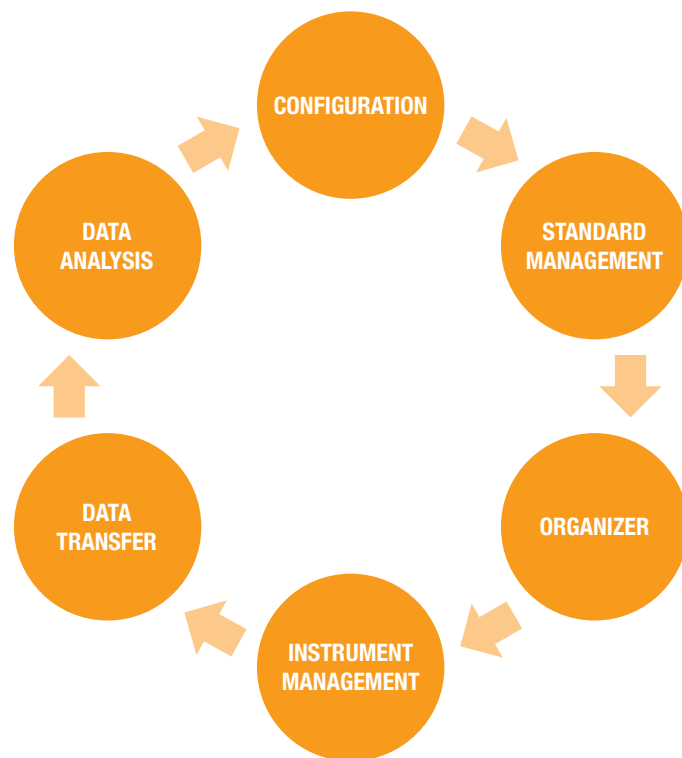


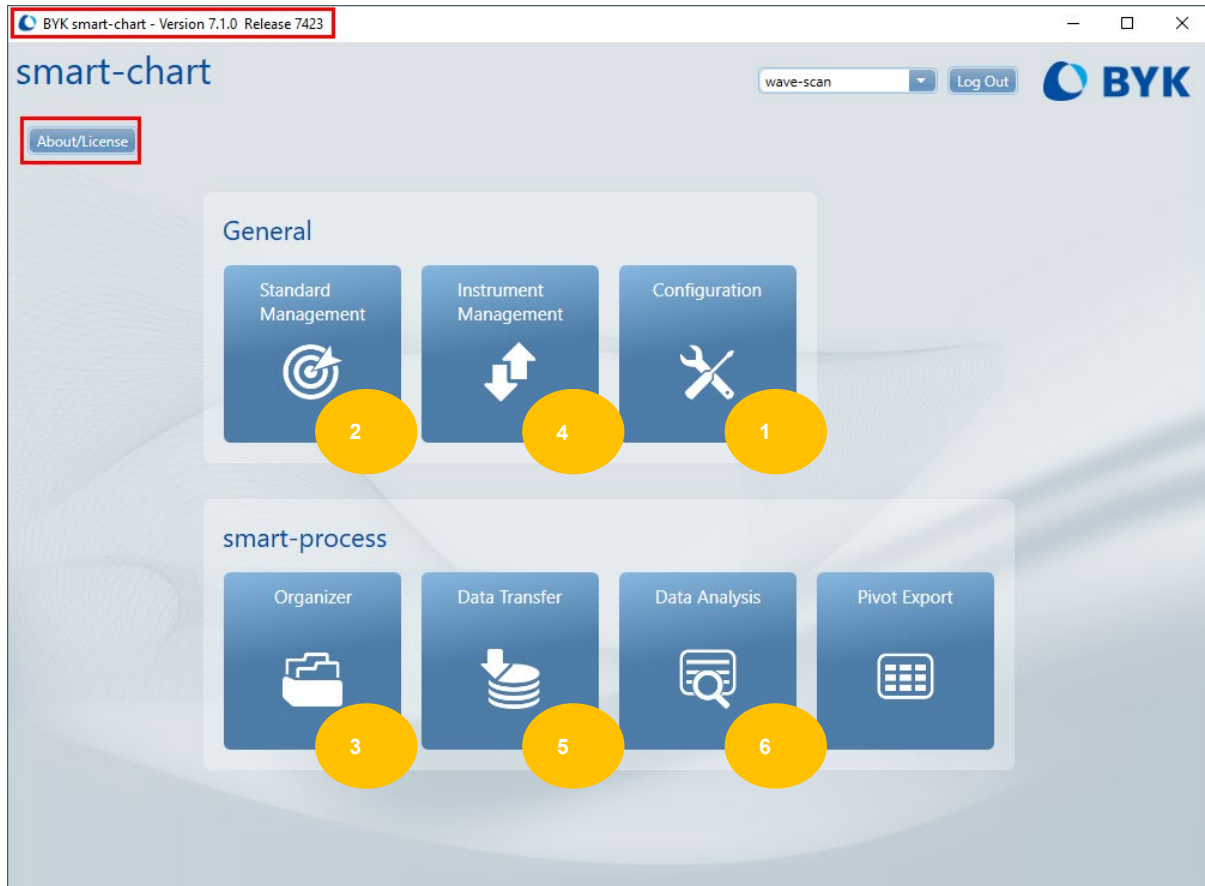
wave-scan with smart-chart









Step-by-Step Guide

wave-scan with smart-chart

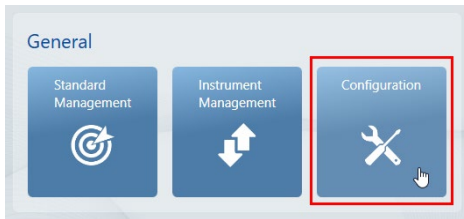
smart-process Overview



	Configuration	General program settings such as Language, Database set-up, Organizer Management and Data Backup are defined.
	Standard Management	Definition of orange peel standards with Pass/Fail limits: Measurement of master panels or import of digital standards.
	Organizer	Definition of a standard measurement procedure for clear sample identification and menu guided operation on the instrument.
	Instrument Management	Preparation of the instrument by sending organizers including the selected orange peel standards.
	Data Transfer	Take readings with the instrument, download to smart-chart and save in a database.
	Data Analysis	Data analysis of measurements in various reports: test report for single vehicles up to trend reports over time.
	smart-chart Version	Displayed in the header row or by clicking on the icon About/License

1. Configuration

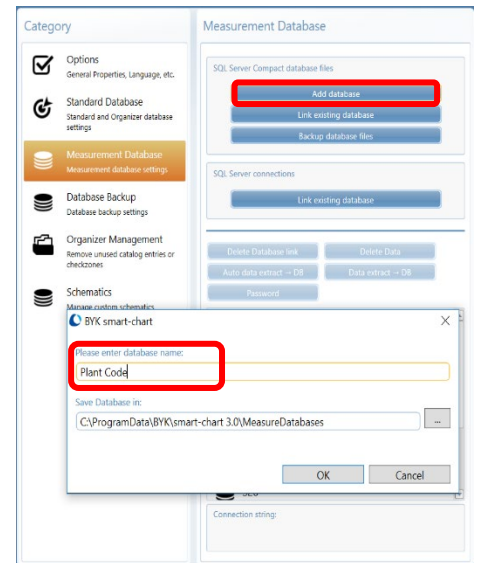
Define measurement database, load car schematics and assign names for parameters used in the organizer.



Define measurement database

- Select **Measurement Database**
- Select **Add database**
- Input database name e.g. Plant Code

Note: As default, the database is created in the folder
C:\ProgramData\BYK\smart-chart 3.0\MeasureDatabases



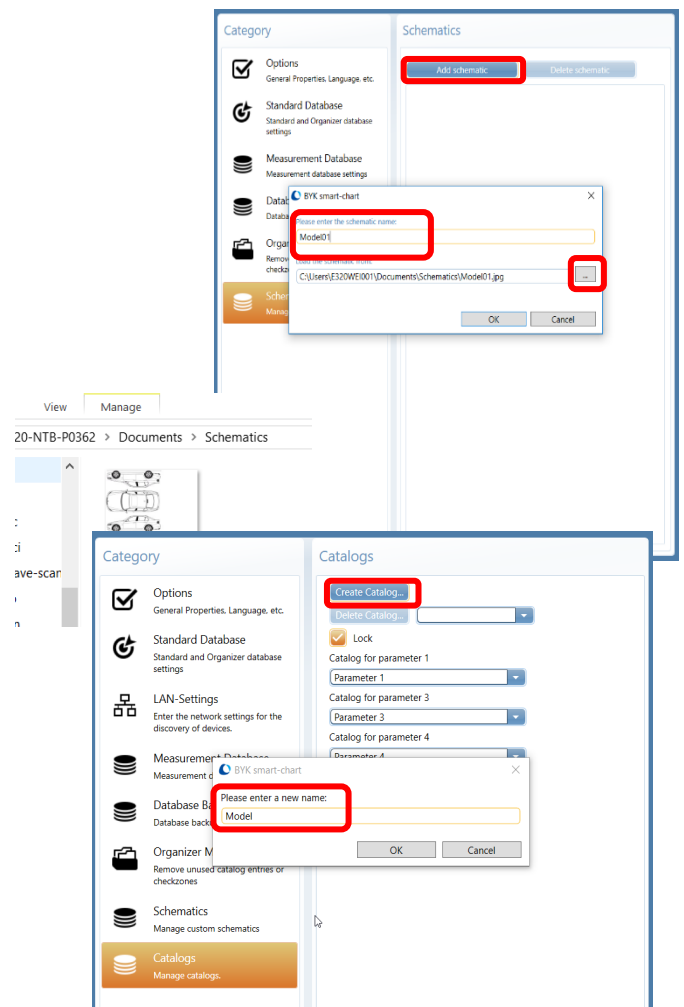
Load car schematics

- Select **Schematics**
- Select **Add Schematic**
- Input name e.g. Model01
- Browse for respective file on your computer and load it
- The data source location appears next to the **Browse** button

Note: The following file formats are supported:
*.png, *.jpg, *.jpeg, *.xaml, *.svg

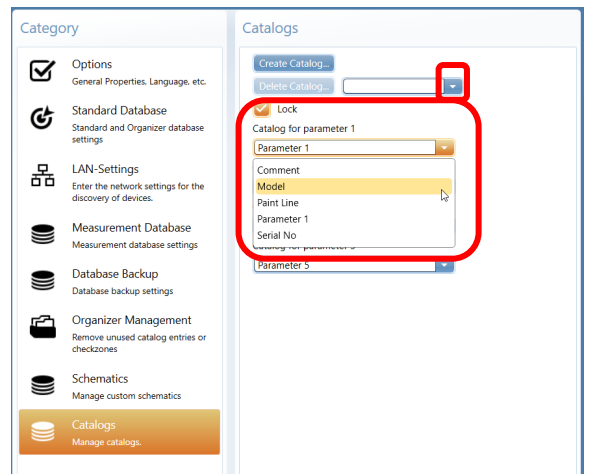
Assign names for parameters in organizer

- Select **Catalogs**
- Select **Create Catalog**
- Input name e.g. Model and Paint Line



- Select the respective names for Parameter 1 -5 with the drop down box behind each parameter
- If **Lock** is activated, only the selected catalog can be used in the organizer. Otherwise, all available catalogs can be selected.

Note: Catalogs can be deleted by selecting them with the drop down box and click on **Delete Catalog**.



