# eyeD Portal: Manual for Customers

NV Bekaert SA

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# 1    The eyeD® System

## 1.1    General

The eyeD system is a measurement system which allows measuring the homogeneity of steel fibres in steel fibre reinforced concrete during the unloading of the steel fibre concrete from a truck mixer.

It consists of the eyeD® device which is attached to the chute of a truck mixer, communication interfaces and the eyeD® web portal.



The automatic determination of the fibre type is possible, too. Furthermore, the eyeD® system allows identifying weak spots in the process or worn / non-suitable equipment due to instant and detailed monitoring.

*Note:    The eyeD® is intended to verify the homogeneity of steel fibre concrete while pouring is going on. This allows for taking corrective actions immediately if the defined tolerances are not met. It is not intended for generating measurements which are just being checked days or weeks after the actual pouring has happened.*

## 1.2    Interpretation of Results

With the eyeD® device the homogeneity of a complete truckload can be investigated. Results can be plotted with a resolution up to 10 litres. Moving averages of 100 litres and 1000 litres can also be chosen. In that way, peaks can be identified as peaks and trends can be identified as trends.

When interpreting the results, it's important to apply reasonable tolerances which are in line with the resolution of the measurements. Therefore not the same tolerances and/or sample sizes can be applied as it is done for wash-out tests. Using the same tolerance for comparing the 10 litre curve of the complete truck load to the tolerances applied for 3 random samples of 10 litres taken from the same volume means comparing apples to oranges.

To give an example: The DAfStb guideline suggests 3 x 10 litre samples, taken over the full truck load. The fibre content may deviate up to -20% for the individual sample and up to -15% for the average of the three samples. These tolerances are calibrated to the 3 samples which are considered. Chances of finding the maximum deviations when using the eyeD® are 100% - compared to close to "zero %" when using 3 x 10 litre samples on the truck load. Thus it is much more likely to find fibre dosages less than -20% with the eyeD® than it could be expected for the 3 x 10 litre samples. As a

consequence, either the tolerance on the individual sample needs to be wider or the sample size needs to be increased.

From the field tests which have been done so far it can be concluded that the 100 litre and the 1000 litre curves are much more appropriate to judge on the homogeneity of the concrete.

## 1.3 Recommended Procedure and Tolerances

Below some procedures and recommendations for tolerances are given.

1. Initial Verification of Process and Equipment
   o Before the eyeD® device is used in a project, initial tests should be done. Suitability of both processes and equipment should be verified.
2. Definition of tolerances
   o The tolerances should be defined in accordance with the design approach, the actual application and with the measurement resolution which shall be applied.
3. Evaluation of homogeneity
   o In the first place, the overall homogeneity should be judged ("trend").
   o A zigzag pattern is normal and is partially attributed to the measurement principle.
   o Single peaks should not be seen overrated
   o The 100 litre moving average and the 1000 litre moving average should be preferred over the 10 litre curve.
   o The 10 litre curve is just required for special purposes and may lead to overcautious conclusions.
4. A reasonable proposal could be
   o 100 litre moving average:        -20 %
   o 1000 litre moving average:       -15 %

However, these may need to be adjusted in dependency of the design approach and the actual application.

## 2   eyeD® portal

Please use this URL to access the eyeD® portal:

http://eyeD®.dramix.com

# 3   Log-on

You can log-on to the eyeD® portal using either your Customer ID or your e-mail address together with the "Website password" which was provided to you:

- Customer ID:               6 digit number, provided to you by Bekaert
- E-mail:                     your e-mail address, used for registration

- Website Password:     password for the eyeD® portal, provided to you by Bekaert

You can already choose a language for the user interface or change your choice later on if you wish.
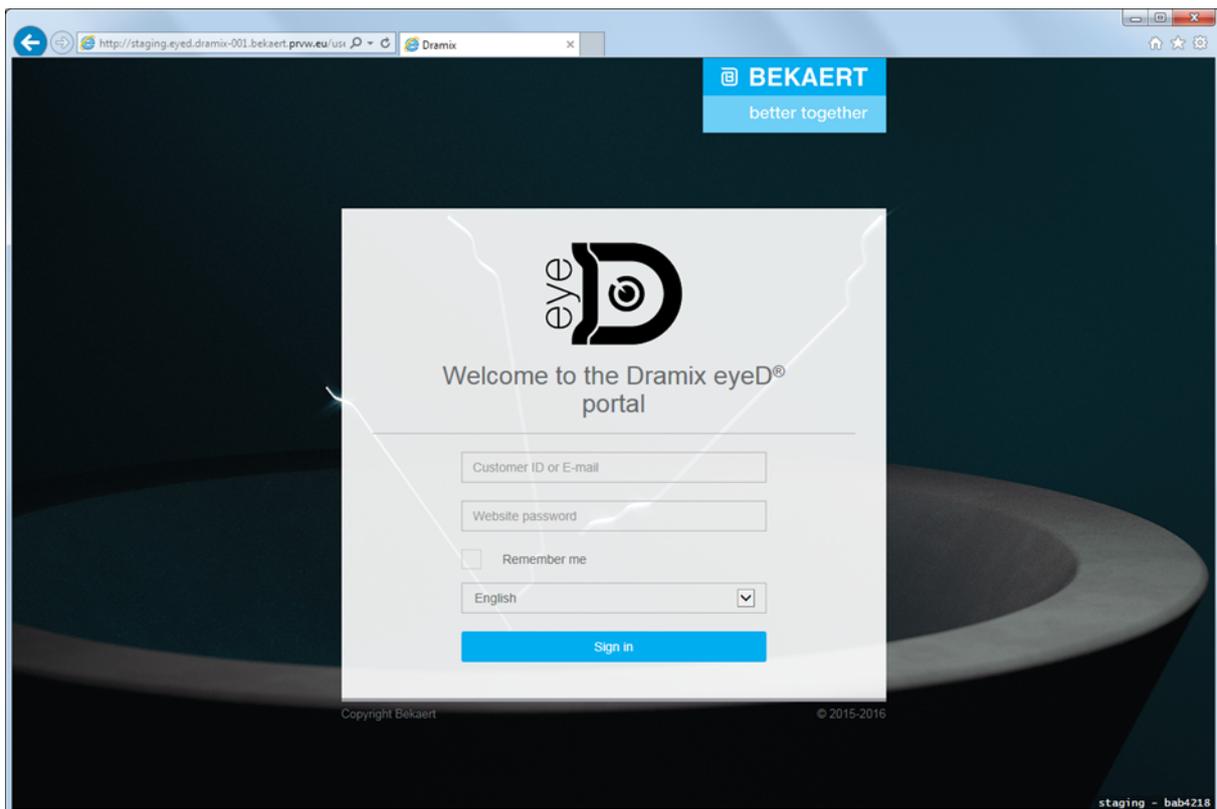


