	1,99	2,01	1,80	2,12	2,19	1,77	1,45	1,87
i=10	-1,36	-1,25	-1,31	-1,68	-1,62	-1,50	-1,49	-1,77	-2,16

Influence variables:	SD	SV	%V	%T	
Parts (Part Variation):	PV	1,042	6,254	NPV	96,04%
Appraisers (Appraiser Variation):	AV	0,227	1,361	%AV	20,90%
Interaction:	INT	0,000	0,000	%A	0,00%
Equipment (Equipment Variation):	EV	0,200	1,200	%EV	18,42%