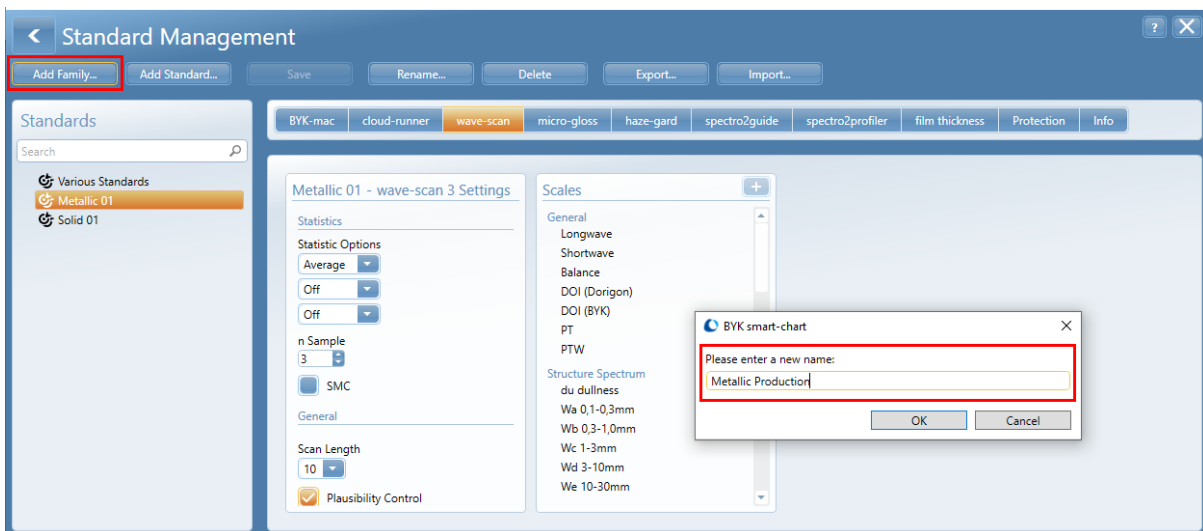
2. Standard Management



2.1. Create color families including color standards by measuring master panels

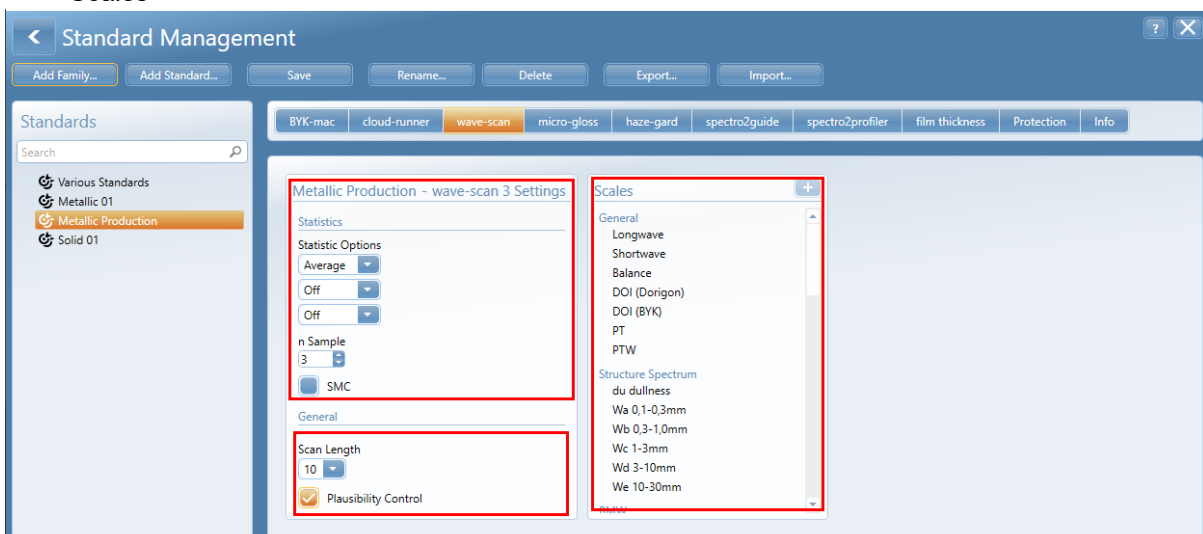
Create a Color Family

- Select **Add Family** and input name e.g. Metallic Production

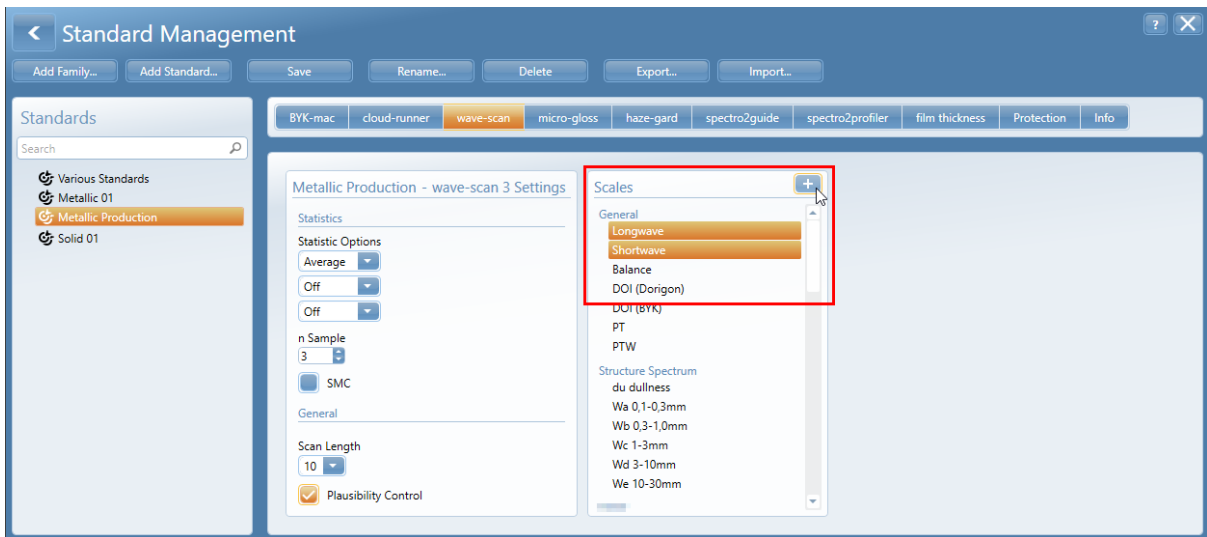


→ A family defines the common measurement settings

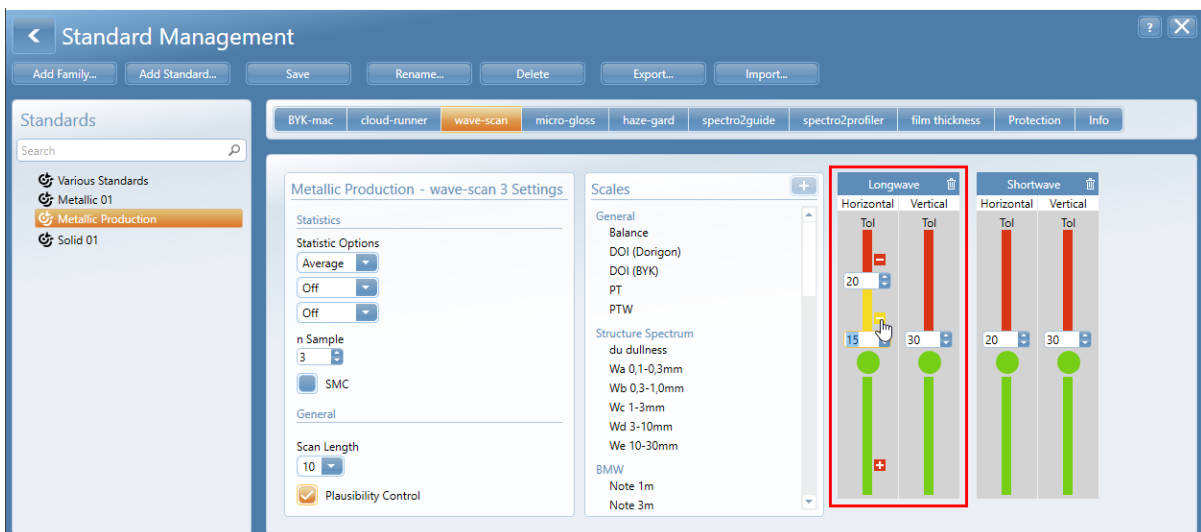
- Select **wave-scan** and define the
 - Number of readings for sample (= check zone)
 - Statistic Options
 - Scan length
 - Scales



- Select Scales and use the + button to add them to the standard family

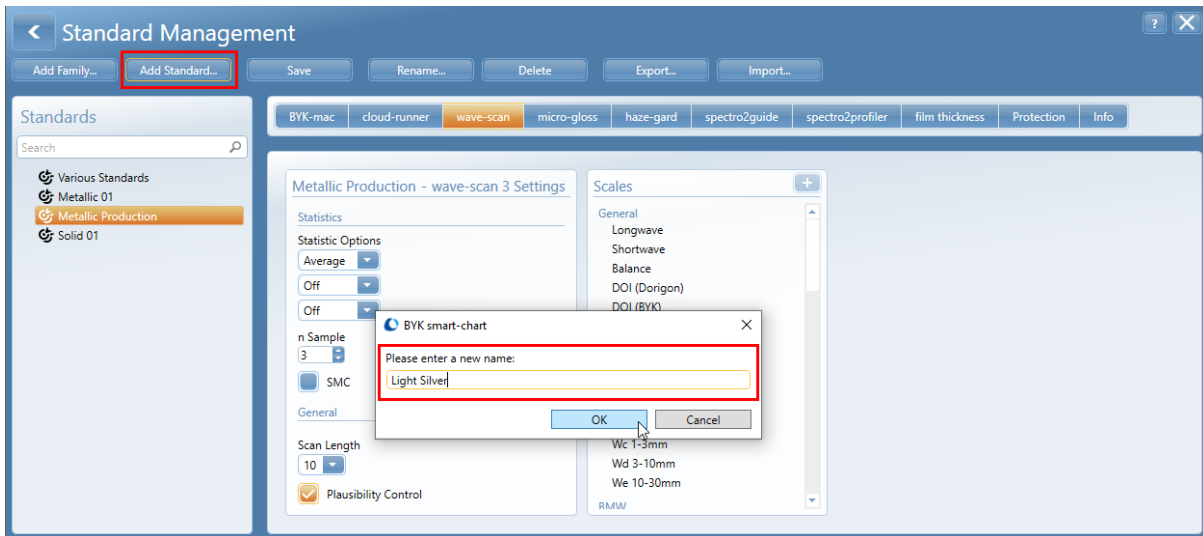


- Tolerance values for Pass/Fail indication can be input for horizontal and vertical checkzones separately. Colored bars illustrate the Pass and Fail areas.
- When scrolling over the colored tolerance bars additional boxes for more detailed tolerance definition can be added by using the [+] sign, e.g. a yellow warning range

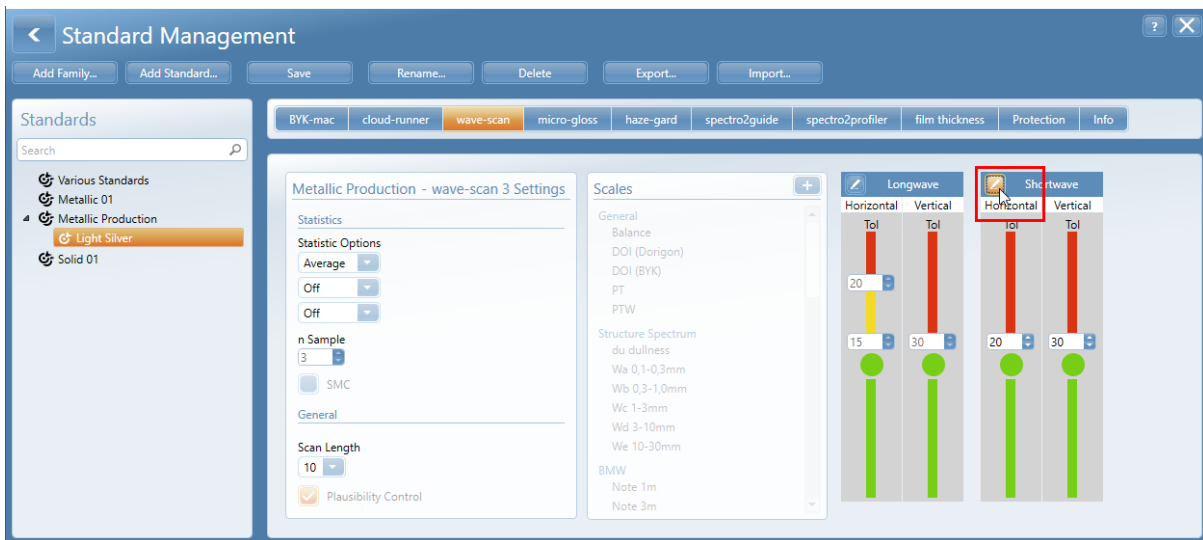


Add Orange Peel Standard settings

- Select **Add Standard** and input name e.g. Light Silver. Additional buttons in the upper row can be used to rename or remove the family or standard



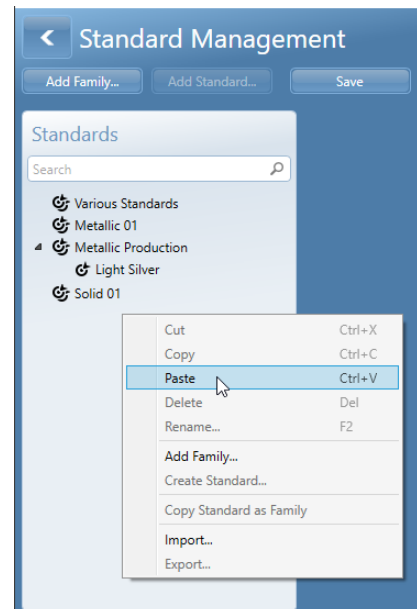
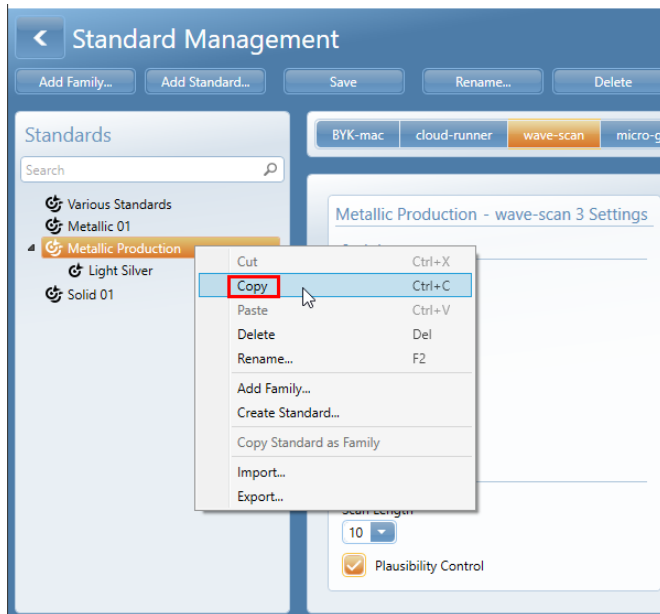
- The new created standard inherits the definition of the standard family such as statistics, scales and tolerances.
- The Edit Button can be used to adjust individual standard tolerances



Create Orange Peel Family “Metallic Batch” from existing Family “Metallic Production”

For batch approval, usually tighter tolerances are used than for production QC. Nevertheless, the same orange peel standards can be used so that the standard does not have to be re-defined again.

- Right mouse click on the color family “Metallic Production” and select **Copy**



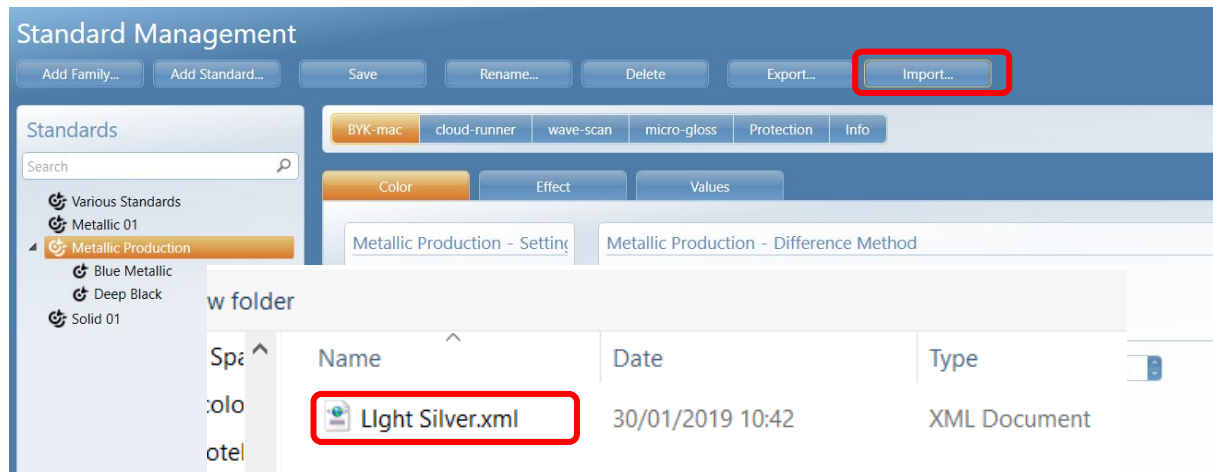
- Right mouse click on the empty area in the blue field and select **Paste**
- Change name of the copied color family and color standard by clicking on the **Rename** icon

2.2 Use of digital standards

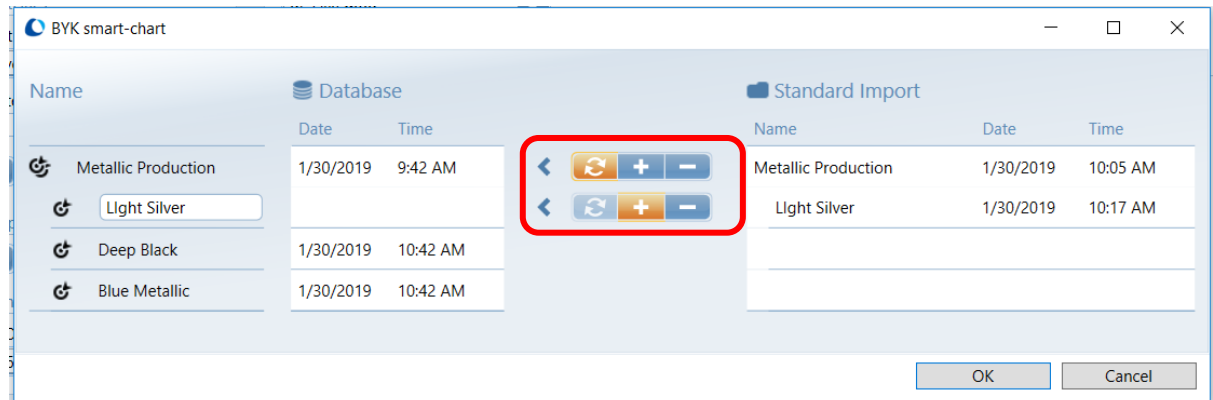
Import of digital masters

Digital standards are master standards saved as an *.xml file. They are distributed by headquarter through Email.