**Figure 1: log-on screen**

*Note:    You also have been provided with an "eyeD® device PIN". With this PIN your operators can log-on to the eyeD® device on a construction site. It cannot be used to log-on to the eyeD® portal.*

# 4    Navigation Bar

The eyeD® portal offers you two navigation bars.

## 4.1    Left Navigation Bar

The navigation bar at the left side of the screen allows you to navigate through the eyeD® portal.

| | | |
|---|---|---|
| Sign out | Sign out | Sign out and leave the eyeD® portal |
| Dashboard | Dashboard | Show latest measurements and eyeD® device status |
| Company settings | Company settings | Show and change settings related to your account |
| Measurements | Measurements | Show all measurements |
| eyeD-devices | eyeD®-devices | Show all eyeD® devices |
| Graph & Print settings | Graph & Print settings | Define default values for visualisation & printing |
| Projects | Projects | Define measurement projects which operators can select while measuring |
| English | Language | Select the language of your choice |

**Figure 2: Navigation Bar**

## 4.2    Lower Navigation Bar

The navigation bar at the lower side of the screen allows you to navigate to the documentation.
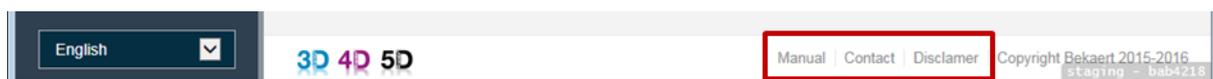
**Figure 3: Lower Navigation Bar**

Please follow the links to access

- Manual
- Contact Information
- Disclaimer

# 5 Dashboard

After log-on, the Dashboard will be shown. It shows your latest measurements as well as a status overview of the eyeD® device(s) you have in use.



**Figure 4: Dashboard**

Via the orange button "Add project" you can add a new project (section 9).

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# 6   Company Settings

Here you can see and change settings related to your account:

## 6.1   Operator Settings

Here you can put in the names of your operators (separated by a comma) who will be using the eyeD® device on a construction site. Operators can select one of these names from a drop-down menu while making measurements and while being connected to the eyeD® device (section 8).
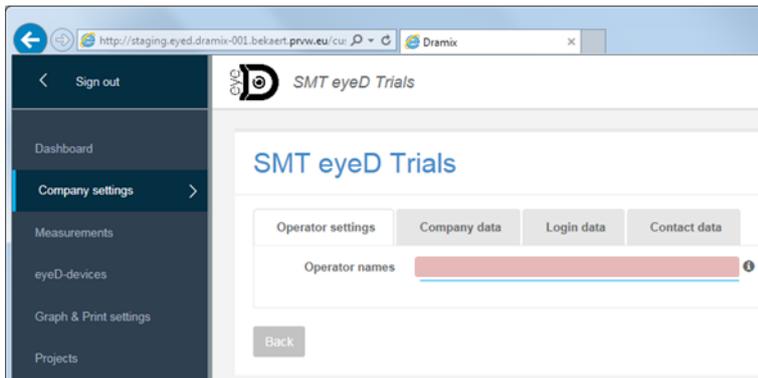


**Figure 5: Company settings / Operator settings**

## 6.2   Company Data

This screen will show you the name and address under which your company is registered on the eyeD® portal. The same data will also appear on the measurement reports.
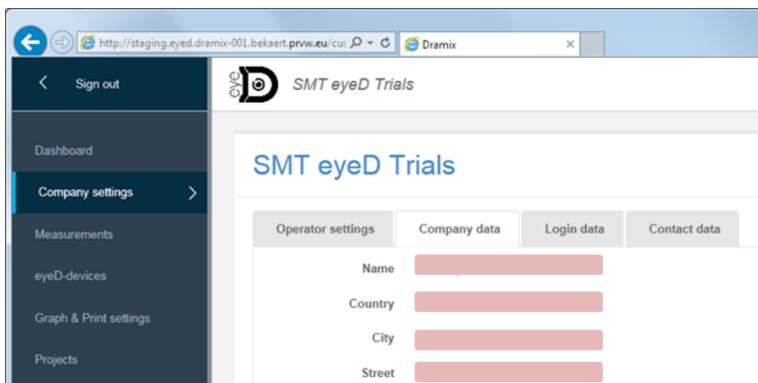


**Figure 6: Company settings / Company Data**

## 6.3   Login Data

Here you can find your credentials which are needed to logon to the eyeD® portal and to the eyeD® device. You can change the password for the eyeD® portal ("Website password") as well as the password for the eyeD® device.

