USER AND INSTALLATION MANUAL

PC-DMIS – RESULT CONVERTER
VERSION 4.XXXX.YYY

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16.05.2013
Preface

During one of my many customer visits, I was amazed to see that one PC-DMIS™ user printed out his measurement results in the form of a report, only to enter the values again via the keyboard into predefined inspection reports based on Microsoft® Excel. For several hours a day, the customer was occupied with this time-consuming and exceedingly monotonous activity – which, incidentally, is also extremely prone to errors. Still hoping that this PC-DMIS™ user was simply an exception, I discussed this situation with several other customers. As a result of this survey, I felt obliged to develop the product PC-DMIS – Result Converter.

I would like to thank all the people who helped me in the development of this product by offering their advice and by explaining their special requirements to me. I would also like to thank my family who, with much understanding and patience, gave me the time to create this product.

Herborn, 28/12/2005

Frank Herr

Note: In spite of all our efforts, we cannot guarantee that the documentation is completely free of errors. We welcome any constructive comments and suggestions.
1. General information

1.1. Software objectives

This software was developed in order to provide an automated interface to Microsoft® Excel (Version 2003-2007) or ASCII files for measuring results obtained using PC-DMIS™ software, Version 2009 or higher.

The converter allows the data of the measurement program to be transferred either manually (OFFLINE) or automatically (ONLINE).

1.2. Software requirements

The software was developed for the Windows 7 operating system. The software was not tested using other operating systems.

Prerequisite for meaningful use of the software is the installation of PC-DMIS™, Version 2009 or higher, on the same computer.

1.3. License agreement, warranty and support

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SOFTWARE MAINTENANCE POLICY
Hexagon Metrology GmbH or its authorized partners agree to provide a software maintenance agreement (SMA) including technical hotline support free of charge for a period of one year. Upon expiration of this period upgrades will be offered at a discount of 14% off the actual list price.

NOTIFICATIONS
All notifications to Hexagon Metrology GmbH in connection with this agreement shall be addressed to:

Hexagon Metrology GmbH
Sieg mund-Hiepe-Straße 2-12  
35578 Wetzlar, Germany

or any other address agreed in writing.

**GOVERNING LAW**  
This license shall be governed and construed in accordance with the substantive law of Germany. The court of Wetzlar (Germany) shall have jurisdiction.
1.4. License structure

Hexagon Metrology GmbH provides the following license structure:

<table>
<thead>
<tr>
<th>Type of license</th>
<th>Description</th>
<th>License Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demo license</td>
<td>License to try the software. This license is a free one-off offer</td>
<td>maximum of 3 months</td>
</tr>
<tr>
<td>Single-user license</td>
<td>License for one PC (workstation). Not transferable to another PC.</td>
<td>unlimited</td>
</tr>
<tr>
<td>Factory license</td>
<td>License for ten (10) PCs in a separate plant or one business division within the plant.</td>
<td>unlimited</td>
</tr>
</tbody>
</table>

1.5. Pricing

Please ask your PC-DMIS™ software supplier for the latest applicable prices.
2. Installation instructions

2.1. Scope of delivery
Software for downloading is provided on the ftp server of Hexagon Metrology GmbH.


The documentation is also available on this server in the form of a Microsoft® Word document or in pdf format.

The software license must be ordered separately from the customer order using the license request which forms an integral part of the software.

The customer will receive the license agreement in writing only on request.

2.2. Installation
Before you start the installation, please make sure that you have the latest software version (even CDs just delivered may contain older software versions because they are products in stock). Then start the file PCDERKON_Setup.exe. Choose the language you would like to use for the installation. This setting is independent of the language in which the software will run later.
After confirmation with the **OK** button the following welcome screen will appear:

Before confirming this view with the **Next >** button, please check that all Windows application programs are closed.

If not, alternatively you can also take the following measures:

a) Stop all Windows applications and then click on the **Next >** button.

b) Stop the setup routine by confirming with <**Cancel**>. Repeat the setup routine at a later point in time.

After confirmation of the **Next >** button the dialog with the license agreement will appear.

The license agreement is displayed in English and in German. Please read the agreement. If you do not comply with this agreement, abort the software installation at this point by clicking the **Cancel** button. Contact your software supplier. All agreements that differ from this must be defined in writing and must be signed by both parties. Accept
the license agreement by confirming the option “I accept the license agreement”. Now you can continue the installation with the Next > button.