- Save the files on a USB stick and transfer them to the computer on which smart-chart is installed
- Click on **Import** and select the appropriate folder and file on your computer



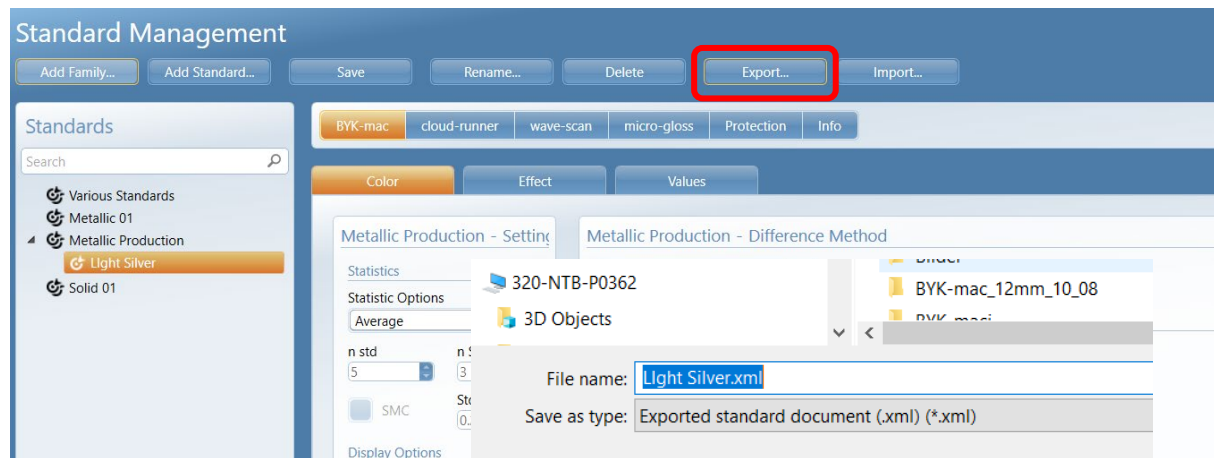
- A dialog box opens to set specific import options. Standard families and standards can be updated (double arrow), created new (+) or deleted from import (-).



Export of digital masters

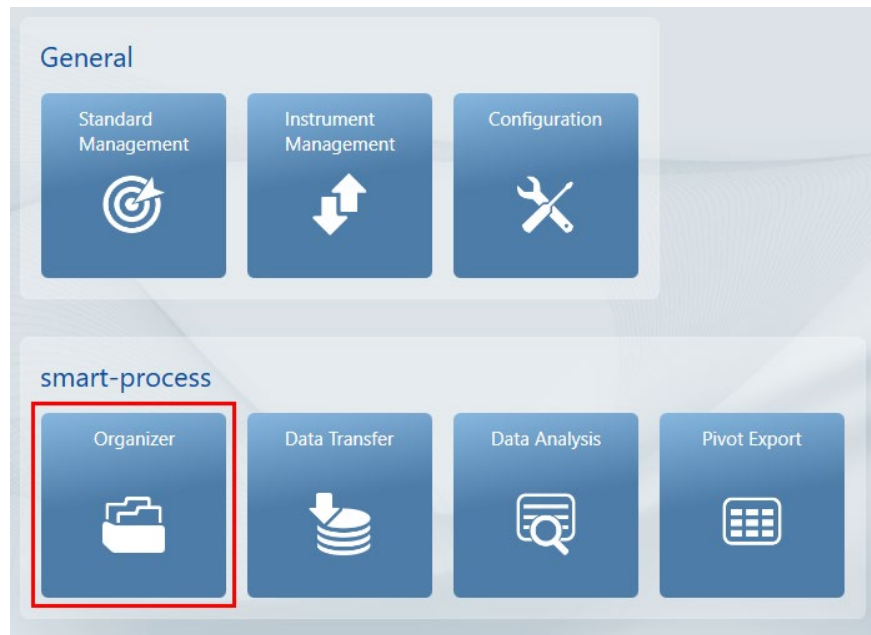
Complete color families or individual standards can be exported to be used as digital standards.

- Select the appropriate family or standards and click on the **Export** icon
- Save the *.xml file on a device of your choice

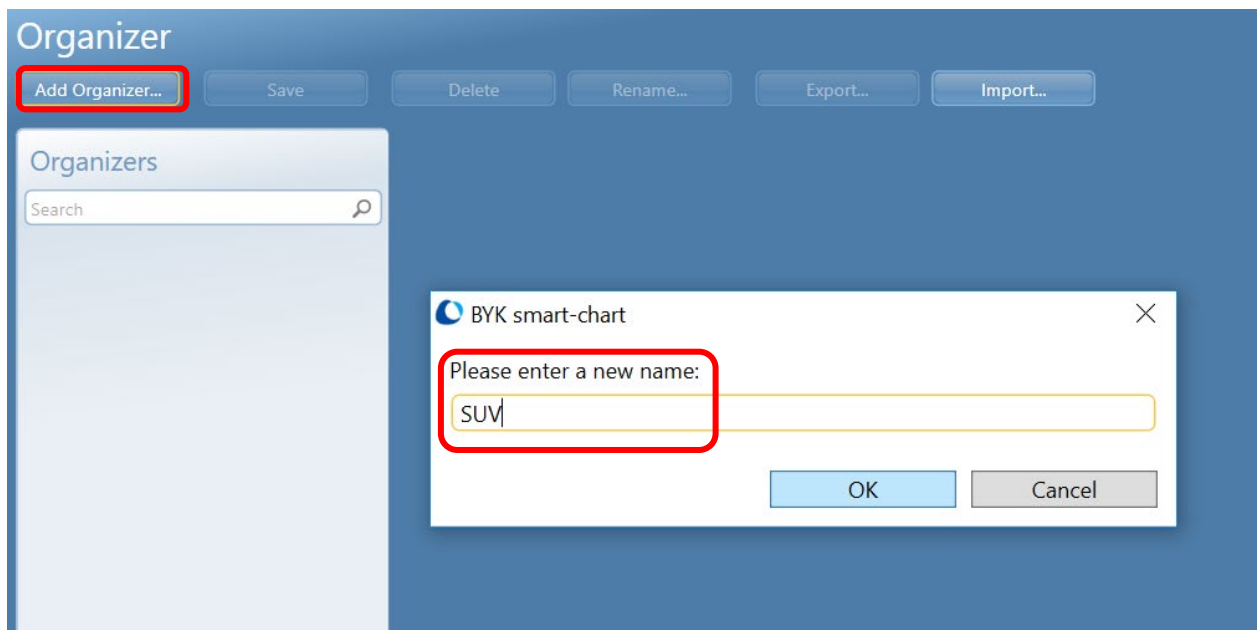


- You can share digital standard *.xml files using your shared drive, Email or USB stick

3. Organizer

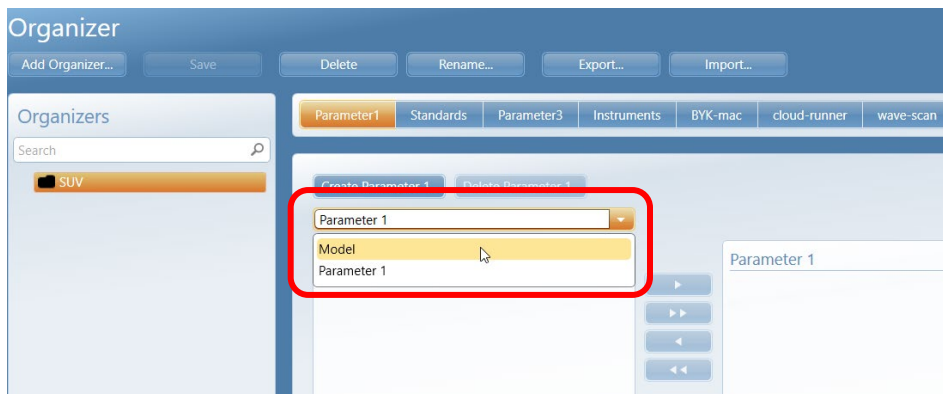


- Select **Add Organizer** and input name e.g. SUV

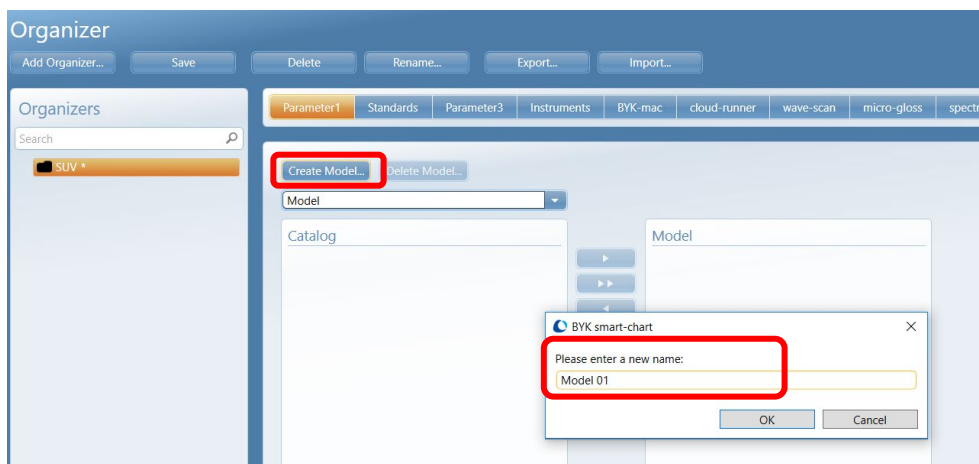


- An organizer includes all car models with the same measurement procedure
- An organizer defines all parameters for clear sample identification:
 - Model – Color – Paint line – Check zones
- For each parameter a specific catalog with multiple entries can be assigned
- The default name of the catalog is Parameter 1 - 5
- Application specific names can be assigned in the module **Configuration** (see page 3)

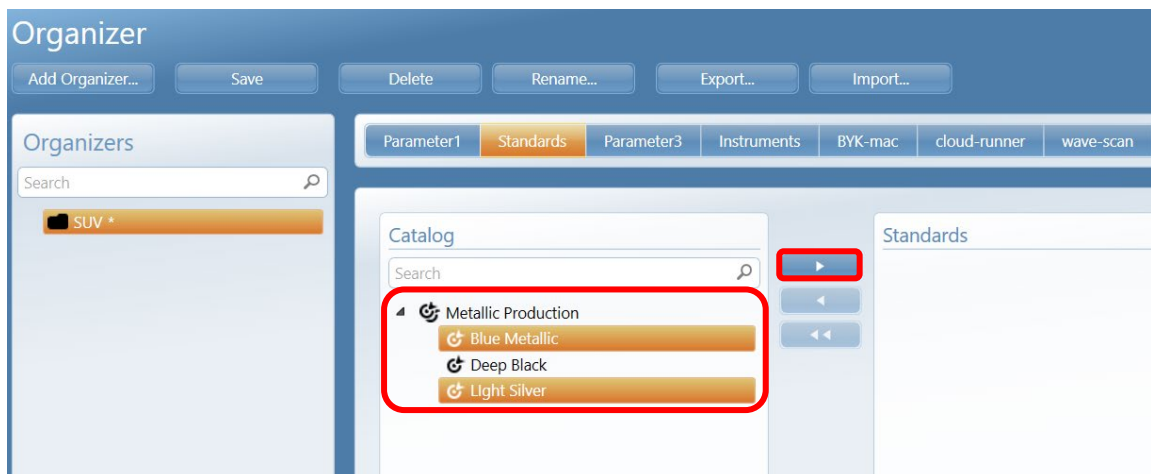
- Select catalog **Model** for parameter 1 by using the **Drop down box**



- Create a new model by clicking on the **Create Model** icon and input the model name
- The new model is automatically selected in the organizer

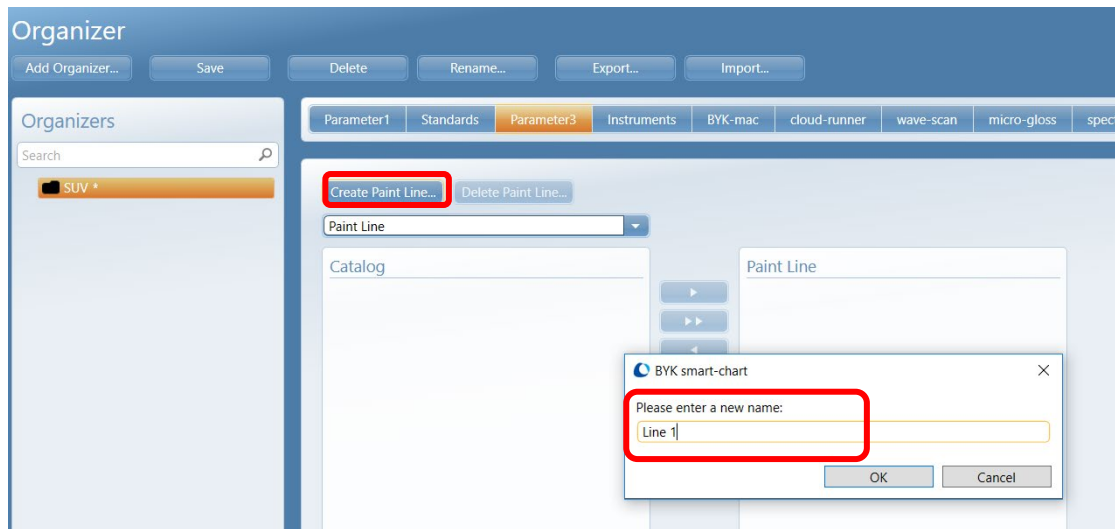


- Click on **Standard** and select all colors that are used for this model by either selecting the complete color family or individual colors
- To select them, click on the **Arrow right** icon

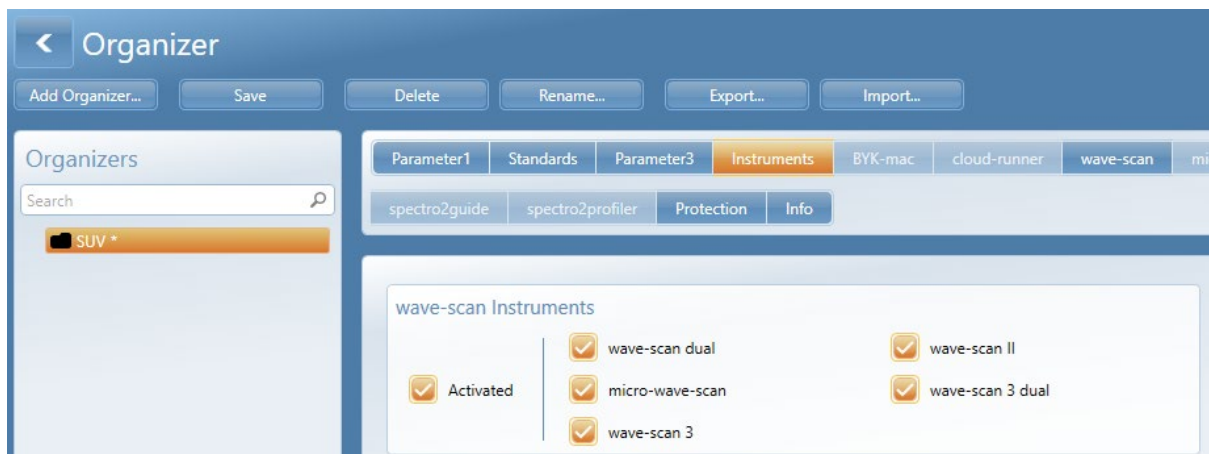


Note: When new colors are added, the organizer needs to be updated and resent to the instrument.