When changing the website password, please make sure to remember it at the next log-on.
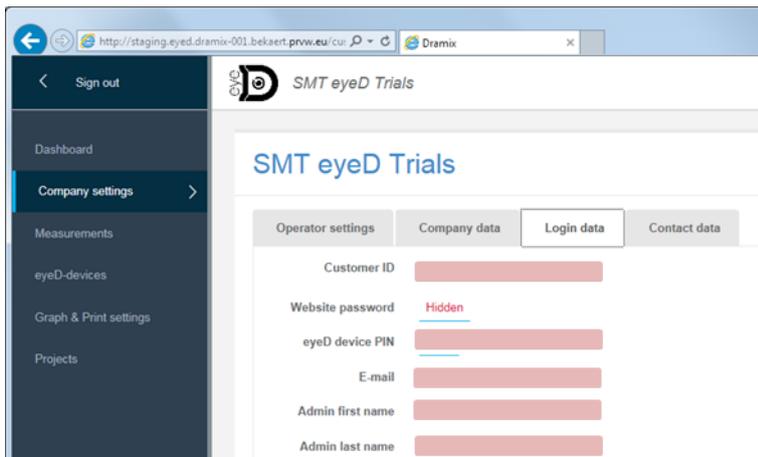
**Figure 7: Company settings / Login data**

Customer ID                  used to log-on to the eyeD® portal, together with the Website password
                             used to log-on to the eyeD® device, together with the eyeD® device PIN

Website Password             used to log-on to the eyeD® portal, together with the Customer ID or the
                             customer E-mail

eyeD® device PIN             used to log-on to the eyeD® device, together with the Customer ID

E-Mail                       used to log-on to the eyeD® portal, together with the Website password
                             (as an alternative to using the Customer ID)

## 6.4  Contact data

Here you find the e-mail address of your personal contact at Bekaert.
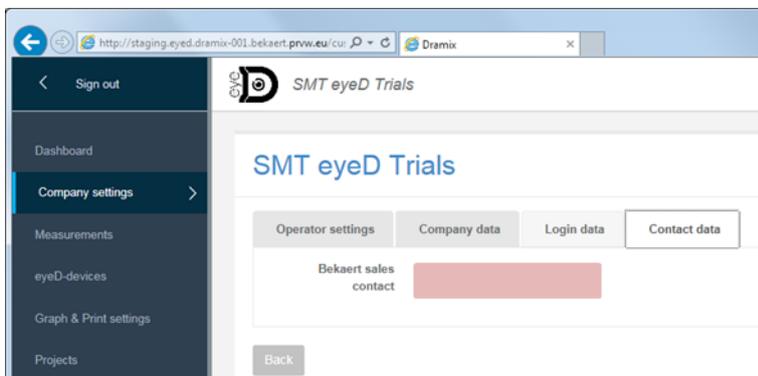


**Figure 8: Company settings / Contact Data**

# 7 Measurements

This screen shows an overview of all your measurements results.



## 7.1 Icons

A number of icons is used to indicate the status of the individual measurement:

-  measurement data is OK: data can be shown
-  measurement data is not OK: data cannot be shown
-  all mandatory input data has been provided
-  some mandatory input data has not yet been provided:
  data can be shown but results can only be shown and printed when the missing mandatory data has been added. Mandatory data is indicated by an asterisk (*).

The different icons can be combined.

A measurement can be printed if these two icons appear together:  

## 7.2 Results Filter

You can apply a number of filters to limit the projects which are shown or to search for a certain project.



"Remove" will reset the filter and all your measurements are shown.

## 7.3    Incomplete Data Sets

You can easily list all measurements with incomplete data sets by clicking the orange button.

Incomplete data sets

Please complete all missing data.

Some fields are mandatory. Results can only be shown if these fields are filled properly.

## 7.4    Measurement Identifier

The "Measurement identifier" is a unique number which is automatically assigned to each measurement.
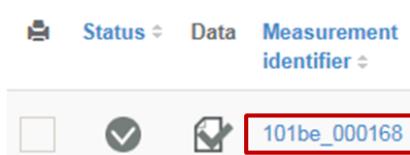


**Figure 9: Measurement identifier**

The "Measurement identifier" is also shown to the operators on the user interface of the eyeD® device (while being connected to the eyeD® device during a measurement).

Please refer to the respective manual for the eyeD® user interface.

## 7.5    Printing Multiple Measurements

You can print multiple measurements by checking the little box ☑ in front of the measurement identifiers (section 6.4) and clicking the orange button  Save PDF  at the bottom of the screen.
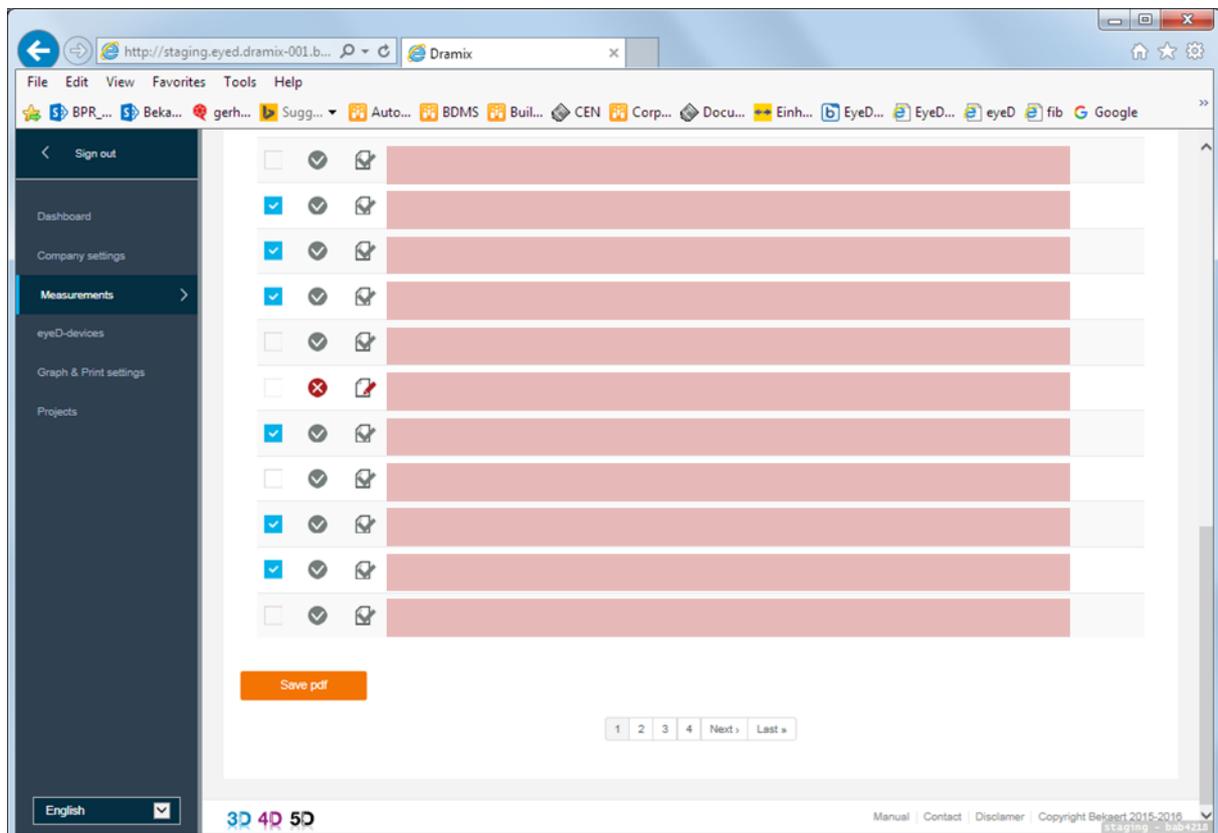


**Figure 10: Printing Multiple Measurements**

*Note:    Your Graph & Print Settings will be applied but only the relative graph will be printed.*

## 7.6 Detailed Results

Click the "Measurement identifier" (section 6.4) to see the detailed results of a measurement.

You can complete missing data or change data which was previously put in by an operator or yourself.

Clicking the orange button will create a PDF document with the measurement results.

Save PDF

As long as the anonymizing process hasn't been triggered, you can generate another print of the report on the eyeD® portal. However, the PDF file will not be stored on the eyeD® portal. After the anonymizing process you will not be able to access your measurements on the eyeD® portal.

Thus we strongly advise to download the PDF file and to store it properly on your own IT system.

*Note: After anonymization you cannot access your measurements anymore. You will find details regarding the anonymizing process in section 7.1.*



**Figure 11: detailed results / first part**
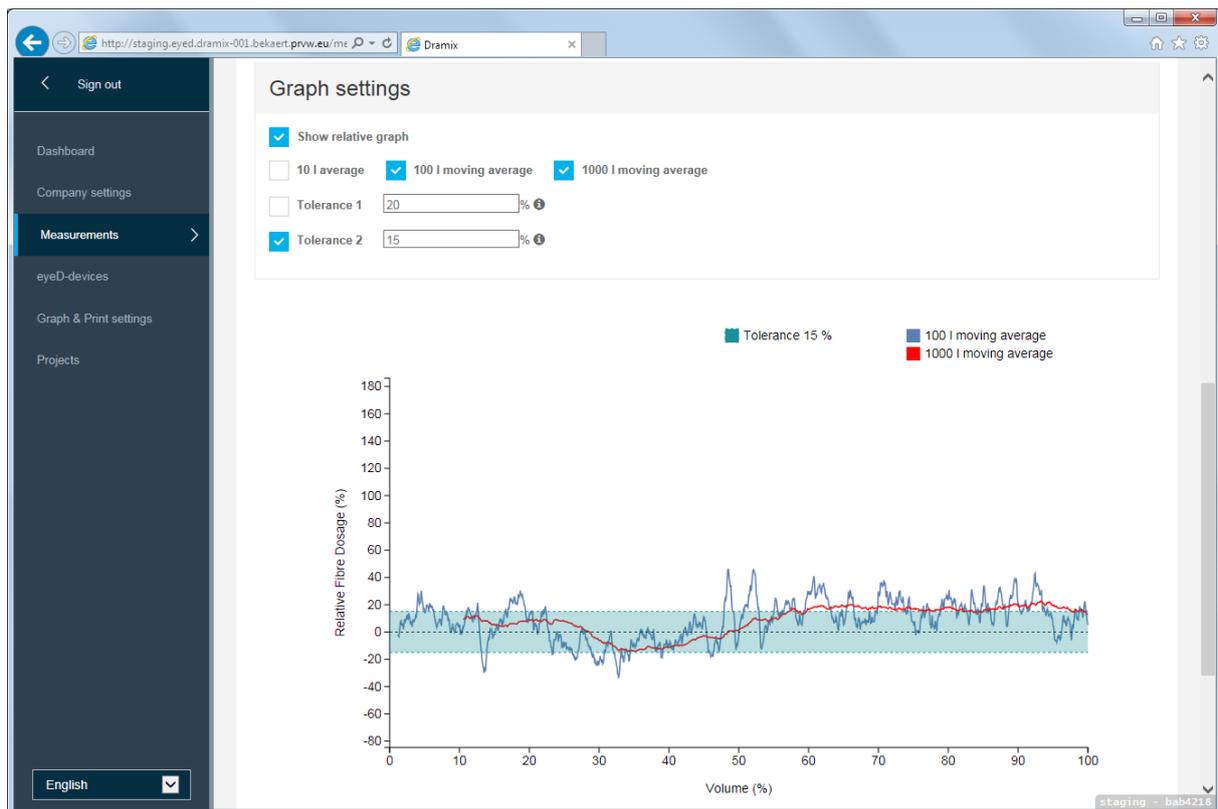
**Figure 12: detailed results / second part**

### 7.6.1    Project Data

This data is not mandatory. The data can be modified on the eyeD® portal.