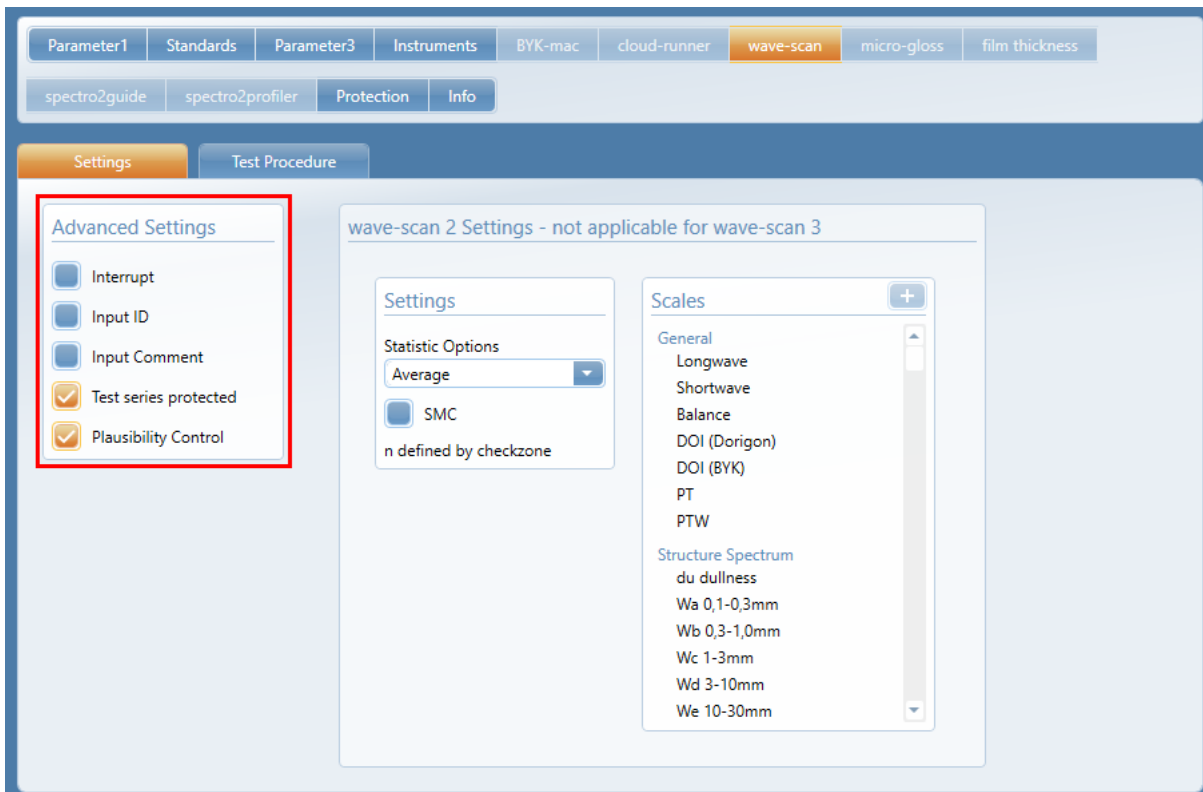
- For Parameter 3 select catalog Paint line
- Create a new Paint line by clicking on the **Create Paint Line** icon and input the name
- The new paint line is automatically selected in the organizer



- Under **Instruments** all instruments the organizer is going to be sent must be selected
→ **Activate** wave-scan

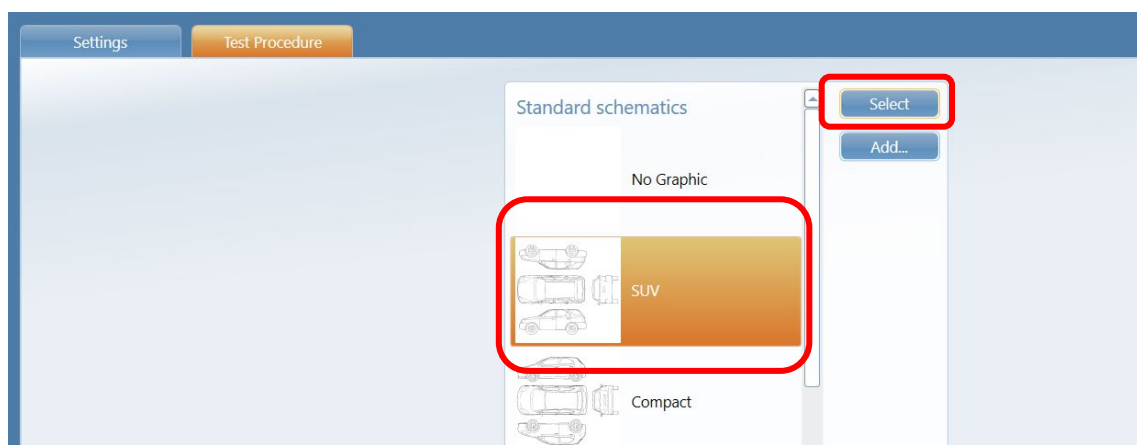


- Continue with defining the **Settings** for the wave-scan

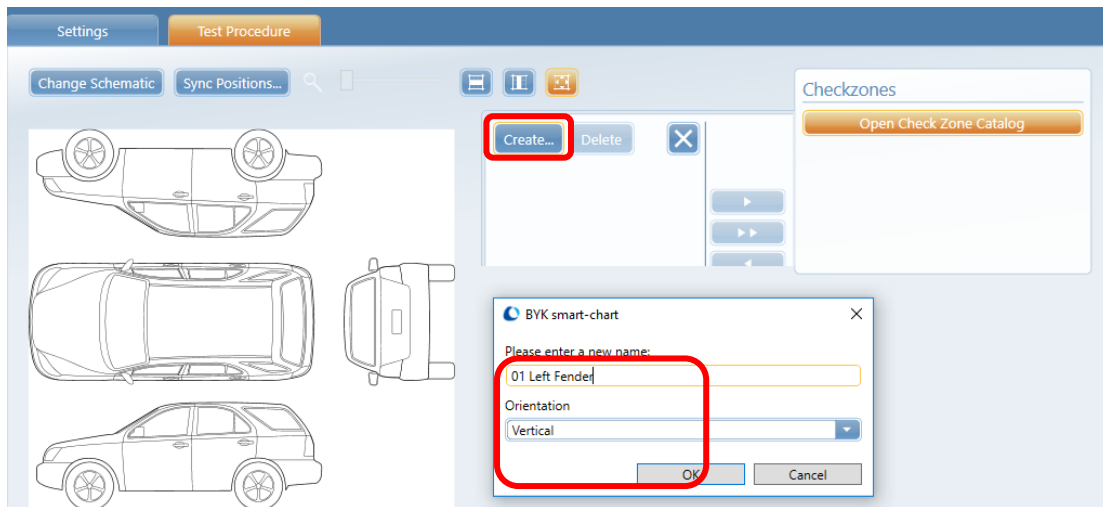


Interrupt	Allows skipping check zones or ending a test series before all check zones are measured. Note: The operator is responsible for the validity of the readings!
Input ID	An individual identification can be entered on the instrument for each teste series e.g. PJI number
Input Comment	Allows to assign additional information on the device for a new test series
Test series protected	Organizers and associated measurements cannot be deleted on the instrument only via the software smart-chart.
Plausibility Control	Compares a corrected to an uncorrected value. If the deviation is >20%, the instrument will ask to repeat the reading.

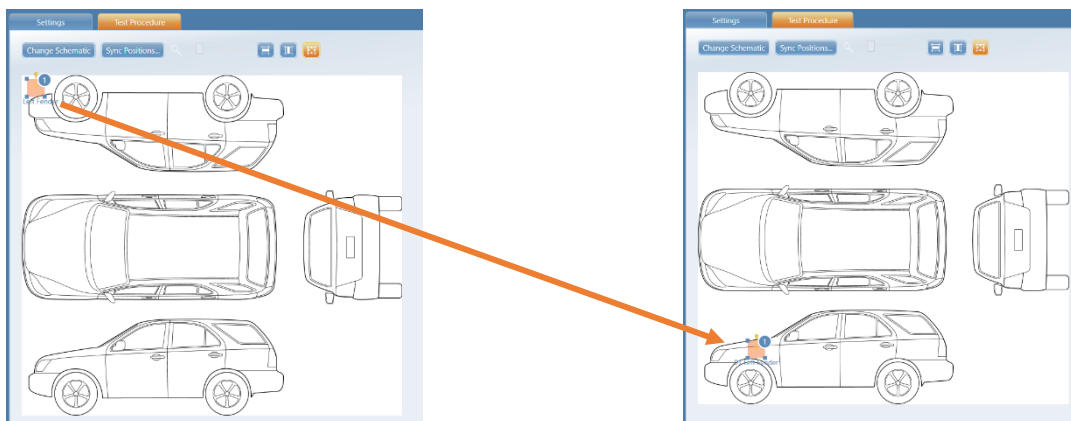
- In the next step define the **Test Procedure**
- Select** the appropriate **car schematic** from the list



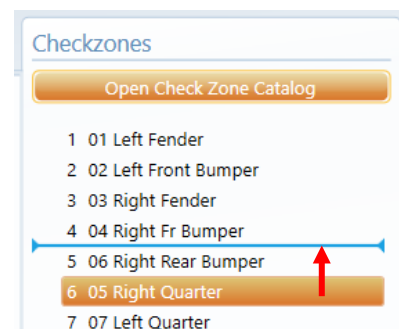
- **Create** check zones:
Enter a name and select the appropriate **orientation** (vertical / horizontal). This will make sure that the correct tolerances from Standard Management are applied. Highly important for the wave-scan instrument.



- A rectangular symbol with the sequence number appears in the upper left corner. Drag & Drop it with the mouse to the right position on the vehicle and adjust the direction of illumination.



- To change the measurement sequence, click on the check zone name with the mouse and Drag & Drop it to the desired position



- For each check zone individual properties need to be defined

Scan length:

Allows to change the measurement length for the highlighted check zones (5, 10 or 20 cm). The default setting is 10 cm.

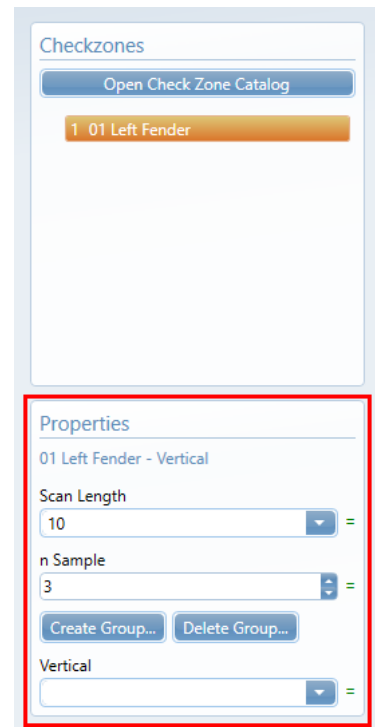
n Sample:

Defines the number of readings for the check zone

Group:

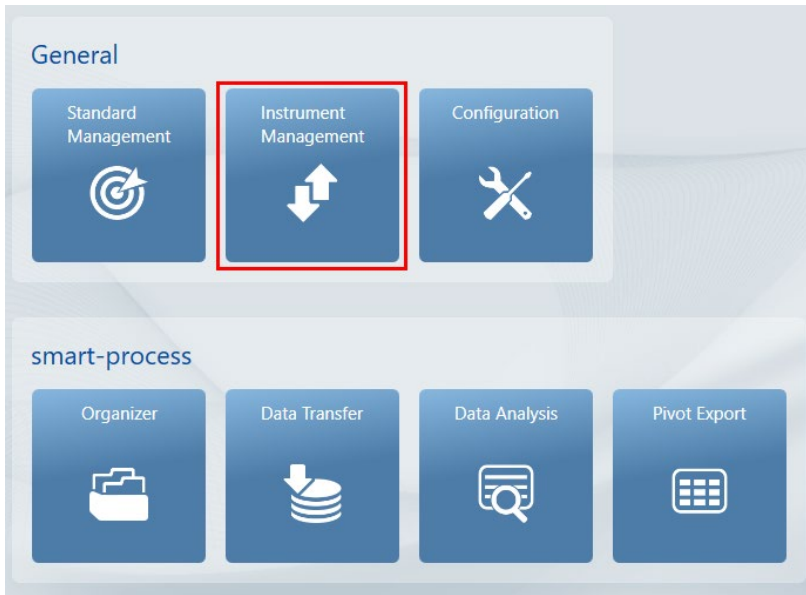
Several check zones can be combined to a group. In Data Analysis the average of each group will be displayed additionally. Highlight the zones to be grouped and select a name from the Groups box or click **Create Group** to create a new name.

- To save the organizer click on the **Save** icon

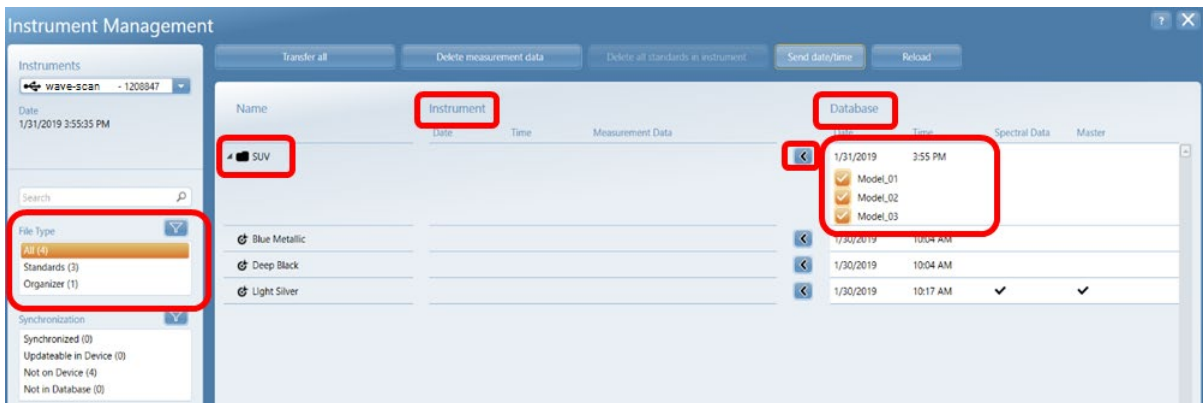


4. Instrument Management

Send organizer to instrument

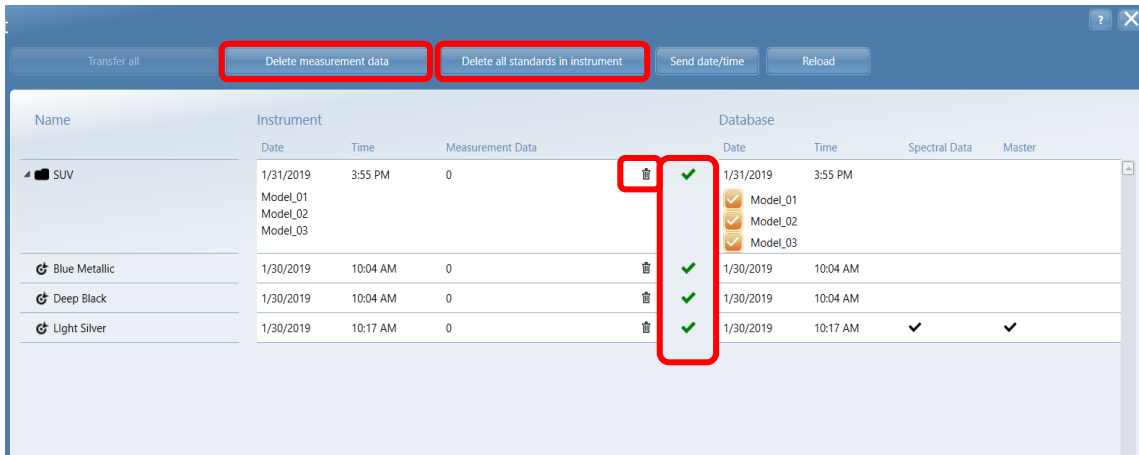


- The below window appears:
 - The column **Instrument** shows the organizers and standards saved in the instrument
 - The column **Database** shows all files stored in the database
 - Standards are marked by a target symbol – Organizers by a folder symbol
- On the left side you are able to **filter** which type of files to be displayed



- Clicking on the **arrow** in front of the organizer name displays all models that are included in this organizer. Individual models can be deselected
- Organizers can be sent to the instrument by clicking on the **arrow buttons pointing to the instrument column**.
- A red arrow indicates that some parameters are not defined in the organizer and the organizer cannot be sent to the instrument. Please review the settings in the Organizer module.