The project data can already be selected by the operator (while being connected to the eyeD® device during a measurement) or can be put in or modified later on the eyeD® portal. Project data can be predefined (section 9) so that the operators can easily select the appropriate data from a drop-down menu (while being connected to the eyeD® device in site).

### 7.6.2    eyeD® / operator data

#### 7.6.2.1    *Truck empty*

This data is mandatory. The data can be modified on the eyeD® portal.

The concept of the eyeD® device requires that the complete truck load is measured. This confirmation needs to be made by the operator (while being connected to the eyeD® device during a measurement) or later on through this page on the eyeD® portal.

If the truck wasn't unloaded completely, the measurement is likely to be falsified. Therefore it is regarded as void.

#### 7.6.2.2    *Balling Detected*

Balling is a term which is used for entangled fibres forming balls. This can be due to different reasons (e.g. insufficient concrete mix, insufficient way of mixing the fibres) but normally balling doesn't occur. If, however, balling is detected during a measurement, this should be indicated by selecting "yes" in the appropriate field.

The eyeD® portal will not block the printing of a report and will show the measurement results. However, balling may falsify the measurement results. Therefore it is advised to judge on the potential effect on the accuracy of the results. Few small balls will not have an impact on the results while a large number of medium to large balls could affect the accuracy of the measurements.

### 7.6.2.3    Remarks

Here you or the operator (while being connected to the eyeD® device during a measurement) can put own remarks and observations. These remarks will be printed on the report.

### 7.6.2.4    Delivery Note

The identifier of the delivery note which is corresponding to the measurement should be put here. In this way a link is made between the actual delivery and the measurement.

It is advisable to note the Measurement Identifier on the delivery note, too. The Measurement identifier is shown to the operator (while being connected to the eyeD® device during a measurement).

## 7.6.3    Fibre and concrete data

### 7.6.3.1    Fibre selected

This data is mandatory. The data can be modified on the eyeD® portal.

The fibre type which has been used can be selected by the operator (while being connected to the eyeD® device during a measurement) or later on through this page on the eyeD® portal.

If a fibre type could be identified during the measurement, the fibre name will also be shown.

In case the two names shouldn't match, immediate action is required and corrective actions might have to be taken.

### 7.6.3.2    Target dosage

This data is mandatory. The data can be modified on the eyeD® portal.

The target dosage is the fibre dosage at which the fibres were added to the concrete.

The eyeD® device does not determine the absolute fibre dosage but determines the relative deviation from the target dosage instead. Together with the Concrete volume (section 6.5.3.3), the value of the target dosage is used to convert the measured relative fibre distribution (average ±%) to an absolute dosage (kg/m³).

The target dosage can be assured by using automatic dosing systems. Alternatively, it can be verified by counting the number of empty bags after fibre addition.

If the target dosage is uncertain, only the relative graphs (default setting) should be used in the reporting.

*Note:    Despite "target dosage" is mandatory data, "absolute values" should only be printed if the target dosage was verified (e.g. by counting bags or by using automatic dosing equipment).*

### 7.6.3.3    Concrete volume

This data is mandatory. The data can be modified on the eyeD® portal.

The concrete volume is the total volume of the complete truck load which is measured.

The eyeD® device does not determine the absolute concrete volume but measures a relative value flow instead. Together with the Target dosage (section 6.5.3.2), the value of the Concrete volume is used to convert the measured relative fibre distribution (0% - 100%) to an absolute dosage (kg/m³).

*Note:    the complete truck load has to be measured (section 6.5.2.1). Otherwise the measurement results may be incorrect and are blocked for that reason.*

### 7.6.3.4    Air temperature

This data is only shown on the printout.

The "Air temperature" is the air temperature inside the eyeD® device during the measurement.

It allows for a good indication of the ambient temperature on site, providing the eyeD® device had sufficient time to accommodate the temperature.

### 7.6.4    Graph settings

#### 7.6.4.1    Show relative graph

This is the default setting, showing the measured relative fibre distribution (y-axis: average ±%) over the measured relative concrete volume (x-axis: 0% - 100%)

If the box is unchecked, the input data for target dosage and concrete volume are used to convert the measured results to a calculated dosage rate (kg/m³) per volume (m³).

*Note:    Despite "target dosage" is mandatory data, "absolute values" should only be printed if the target dosage was verified (e.g. by counting bags or by using automatic dosing equipment).*

#### 7.6.4.2    Averages

Depending on the requirements, one to three averages can be shown in the graph:
- 10 l average
- 100l moving average
- 1000l moving average

Please refer to the section Graph & Print settings for further information.

#### 7.6.4.3    Tolerances

Up to two tolerance levels can be defined and are shown in the graph.

These levels have to be chosen in accordance with the normative requirements and/or the relevant specifications for the actual project.

Typical values are:
- ±20% for tolerance 1, referring to the 100l moving average
- ±15% for tolerance 2, referring to the 1000l moving average

# 8   eyeD® devices

Here you can see detailed information regarding your lease time and your eyeD® device(s) in use.
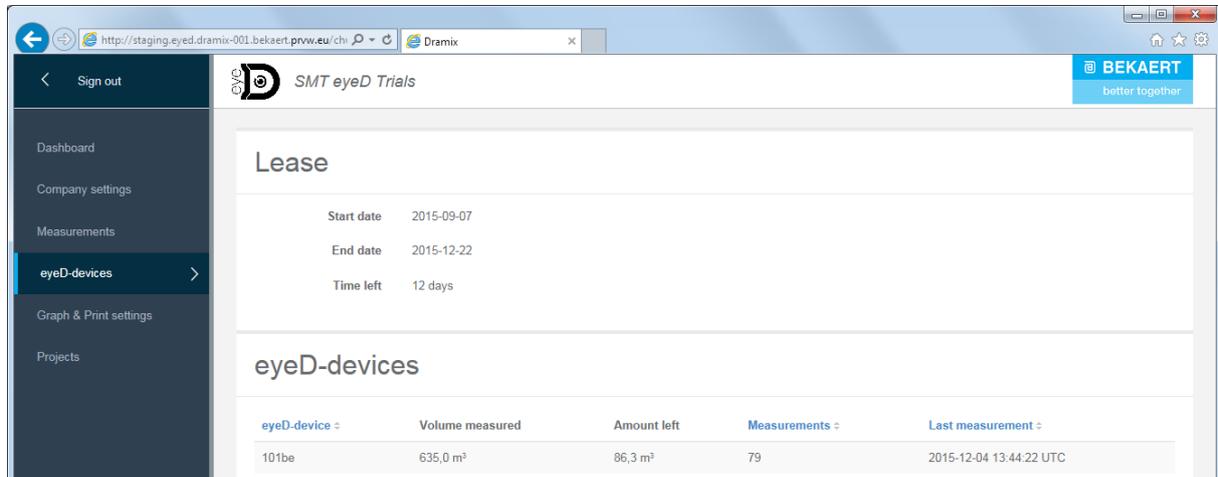


**Figure 13: eyeD®-devices**

## 8.1   Lease

A certain lease time is granted to you. This is corresponding to the time within which you can use the eyeD® device(s).

*Note:   The "End date" of the lease time is also used to calculate the Anonymization trigger which is used to irreversibly anonymize all measurement results (section 10.2).*

*Note:   Please make sure to download and archive your data on time.*

The lease time can be changed on your request or in accordance to what is contractually defined.

## 8.2   eyeD®-devices

The volume counter of the eyeD® device needs to be reset after a certain concrete volume has been measured. This is normally done automatically when using Dramix® steel fibres.

The remaining concrete volume which can be measured is shown under "Amount left".

In case the reset was missed or Dramix® couldn't be identified within a certain interval, operators can still see the measurement data (while being connected to the eyeD® device on site) and can react as needed. Your data will still be processed and sent to the eyeD® portal. However, you might not be able to see and access the measurement data unless it has been unlocked by a Bekaert administrator.

*Note:   Please take contact with Bekaert (section 5.4) in case you are missing measurement results.*

## 9    Graph & Print settings

This page allows you to define standard settings for graphs and printing. All settings which you make here are the initial settings whenever you open a measurement result (section 6).

- 10l average
- 100l moving average          average value, calculated for over the previous 100l
- 1000l moving average         average value, calculated for over the previous 1000l
- Tolerance 1                  shows or hides the limits defined for Tolerance level 1
- Tolerance level 1            sets the graphical limit for Tolerance 1
- Tolerance 2                  shows or hides the limits defined for Tolerance level 2
- Tolerance level 2            sets the graphical limit for Tolerance 2

Please refer to applicable standards or the project specification for suitable Tolerance levels.
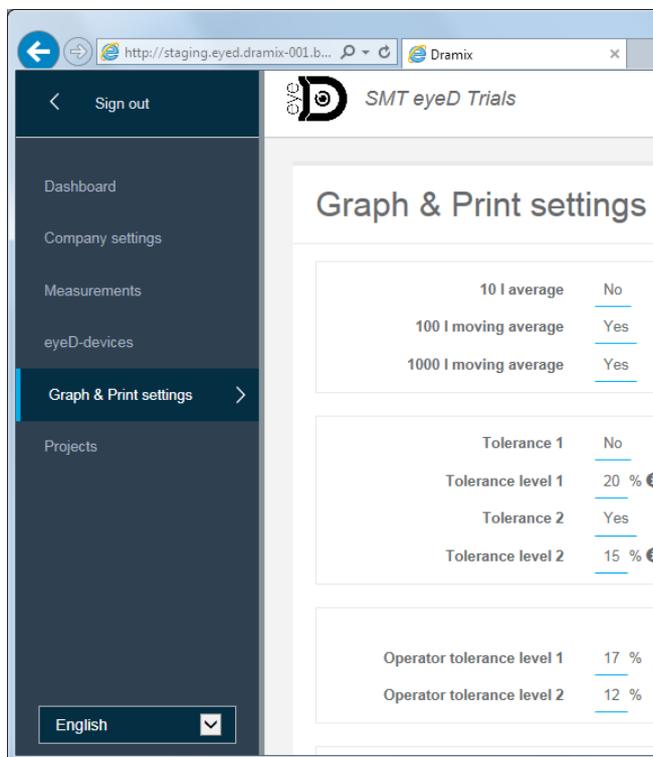


**Figure 14: Graph & Print settings**

In addition, tolerance levels can be defined for the operators. These tolerance levels are shown to the operators (while being connected to the eyeD® device on site), allowing them to initiate corrective actions independently from the tolerance levels defined for the graphs and printouts shown on the eyeD® portal.

- Operator tolerance level 1
- Operator tolerance level 2

In Figure 12 above you can see different tolerance levels for the operators and the graphs (20% vs. 17% and and 15% vs. 10% respectively).

## 10 Projects

Here you can define Projects and Sectors. The number of measurements per project is shown, too.

All entries made here will are shown to the operators (while being connected to the eyeD® device on site), allowing them to quickly select the appropriate data from a dropdown menu.

*Note:    Operators are also able to make own input for Projects and Sectors (while being connected to the eyeD® device on site). But experience has shown that it is faster, more reliable and more convenient to define the required data on beforehand.*

*Note:    All input which is made under Projects can always be edited later on.*



**Figure 15: Projects**

In Figure 13 an exemplary overview of several Projects is given. These Projects have already been defined previously. The number of Sectors and the total number of Measurements are listed for each project, as well as date and time of the last measurement.