- Sending the organizer automatically transfers all standards that are selected in the organizer
- After successful transfer a green checkmark appears and the organizer/standards are now also shown in the **Instrument** column



Delete Measurement Data

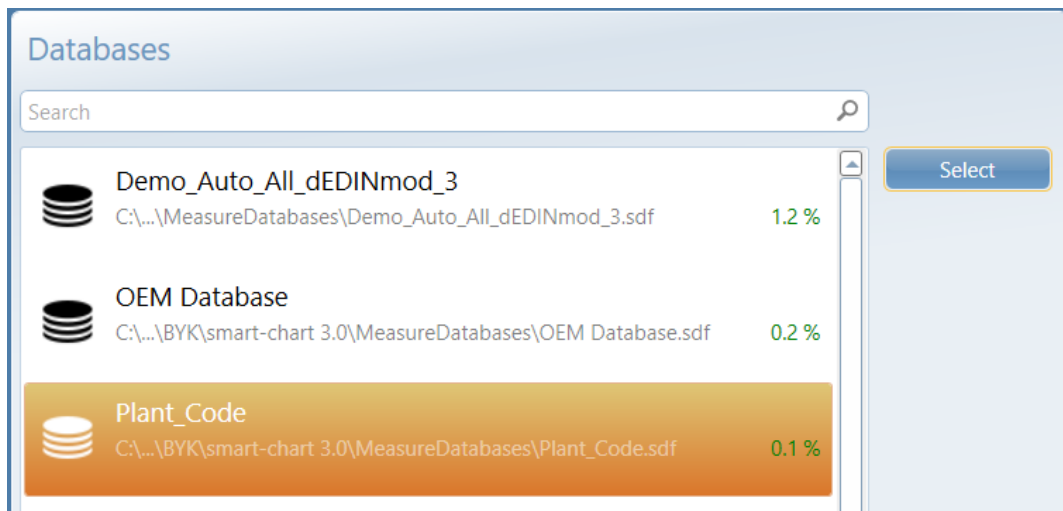
- In case you did not delete data in the instrument at time of data transfer to the measurement database it can be done afterwards
- Use **Delete measurement data** to delete measurements of vehicles
- Use **Delete all standards** in the instrument to delete all standards
- To delete individual standards or organizers in the instrument please use the **Waste bin** icon behind the respective entry

5. Data Transfer

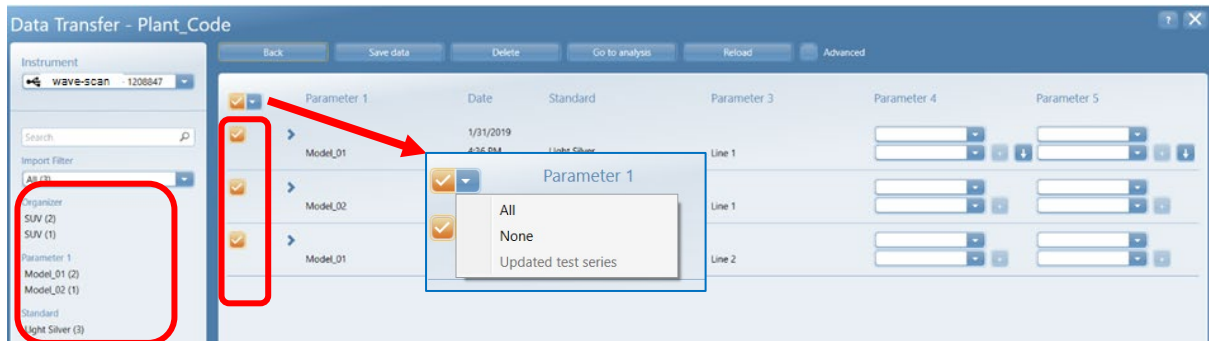
Download measurement data from instrument and save in database



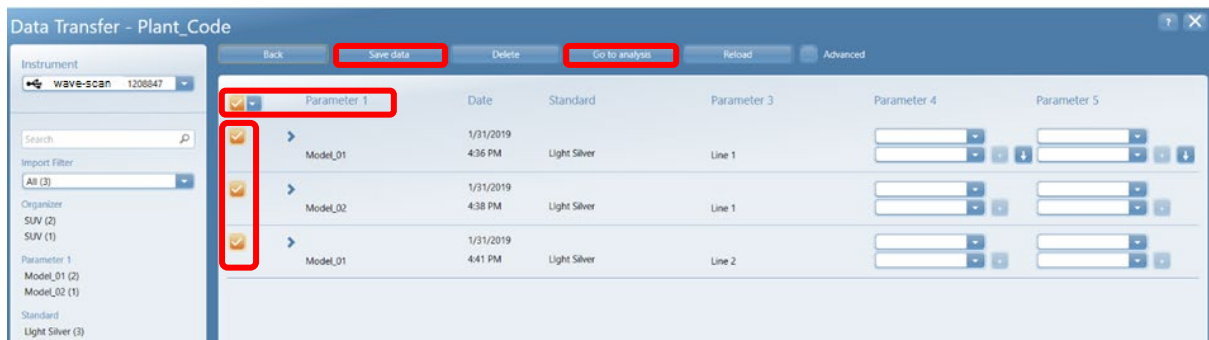
- **Select** database to store the readings. If only one database is available, the following screen is skipped and the database is automatically selected
- The percentage number behind the database name is an indication “how full” it is



- As default, all vehicles saved in the instrument memory are selected. By clicking on the orange **check box** you are able to deselect specific test series
- Or you can use the checkbox in the header to select **All** or **None**. The option **Updated test series** is only available for the instrument spectro2guide.
- The **Filter** option on the left side allows to select the displayed data by Organizer – Model – Standard



- To save the readings click on the **Save Data** icon. The saved files are shown with a check mark
- To delete data in the instrument, please select the option **Delete**
- Press **Go to Analysis** to continue directly with data analysis

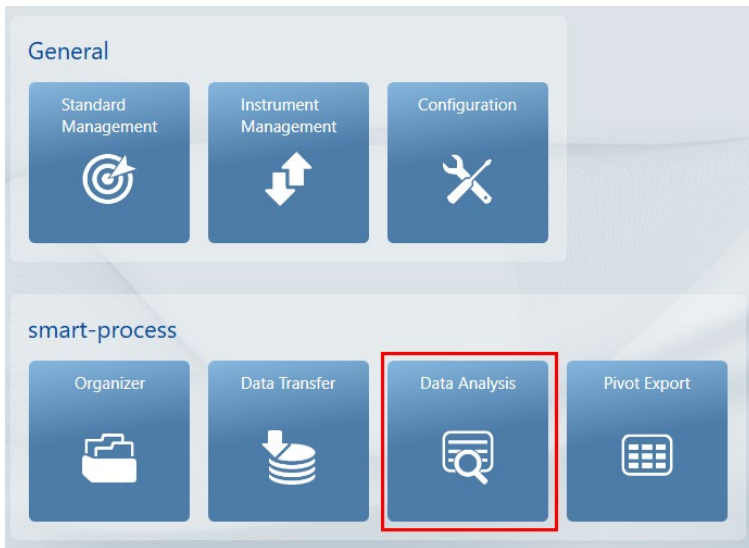


Note: In case you forgot to delete the measurement data, it can be done afterwards in the module **Instrument Management** (see page 17).

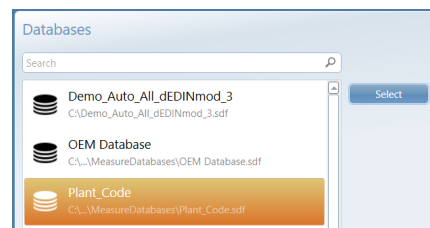
6. Data Analysis

Data analysis of measurements in various reports:

Test Report for single vehicles - Trend Reports to control process stability over time

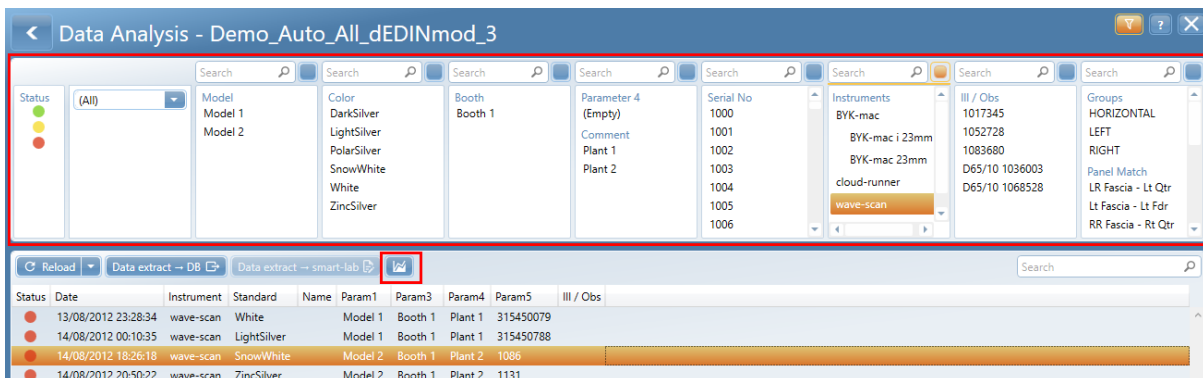


- **Select** database. If only one database is available, the screen aside is skipped and the database is automatically selected



Database List

- The top window allows to select test series from the database which will be listed in the lower area after pressing the **Reload** button
- The following **filter criteria** are available:
 - Status: Pass – Warning – Fail bases on the tolerances defined in Standard Management
 - Date: Input time range or use predefined range e.g. Today, This Week
 - Parameter 1 – 3 as defined in the organizer
 - Parameter 4 – 5 as input on the instrument
 - Instruments and Check Zones / Panel Matches
- To activate a filter criteria click on the respective item. It will be highlighted. To deactivate click again.
- The square above each filter field allows to select and deselect all items
- To select the individual reports with graphical display click on the **Graph** icon



Test Report

Measurement data of a single vehicle is shown. It is the ideal report for orange peel harmony reviews. Different graphical displays are available.

Instrument	Date	Model	Color	Booth	Comment	Serial No.														
wave-scan	14/08/2012	Model 2	SnowWhite	Booth 1	Plant 2	1086														
							LW	SW	DOI	R	N1	N3	CF	B	du	Wa	Wb	Wc	Wd	We
Horizontal																				
	Fail High	10.0	30.0			3.2	3.7			6.0	30.0	30.0	35.0	20.0	20.0	20.0				
	Warning High	10.0	30.0			3.2	3.7			6.0	20.0	20.0	30.0	15.0	15.0	15.0				
	Warning Low		10.0	85.0	7.0	0.0	0.0	60.0	-6.0				10.0							
	Fail Low		5.0	85.0	7.0	0.0	0.0	60.0	-6.0				5.0							
Vertical																				
	Fail High	15.0	30.0			6.0	6.0			6.0	30.0	30.0	35.0	30.0	30.0	30.0				
	Warning High	15.0	30.0			6.0	6.0			6.0	20.0	20.0	30.0	25.0	25.0	25.0				
	Warning Low		10.0	85.0	5.0	0.0	0.0	47.0	-6.0				10.0							

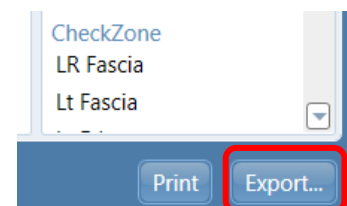
Select one vehicle in the **List** and click on the required graph

Data Table

- The data table shows the numerical measurement values showing the absolute values of measurements.
- The two table headers Horizontal and Vertical show the tolerances set in Standard Management. They can be shown/hidden using the *Tolerances* checkbox.
- A traffic light symbol is assigned to each check zone.
- Values out of tolerance are highlighted in yellow or red according to the Pass/Fail definition in Standard Management.
- If individual Scales are out of specification, the data is colored red.
- The table section "Groups" show the check zones combined to a group in the Organizer. The average of each group is displayed.

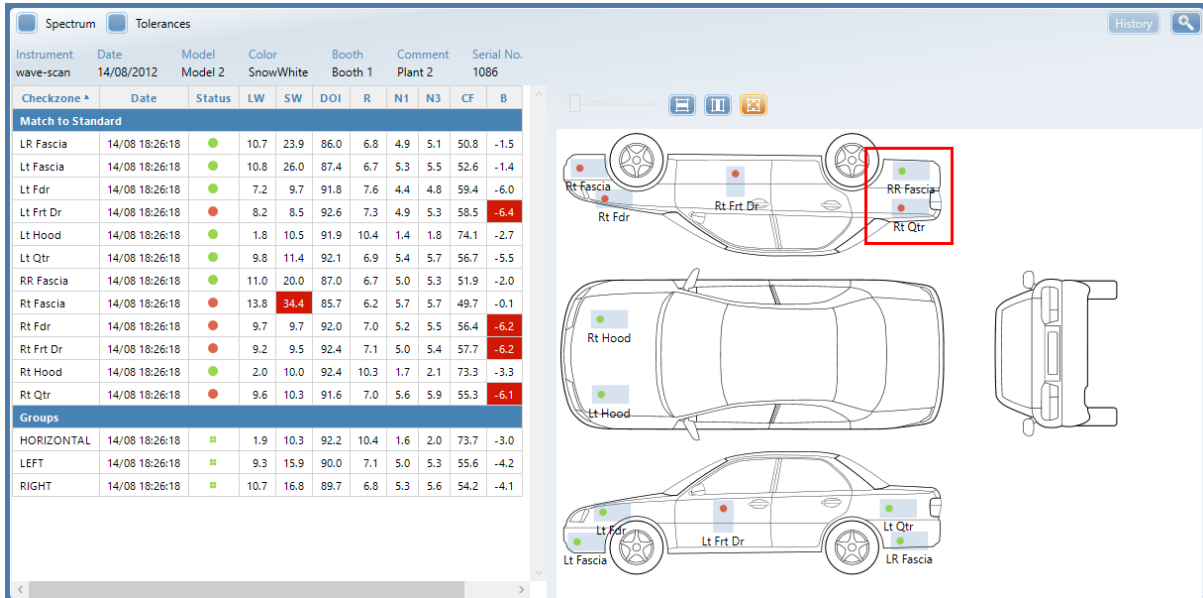
Instrument	Date	Model	Color	Booth	Comment	Serial No.															
wave-scan	14/08/2012	Model 2	SnowWhite	Booth 1	Plant 2	1086	LW	SW	DOI	R	N1	N3	CF	B	du	Wa	Wb	Wc	Wd	We	
Horizontal																					
	Fail High	10.0	30.0			3.2	3.7			6.0	30.0	30.0	35.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	
	Warning High	10.0	30.0			3.2	3.7			6.0	20.0	20.0	30.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	
	Warning Low		10.0	85.0	7.0	0.0	0.0	60.0	-6.0				10.0								
	Fail Low		5.0	85.0	7.0	0.0	0.0	60.0	-6.0				5.0								
Vertical																					
	Fail High	15.0	30.0			6.0	6.0			6.0	30.0	30.0	35.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	
	Warning High	15.0	30.0			6.0	6.0			6.0	20.0	20.0	30.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	
	Warning Low		10.0	85.0	5.0	0.0	0.0	47.0	-6.0				10.0								
	Fail Low		5.0	85.0	5.0	0.0	0.0	47.0	-6.0				5.0								
Checkzone ^	Date	Status	LW	SW	DOI	R	N1	N3	CF	B	du	Wa	Wb	Wc	Wd	We					
Match to Standard																					
LR Fascia	14/08 18:26:18	●	10.7	23.9	86.0	6.8	4.9	5.1	50.8	-1.5	17.0	21.1	27.8	17.9	22.9	14.4					
Lt Fascia	14/08 18:26:18	●	10.8	26.0	87.4	6.7	5.3	5.5	52.6	-1.4	13.0	17.9	29.1	17.0	24.7	15.2					
Lt Fdr	14/08 18:26:18	●	7.2	9.7	91.8	7.6	4.4	4.8	59.4	-6.0	9.5	5.9	12.0	11.7	18.5	11.7					
Lt Frt Dr	14/08 18:26:18	●	8.2	8.5	92.6	7.3	4.9	5.3	58.5	-6.4	7.9	6.1	11.3	12.1	20.6	12.9					
Lt Hood	14/08 18:26:18	●	1.8	10.5	91.9	10.4	1.4	1.8	74.1	-2.7	8.9	7.0	13.6	5.7	6.0	5.0					
Lt Qtr	14/08 18:26:18	●	9.8	11.4	92.1	6.9	5.4	5.7	56.7	-5.5	8.0	8.3	14.9	12.8	23.5	11.9					
RR Fascia	14/08 18:26:18	●	11.0	20.0	87.0	6.7	5.0	5.3	51.9	-2.0	15.2	18.1	26.3	17.2	23.2	15.8					
Rt Fascia	14/08 18:26:18	●	13.8	34.4	85.7	6.2	5.7	5.7	49.7	-0.1	14.2	21.3	35.0	19.9	27.2	15.7					
Rt Fdr	14/08 18:26:18	●	9.7	9.7	92.0	7.0	5.2	5.5	56.4	-6.2	9.1	6.6	12.2	13.7	21.8	17.0					
Rt Frt Dr	14/08 18:26:18	●	9.2	9.5	92.4	7.1	5.0	5.4	57.7	-6.2	8.0	7.1	12.0	13.5	21.1	13.4					
Rt Hood	14/08 18:26:18	●	2.0	10.0	92.4	10.3	1.7	2.1	73.3	-3.3	7.8	6.2	13.3	5.9	7.0	6.6					
Rt Qtr	14/08 18:26:18	●	9.6	10.3	91.6	7.0	5.6	5.9	55.3	-6.1	9.6	8.1	12.9	12.6	23.8	12.4					
Groups																					
HORIZONTAL	14/08 18:26:18	■	1.9	10.3	92.2	10.4	1.6	2.0	73.7	-3.0	8.4	6.6	13.5	5.8	6.5	5.8					
LEFT	14/08 18:26:18	■	9.3	15.9	90.0	7.1	5.0	5.3	55.6	-4.2	11.1	11.9	19.0	14.3	22.0	13.2					
RIGHT	14/08 18:26:18	■	10.7	16.8	89.7	6.8	5.3	5.6	54.2	-4.1	11.2	12.2	19.7	15.4	23.4	14.9					