Please note that the time and date are in UTC format so that you might need to convert it.

### 10.1  New project
A new screen will appear (Figure 14) where you can define the name of this Project.

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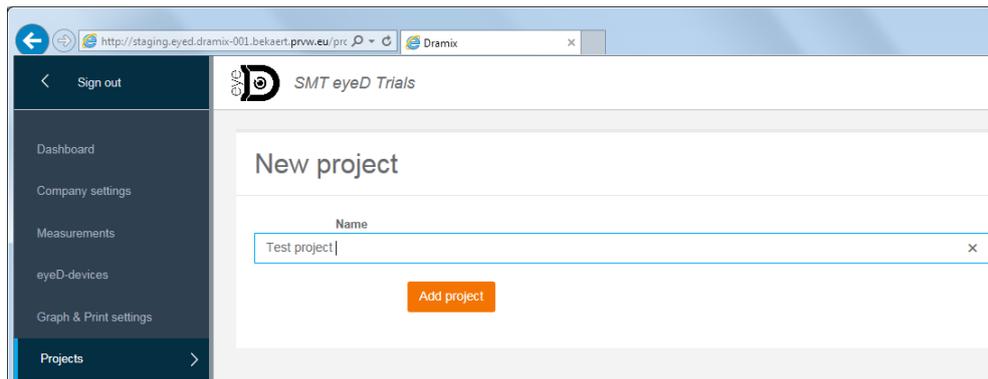
**Figure 16: adding a new project**

When clicking the orange button, the project is saved and a new screen opens for the definition of the corresponding sectors (see Add Sector).



In the above example, the new project "Test project" is created.

## 10.2  Add Sector

Sectors are used to distinguish different parts or building within the same project. Examples might be:

- slabs in the same building which are built with different fibre types or dosages
- different slabs in different buildings which are built with the same or even other fibre types or fibre dosages.
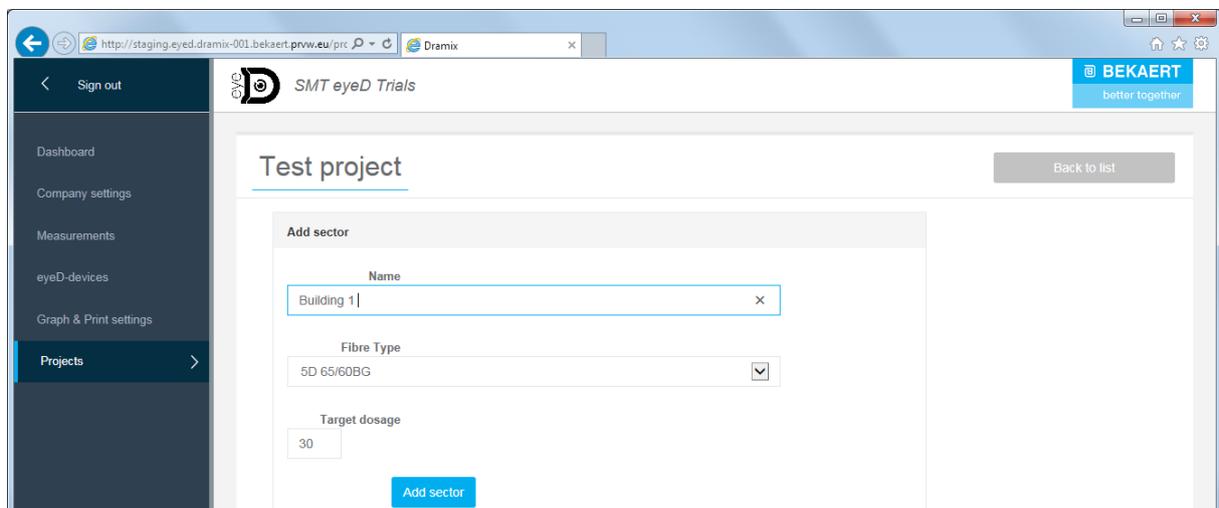


**Figure 17: adding a sector to a project**

Each sector requires the definition of the fibre type and the target dosage.

Figure 16 shows the two sectors "Building 1" and "Building 2" which have been added to the project "Test project".

**Figure 18: new project with two new sectors**

When clicking the grey button, you will return to the list of projects which will now contain the newly added project "Test project".