- The information of the data table can be exported to Excel or .csv by clicking on the **Export** icon in the right corner above the data table



Schematic

- Clicking on the **Schematic** icon displays the schematic of the car as defined in the organizer with traffic light symbols
 - "Single dots" for comparing check zone to standards
 - "Double dots" for panel match



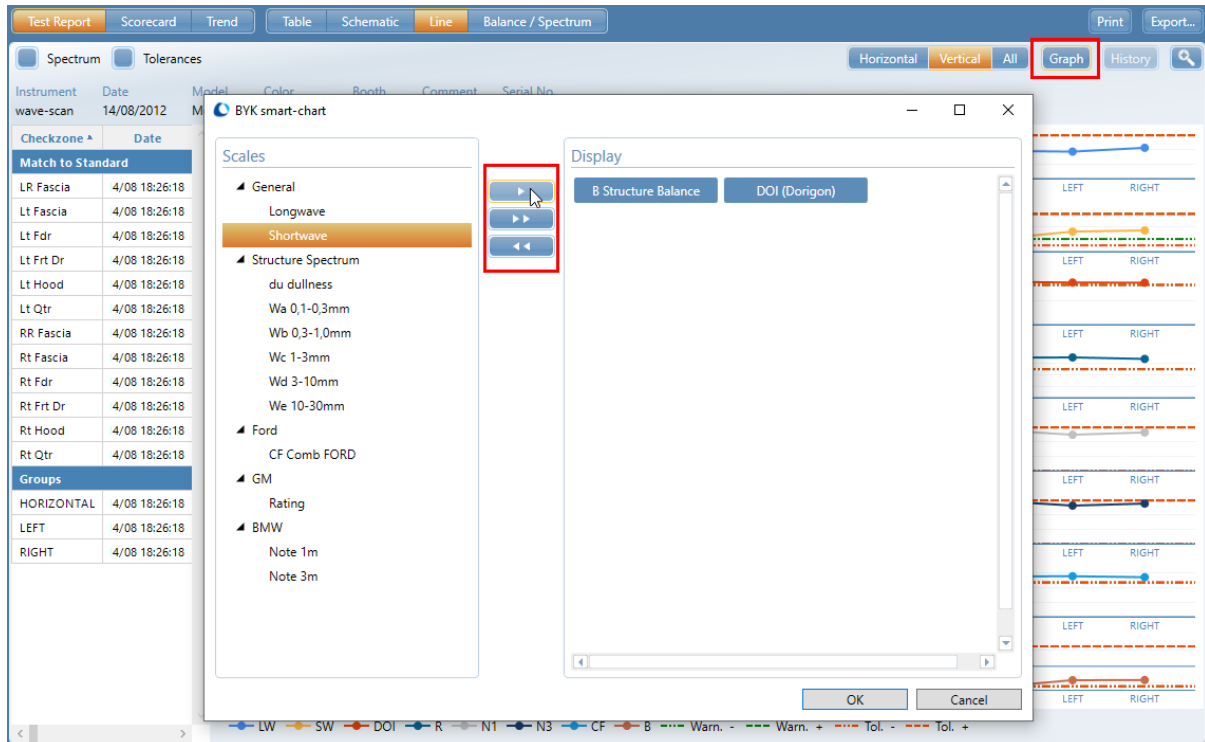
Line Graph

- Clicking on the **Line** icon displays line graphs including the tolerances as defined in Standard Management. Switch between **Horizontal**, **Vertical** and **All** to filter check zones for orientation.



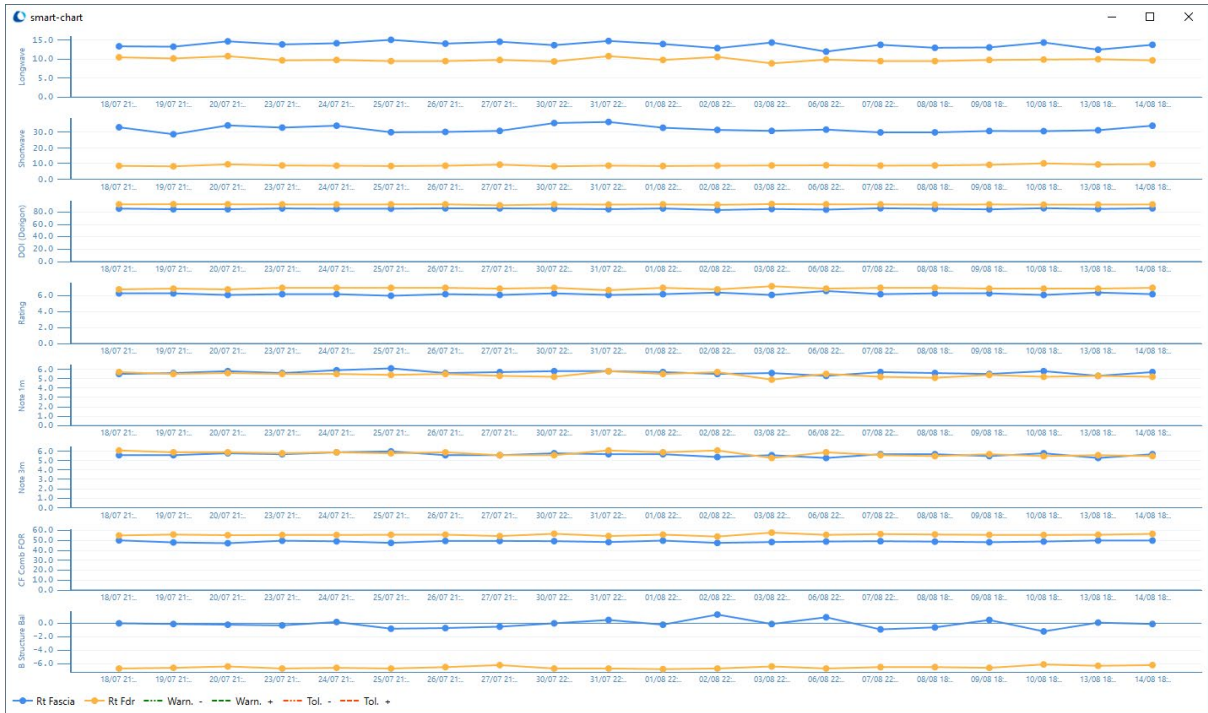
The scales to be shown in the graph can be selected with the icon **Graphs**. Select the required scales by using the **Arrow buttons**

- The order of the scales can be changed by using left mouse click and drag & drop
- Individual scales can be deselected with the **Waste bin** icon which appears during mouse roll-over



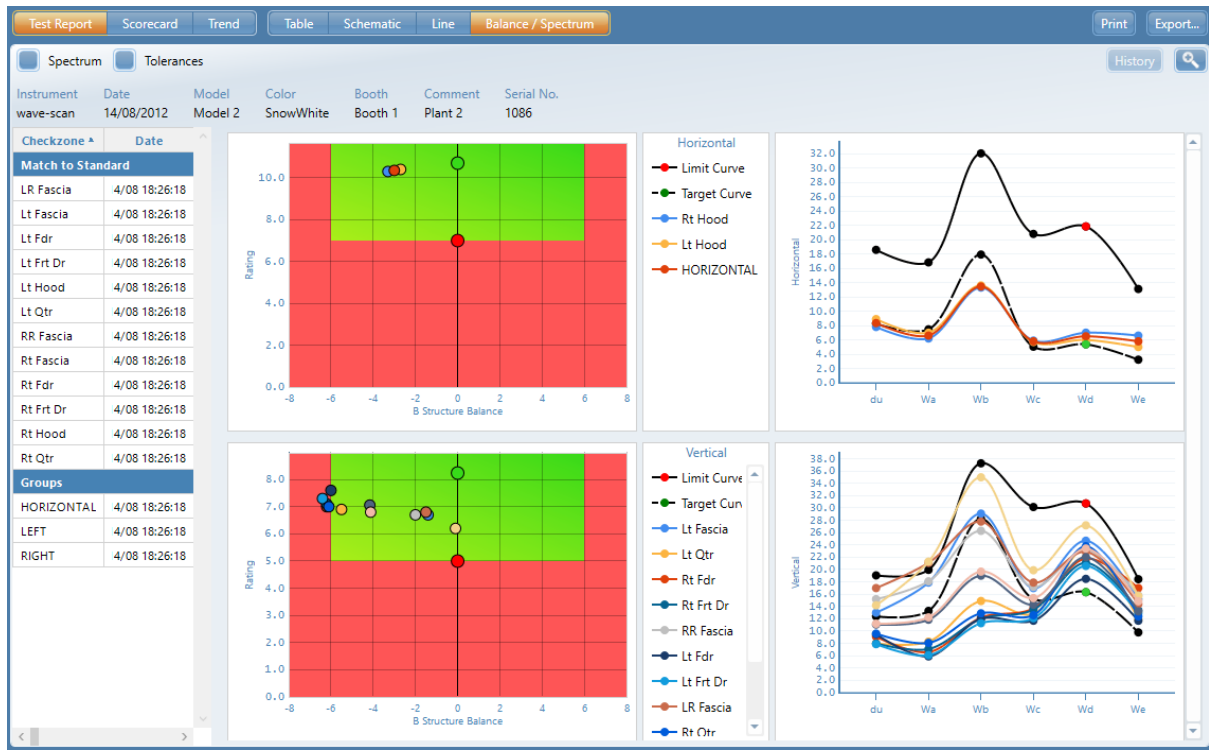
- Select one or multiple checkzones to use the **History** function to analyze the trend of the maximum last 20 vehicles of the same Model – Color – Paint Line is displayed. The layout of the graph is according to the definition in **Line Graph**.

Instrument	Date	Model	Color	Booth	Comment	Serial No.				
wave-scan	14/08/2012	Model 2	SnowWhite	Booth 1	Plant 2	1086				
Checkzone ^	Date	Status	LW	SW	DOI	R	N1	N3	CF	B
Match to Standard										
LR Fascia	14/08 18:26:18	●	10.7	23.9	86.0	6.8	4.9	5.1	50.8	-1.5
Lt Fascia	14/08 18:26:18	●	10.8	26.0	87.4	6.7	5.3	5.5	52.6	-1.4
Lt Fdr	14/08 18:26:18	●	7.2	9.7	91.8	7.6	4.4	4.8	59.4	-6.0
Lt Frt Dr	14/08 18:26:18	●	8.2	8.5	92.6	7.3	4.9	5.3	58.5	-6.4
Lt Hood	14/08 18:26:18	●	1.8	10.5	91.9	10.4	1.4	1.8	74.1	-2.7
Lt Qtr	14/08 18:26:18	●	9.8	11.4	92.1	6.9	5.4	5.7	56.7	-5.5
RR Fascia	14/08 18:26:18	●	11.0	20.0	87.0	6.7	5.0	5.3	51.9	-2.0
Rt Fascia	14/08 18:26:18	●	13.8	34.4	85.7	6.2	5.7	5.7	49.7	-0.1
Rt Fdr	14/08 18:26:18	●	9.7	9.7	92.0	7.0	5.2	5.5	56.4	-6.2



Balance / Spectrum

- Selecting **Balance/Spectrum** icon displays the Balance chart and structure spectrum chart for horizontal and vertical checkzones checkzones separately.



Scorecard Report

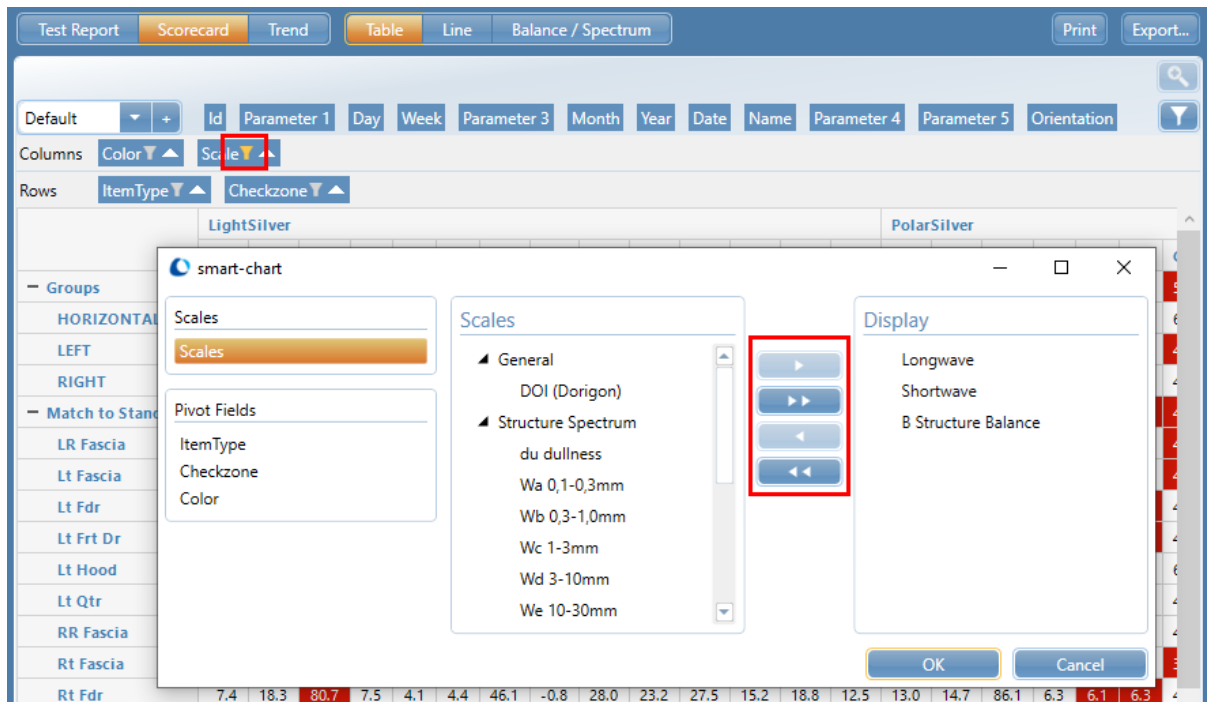
This report gives an overview how the individual colors are running over time. It can be used as a summary report for upper management as it will easily detect colors where actions have to be taken.

- A Scorecard Report is usually done for all colors over a specific time range (e.g. one month).
- Activate the respective **filter criteria** in the upper part of the window and click on **Reload**.
- **Select** all test series in the **List** with the mouse, click on the Graph icon and select **Scorecard** and **Table**.

- The arrangement of data in **rows** and **columns** is defined by the blue **grouping fields** in the upper part of the table.
- To change the layout drag & drop the field to the row or column header area, or remove it to the top of the table.
- The grouping fields are related to the parameters defined in the organizer. Additional fields are available for Day, Week, Month, Angle
- Values out of tolerance are highlighted in yellow or red according to the Pass/Fail definition in Standard Management

Groups	LightSilver											PolarSilver									
	LW	SW	DOI	R	N1	N3	CF	B	du	Wa	Wb	Wc	Wd	We	LW	SW	DOI	R	N1	N3	
6.9	20.8	81.6	7.8	3.7	4.0	49.4	0.7	25.8	22.0	28.7	15.6	16.2	11.6	8.5	14.6	84.3	7.5	4.3	4.6	5.9	
HORIZONTAL	3.9	24.3	82.1	8.8	2.6	3.0	56.4	4.8	22.9	23.4	33.7	14.3	9.9	8.5	3.0	14.7	85.7	9.3	2.3	2.7	6.0
LEFT	8.4	19.2	81.2	7.3	4.3	4.6	45.8	-1.4	27.3	21.2	26.1	16.3	19.5	13.4	11.1	14.5	83.6	6.7	5.2	5.5	4.4
RIGHT	8.3	18.8	81.3	7.3	4.2	4.5	46.1	-1.2	27.2	21.3	26.3	16.2	19.1	12.9	11.4	14.7	83.8	6.7	5.2	5.5	4.4
Match to Standard	7.6	19.9	81.4	7.5	4.0	4.3	47.7	-0.3	26.5	21.6	27.5	15.9	17.7	12.4	9.9	14.6	84.0	7.1	4.7	5.0	4.4
LR Fascia	9.6	17.1	82.4	7.0	4.5	4.8	46.0	-3.2	26.3	16.6	21.1	16.8	20.2	14.2	10.2	14.9	82.3	6.9	4.5	4.8	4.4
Lt Fascia	10.7	17.9	82.7	6.7	4.9	5.1	45.0	-3.3	25.4	16.6	21.6	18.2	22.0	16.5	9.5	14.3	80.0	7.0	4.5	4.8	4.4
Lt Fdr	7.3	18.4	80.4	7.6	4.1	4.4	45.8	-0.8	28.9	22.5	27.5	15.0	18.9	11.7	11.2	13.1	86.1	6.7	5.7	6.0	4.4
Lt Frt Dr	6.0	19.3	81.8	7.9	3.5	3.9	50.2	0.0	25.7	22.8	28.1	14.3	16.1	11.2	12.1	15.0	84.9	6.5	5.7	5.9	4.4
Lt Hood	3.8	23.7	82.7	8.8	2.5	2.9	57.3	4.4	22.1	22.7	32.8	13.7	9.8	8.2	2.9	14.0	86.1	9.4	2.3	2.7	6.0

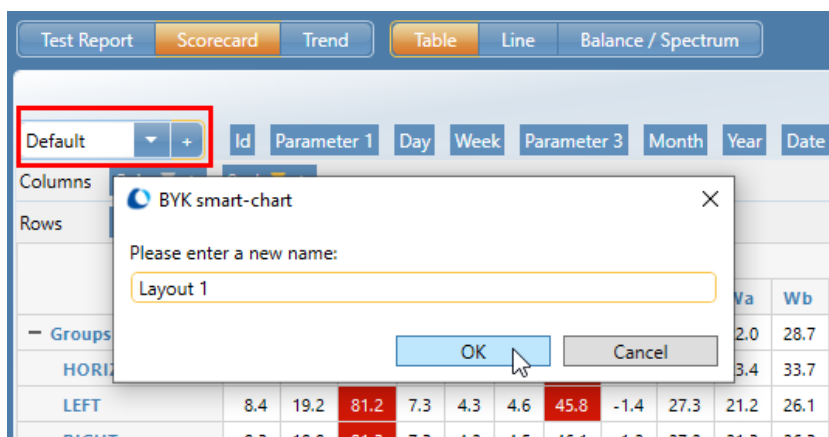
- The scales to be shown in the table can be selected with the **Filter** symbol on the blue grouping field. Select the required scales by using the **Arrow buttons**
- The filter function is available for all selected grouping fields and allows customization of the data table.



- The data can also be viewed in Line graph by clicking on an individual cell or a complete line.

Note: The value in a table cell is the average of all selected test series and is highlighted in yellow or red according to the Pass/Fail definition in Standard Management

- With the dropdown menu in the upper left corner it is possible to add, load and save the arrangements of grouping fields.



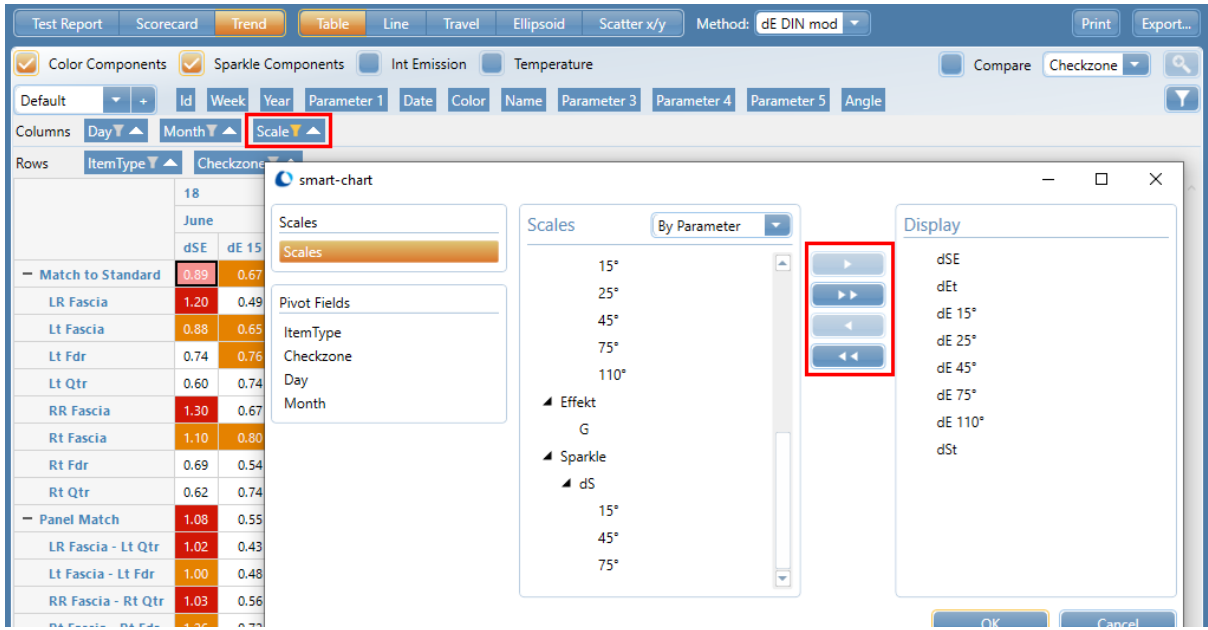
Trend Report

This report shows measurement data over time (day, week, and month) or by individual. It is the ideal tool to monitor process stability.

- A Trend Report is usually done for one color over a specific time range (e.g. one month).
- Activate the respective **filter criteria** in the upper part of the window and click on **Reload**.
- **Select** all test series in the **List** with the mouse, click on the Graph icon and select **Trend** and **Table**.

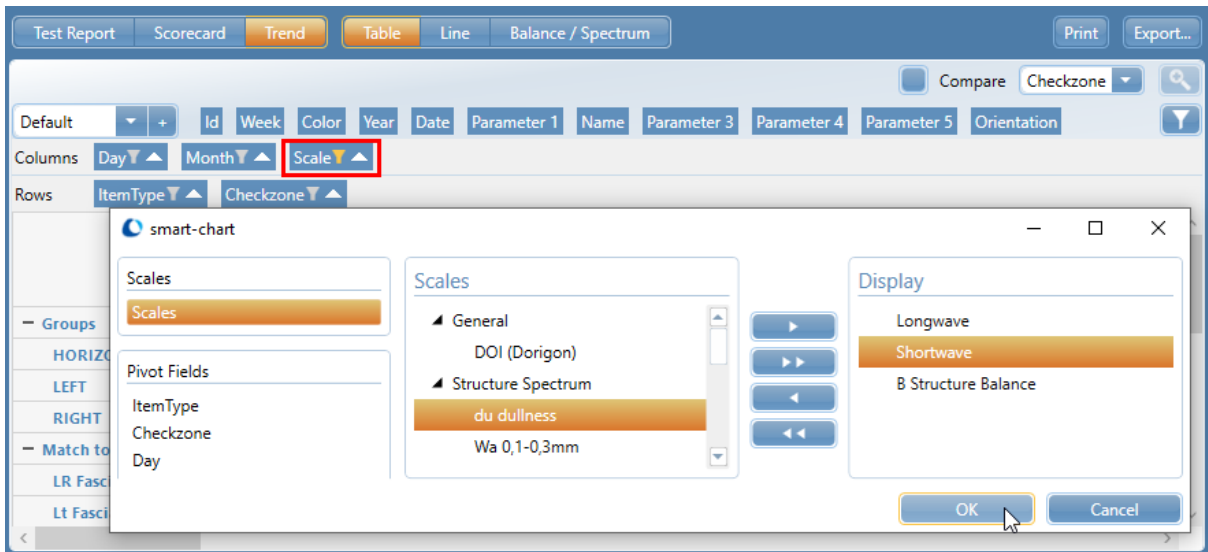
- The arrangement of data in **rows** and **columns** is defined by the blue **grouping fields** in the upper part of the table.
- To change the layout drag & drop the field to the row or column header area, or remove it to the top of the table
- The grouping fields are related to the parameters defined in the organizer. Additional fields are available for Day, Week, Month, Angle
- Values out of tolerance are highlighted in yellow or red according to the Pass/Fail definition in Standard Management

- The scales to be shown in the table can be selected with **Filter** symbol on the blue grouping field. Select the required scales by using the **Arrow buttons**
- The filter function is available for all selected grouping fields and allows customization of the data table.



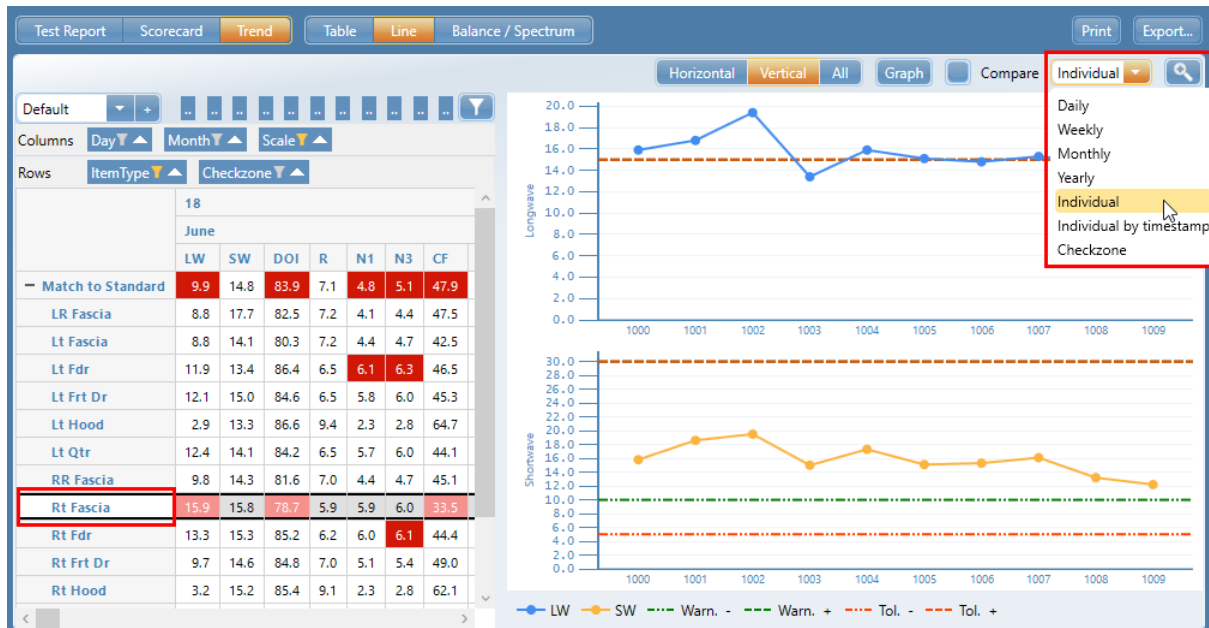
Note: The value in a table cell is the average of all selected test series and is highlighted in yellow or red according to the Pass/Fail definition in Standard Management

- With the dropdown menu in the upper left corner it is possible to add, load and save the arrangements of grouping fields.