The 2 sectors which were added in this example are also indicated now (Figure 17). As it is a newly added project, there is no information on the number of measurements and the date and time of the last measurement yet.
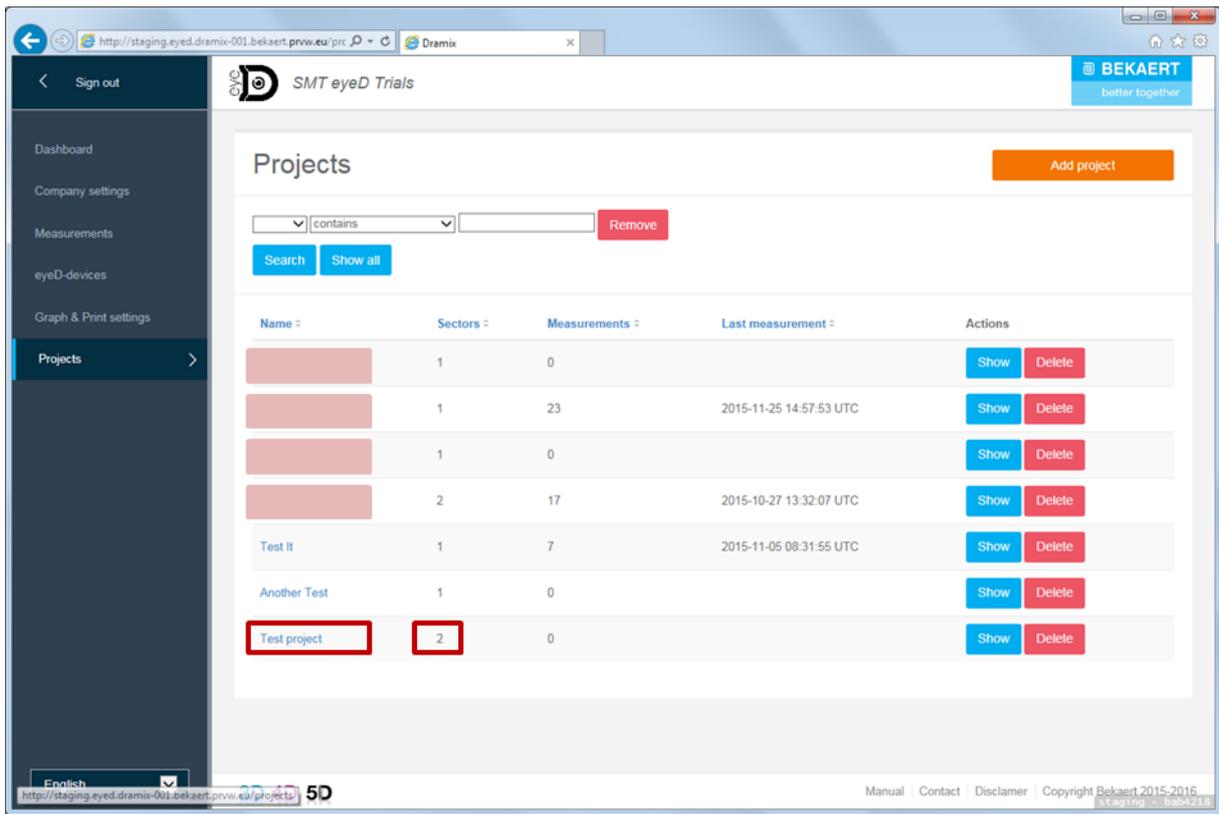
**Figure 19: project overview including the newly added project with two sectors**

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# 11 Important Remarks

## 11.1 User Input

The eyeD® device is designed to measure the relative distribution of Dramix® steel fibres in fresh concrete during the unloading a truck mixer.

The full truck load has to be measured in order to get valid measurement data. This data is so called *relative data*. It can be converted to *absolute data* by using the steel fibres target dosage in kg/m³ and the concrete volume in m³ which was supplied.

It is your responsibility to put in correct data. This does also refer to any other input you or your operators make.

If you are not sure about the correctness of the steel fibre target dosage or the concrete volume or if you don't have it available, please select relative data instead of absolute data when printing your reports. (Relative data is the default setting when viewing project data.)

## 11.2 Automatic assignment of measurements

Your measurements are automatically assigned to your account when an operator has logged on to the eyeD® device prior or during measuring.

In case measurements are made without a customer having logged on, the data cannot be assigned to your account. Nevertheless, the data will be processed and will be sent to the eyeD® portal. However, In order to assign it to your account, you need to contact Bekaert (section 5.4) and you need to know the Measurement identifier (section 6.4).

*Note: It is strongly recommended that your operators always log on to the eyeD® device before making the first measurements. Please refer to the respective manual for the eyeD® user interface.*

## 11.3 Anonymizing of Data

### 11.3.1 Anonymization trigger

A specific date is assigned to each measurement at the time of measuring. It is the lease end date which is assigned to your account at the day of measuring plus 90 days. This date is called Anonymization trigger.

*Note: Anonymization trigger = lease end date + 90 days [date]*
After that date your measurement data will be anonymized in an automated process.

If your lease end date is extended, this new lease end date will only affect measurements made after the change. All previously measured data will keep their assigned anonymization trigger. Only triggers for new measurements will be calculated from this new lease end date.

*Note: It is your responsibility to download and archive your measurement results from the eyeD® portal on time.*

#### 11.3.1.1 Actual date < Anonymization trigger

When the actual date is less than the Anonymization trigger for a specific measurement, you can access and print your measurement results as many times as you want.

During that period, Bekaert can only see and print measurements results and general input (such as fibre type or fibre target dosage) but no project specific input (such as project name or sector). The only information which is visible to Bekaert and which allow Bekaert to link to a specific measurement to a certain project is the Measurement identifier (section 6.4). However, this requires that you give us project details related to a specific Measurement identifier.

In this way we want to ensure both your privacy and the possibility to provide technical support for a certain measurement.

### 11.3.1.2 Actual date ≥ Anonymization trigger.

After the defined period all your measurement data including the measurement identifier is irreversibly anonymized. This means that neither you nor Bekaert can identify the measurement any more. All data which would allow relating a measurement to a certain eyeD® device, project or customer will be overwritten by random data.

However, Bekaert will still have the possibility to use the data for research and other technical purposes in irreversibly anonymized form.

### 11.3.1.3 Exceptions

Only in a very specific case, Bekaert is able to see customer and project related information such as the customer name or project name. This situation can only occur when

- your operators are logged on to an eyeD® device
- measurements are being made
- the volume counter has no "Amount left" (section 7.2)

Your operators are still able to see relative measurement results on site (while being connected to the eyeD® device) and your data will still be arriving at the eyeD® portal. However, you will not be able to access this data on the eyeD® portal because the "Amount left" has reached the critical value. If you are expecting measurement data but you can't find it on the eyeD® portal, please contact Bekaert (section 5.4). We will then be able to assign the measurement data to your account so that you have access to it.

*Note:    Normally this case shouldn't occur and the volume counter is automatically reset while Dramix® steel fibres are being detected.*

In case your operators are not logged in to an eyeD® device in the above scenario, Bekaert will only see the Measurement identifier on the eyeD® portal. Therefore these measurements can only be assigned to your account if you know the Measurement identifier(s).

*Note:    Operators should always be logged on to the eyeD® device when measuring.*