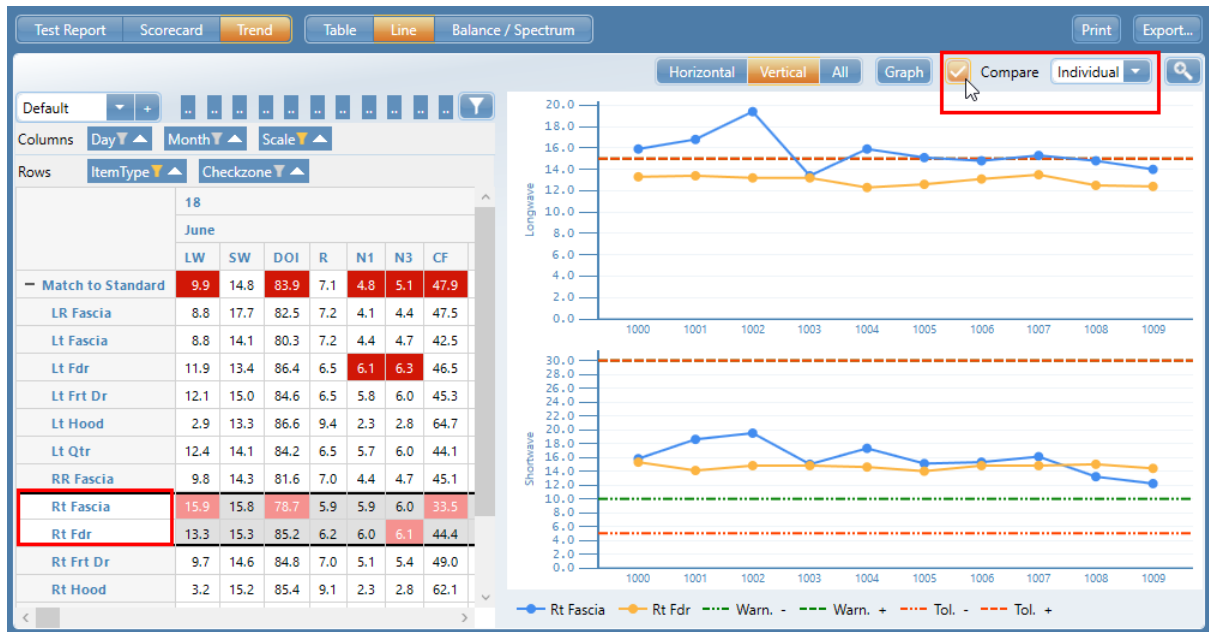
Drill-Down function

- The summarized data can be shown graphically in details by clicking on one or multiple rows, cells or columns
- The data on the x-axis can be selected by the drop down menu above the graph: Daily – Weekly – Monthly – Yearly – Individual – Check Zone
 - ➔ Selecting **Individual** displays **individual vehicles** whereas **Daily, Weekly, Monthly, Yearly** still displays the **average of all vehicles** measured during this time frame
- Buttons above the graphs allow to view the data as **Line** graph



Comparison of check zones

- To compare different check zones press the **CTRL** button and click on the desired rows. Then activate the option **Compare**
- The selected check zones are displayed as **different colored lines in Line graph**
- The data on the x-axis can be selected by the drop down menu above the graph: Daily – Weekly – Monthly – Yearly – Individual
 - ➔ Selecting **Individual** displays **individual vehicles** whereas **Daily, Weekly, Monthly, Yearly** still displays the **average of all vehicles** measured during this time frame
- Buttons above the graphs allow to view the data as **Line graph**



7. Data Sharing

There are two possibilities to share data between headquarter – plants - suppliers:

- Create an extract of the complete database e.g. once per week
- Always share the complete database

Create an extract (= mini database)

- Select the required time frame, click on **Reload** and mark all test series in the **List** with the mouse
- Click on **Data extract → DB** and type in a name for the extracted database e.g. calendar week Week09
- The mini database is saved in the regular *.sdf format
- Close smart-chart, open Windows Explorer and move to the appropriate folder
- Please create a zip archive of the *.sdf database file to make sure it can be sent safely by email (description see next page 32)

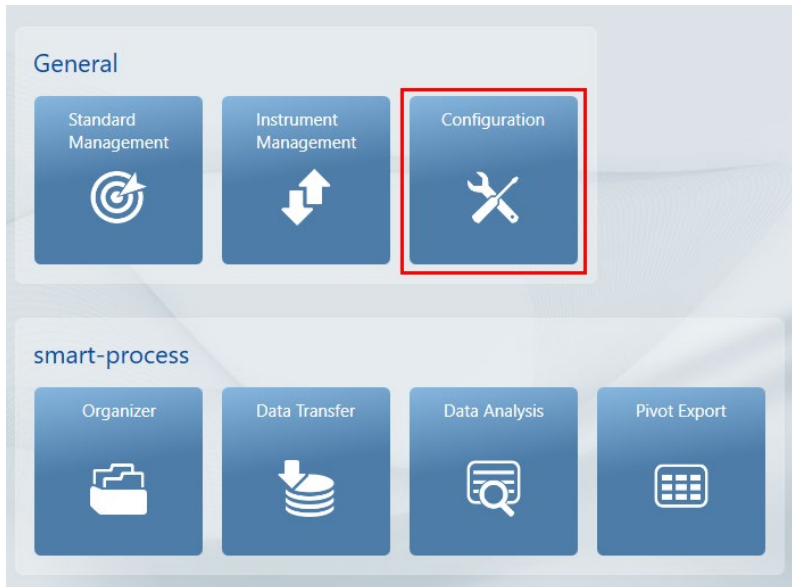
The screenshot displays the 'Data Analysis - Demo_Auto_All_dEDINmod_3' application window. The 'Status' dropdown is set to 'This Week'. The 'Data extract → DB' button is highlighted with a red box. Below the application window, a table lists data points:

Status	Date	Instrument	Standard	Name	Param1	Param3	Param4	Param5	Ill / Obs
●	18/06/2012 09:26:57	BYK-mac 23mm	PolarSilver	Model 2	Booth 1	Plant 2	1000	D65/10	
●	19/06/2012 09:29:38	BYK-mac 23mm	PolarSilver	Model 2	Booth 1	Plant 2	1001	D65/10	
●	20/06/2012 09:32:11	BYK-mac 23mm	PolarSilver	Model 2	Booth 1	Plant 2	1002	D65/10	
●	21/06/2012 09:35:32	BYK-mac 23mm	PolarSilver	Model 2	Booth 1	Plant 2	1003	D65/10	
●	22/06/2012 09:38:23	BYK-mac 23mm	PolarSilver	Model 2	Booth 1	Plant 2	1004	D65/10	
●	25/06/2012 09:41:20	BYK-mac 23mm	PolarSilver	Model 2	Booth 1	Plant 2	1005	D65/10	
●	26/06/2012 09:50:32	BYK-mac 23mm	PolarSilver	Model 2	Booth 1	Plant 2	1006	D65/10	
●	27/06/2012 09:53:42	BYK-mac 23mm	PolarSilver	Model 2	Booth 1	Plant 2	1007	D65/10	
●	28/06/2012 09:57:08	BYK-mac 23mm	PolarSilver	Model 2	Booth 1	Plant 2	1008	D65/10	

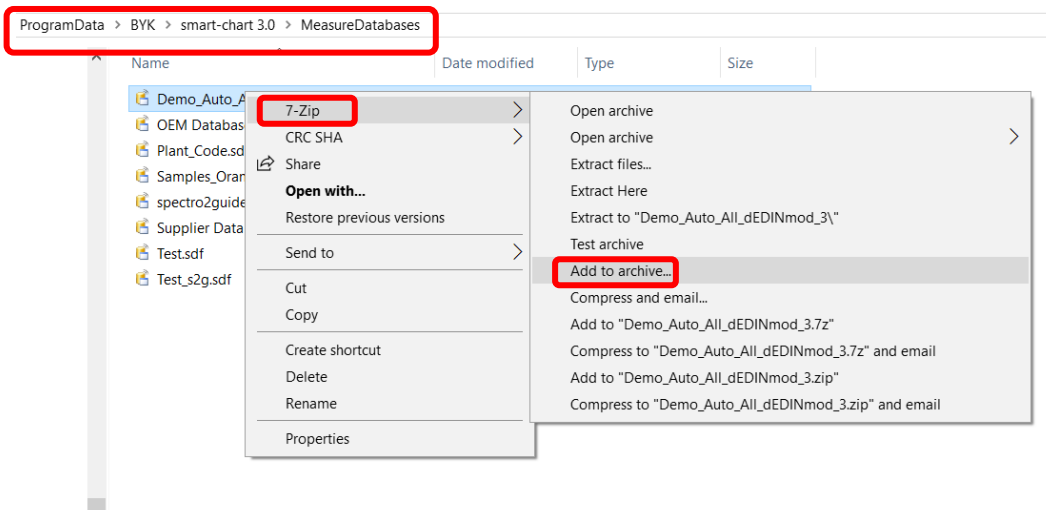
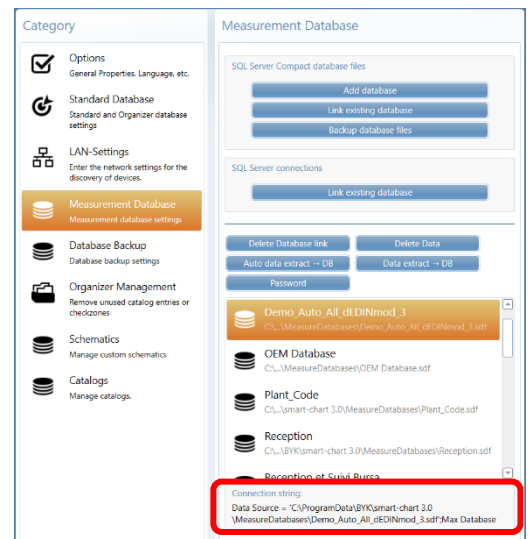
Simultaneously, a Windows Explorer window shows the 'Save As' dialog. The file name is 'Week09' and the 'Save as type' is 'Database (*.sdf)'. Both the 'Data extract → DB' button and the 'Save As' dialog are highlighted with red boxes.

Share complete database

- In order to find the folder where the database is stored click on **Configuration**



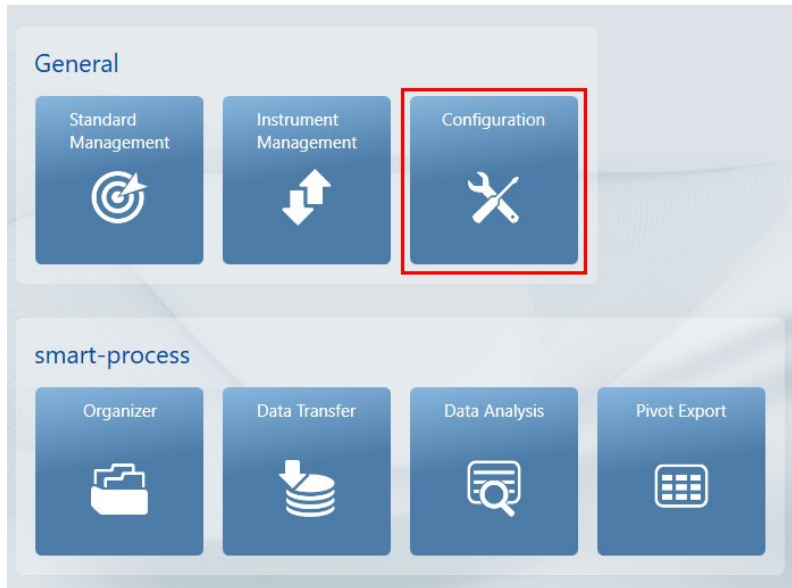
- Under **Category**, select **Measurement Database**
- All measurement databases are shown on the right side
- Select the one you want to share
- The folder where it is stored is displayed at the bottom as **Connection String - Data Source**
- Close smart-chart, open Windows Explorer and move to the appropriate folder
- Please create a zip archive of the *.sdf database file to make sure it can be sent safely by email



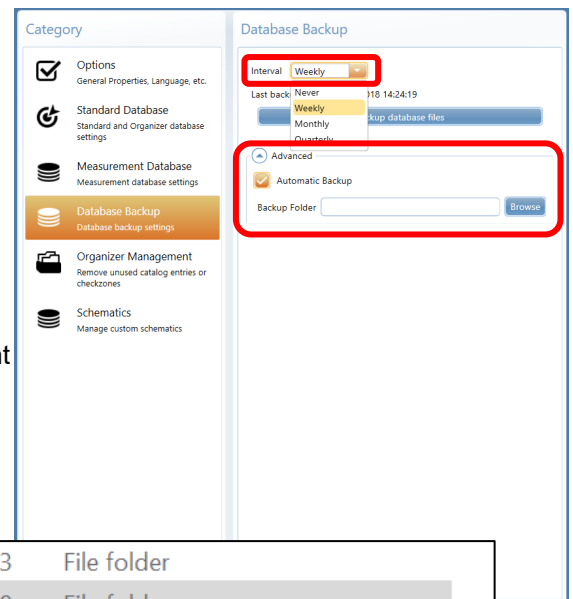
8. Data Backup

Backup of measurement data is very important to avoid any data loss. Running the back up at least **once a week** is recommended.

- In **Configuration**, an automatic backup procedure can be defined.



- Under **Category**, select **Database Backup**
- Select **Weekly** for the backup **Interval**
- Use the **Arrow down** in front of **Advanced** to activate **Automatic Backup** and **Browse** for the backup folder on your computer
- A **folder** with the name shown below is created
 - The name includes **date** and **time** of the backup
 - The Standard database as well as all linked measurement databases are saved
- The backup is automatically done when smart-chart is terminated



s2g_Seminar	13/08/2018 10:53	File folder
smartchart_backup_20180814_17.48.31	14/08/2018 17:48	File folder
smart-chart_projects	09/08/2018 13:54	File folder

- Please save the back-up files on an external hard disk or USB key

smart-chart Installation Guide

*System Requirements:

Computer: model Core 2 Duo, 2.2 GHz, i7, 2.5 GHz recommended, or equivalent

Operating system: Windows 7SP1, 8.1 or 10, 32 bits or 64 bits

Microsoft® .NET Framework 4.5.2

Excel® 2002 or later version for export

Memory: 4 GB RAM, 8 GB recommended

Free space on hard disk: 2 GB during installation

Monitor resolution: 1280 x 1024 pixel or higher

Free USB interface type 2.0 or under Windows 10 type 3.0 also possible

- **Administrator Rights**

During installation full administrator rights are necessary.

- **Software installation**

Download the zip-file, save it on your hard drive into a new folder and **extract** the complete archive. In the extracted folder, right mouse click on the file “install.exe” and select the option “Run as administrator”. Follow the setup instructions on the screen.

- **Installation of .net Framework 4.5.2**

smart-chart requires .net Framework 4.5.2. In case it is not installed on your PC, it will automatically be installed during the installation procedure. This might take some time. Some computers might ask for rebooting during the installation process. Please **do not reboot right away**, but finish the complete installation and reboot afterwards.

- **Default directory**

When using “Complete Installation” smart-chart is automatically installed in C:\Program Files (x86)\BYKWARE\smart-chart3.

- **Instrument driver installation**

During installation you are asked to connect the instrument with the computer. It is highly recommended to do so **exactly** at that time and not before.

In case the instrument driver is not installed automatically, please perform the following steps:

- Close smart-chart and disconnect the instrument
- In Windows Explorer open the folder C:\Program Files (x86)\BYKWARE\smart-chart3\Tools\USBDRIVER and run the file CDMXXXXX.exe as “Administrator”
- Connect the instrument and start smart-chart again

- **Note:** Subject to change without notice. Please confirm with the software supplier.

smart-chart License Activation

After download, the software can be used for 30 days free trial. Thereafter, the user needs to decide and register for the required software package. The standard delivery includes two licenses for the selected software package.

Instrument	Software Package
BYK-mac i	smart-lab Color or smart-process (incl. smart-inline)
wave-scan	smart-process
cloud-runner	smart-process
haze-gard i	smart-lab Haze
micro-gloss	smart-lab Gloss or smart-process Gloss

How to activate the license?

- Before activating the license, make sure to have a reliable internet connection
- Start smart-chart and click on "About/License" in the upper left corner of the screen
- The license window opens and shows the license agreement.
- Connect the instrument with the computer and click on the "License" tab
- Select the desired software by clicking on the appropriate "Validate License" button.
- In case a license is available, the button "Import Online License" appears. Click on this button, fill in the registration form and click on "Register"
- The activation of the license is shown in the upper "License Information" field.

How to transfer the license?

If smart-chart needs to be transferred to another computer, the license needs to be returned from the actual computer and activated on the new computer.

- Before returning the license, make sure to have a reliable internet connection
- Start smart-chart and click on "About/License" in the upper left corner of the screen
- The license window opens and shows the license agreement.
- Find the respective software license in the upper "License Information" field and click on the "Return License" button
- A confirmation is shown that the license was successfully returned

Note: In case your computer has no internet connection, please refer to the „Offline Licensing“ description in
C:\Program Files(x86)\BYKWARE\smart-chart3\Tools\OfflineLicense

225 025 668 E 2005