You can select which files will be taken into consideration during the installation in this dialog. The installation of all files is recommended. However, if the software had already been installed earlier, it is not absolutely necessary to install the character font for symbols or the sample files. After your selection, you can continue with the Next > button.
Please select the desired directory for the software installation here. Now all the settings required for the installation are complete. The installation can be started with the **Install** button.

A progress bar indicates the progress of the installation.

Upon termination of the complete installation you can close it with the **Finish** button.

**Note:** The installation routine creates a link on the desktop of your computer as well as a folder in the program group of your computer.
After starting the software, the license status is checked. If no license is found, a dialog opens automatically to assist you in creating a LicenseRequestForErgebnisKonverter.dat license request file.

Send this file to the following email address:

software.de@hexagonmetrology.com

You will receive a license file at the transmitting email address. This may take several days because the process is not fully automated.

The license file is usually transmitted as a WinZip archive. If this is a problem for you, please note this in the email with your license request.

Upon receipt of the license file, it must be unpacked into the directory where the converter is installed.
2.3. **De-installation of software**

Generally, a software update or upgrade does not require any prior de-installation.

Should a software de-installation be desired at a later point in time, it may be run by calling up the uninstall routine in the start group. The manual deletion of folders may be necessary because there may be files in the installation directory which were not created by the converter installation program. In any case, you must execute the uninstall routine first to remove all entries from the registry of the computer.
3. Software configuration

Before the software is used for the first time, it must be adapted to your environment. This first step requires administrator rights.

3.1. Language settings

After the software has been installed and the license on your computer has been enabled, the language can now be selected. After the software has been started, the language can be selected under the "File" menu option.

Select your desired language here. If a language is desired and is not available for selection, please contact the software supplier or manufacturer.

3.2. Registry settings

Now open the dialog for the program settings. You will find it under the menu option Settings – Output file.

Here you can define where the settings in the registry of the computer are to be saved. By default they are stored in the folder
As this is based on the availability of administrator rights during the use of software, the key can also be changed to

HKEY_CURRENT_USER\SOFTWARE\DEAGERMANY\PCDMIS_Ergebnis_KONVERTER

now. This has the disadvantage that every user under Windows has to repeat the same settings again himself. However, this procedure has the advantage that user rights are sufficient to work with the software.

3.3. Converter position on the screen

The main window of the software can be moved to any position on the screen. You can move the window with the mouse. To avoid having to repeat this operation each time the software is restarted, the current position can be saved in the registry of your computer. You can do this in the dialog “Configuration for window position”. This dialog is accessed via the menu option “Settings – Window position”.

Use the button [Get actual position] to accept the current values. After you exit the dialog with the [OK] button, these settings are saved in the computer registry. Now this position will be set automatically the next time the software is restarted.

**Note:** Different screen resolutions or modifications of the resolution may cause the window to be positioned outside the screen. Therefore, you must set the position of the main window so that it appears in the upper left corner of your screen before changing the screen resolution.
4. How to use the software

4.1. User interface of the software (GUI)

The user interface of the software can be divided into the following segments:

a) Menu bar

b) Toolbar

c) Data area

d) Progress bar

e) Status bar
The data area in turn is subdivided into the following sections:

- PC-DMIS™ program data
- Header data
- Dimension list
- Dimensional values
- Comment
- Workpiece Info

4.2. Menu structure

The "File" menu option includes the "Language" menu item for selecting the language of the software (for further information, see chapter 4.1). The "Exit" menu item can be used to close the software.

The "Settings" menu option includes the menu items "Output file", "ASCII setup", "Header data setup", "Report design" and "Window position". These menu items can be used to customize the converter to meet your output requirements. Please refer to chapter 4.3 for further information on the "Window position" menu item.

The "Actions" menu item includes the possibility to create batch files that allow you to start the transfer of data from PC-DMIS™ measurement programs to an Excel sheet.

The "Help" menu option includes the menu items "License information" and "Info about PC-DMIS – Ergebnis Konverter...". This area provides you with the information on your current license status and the software.
5. Reading data

5.1. Supported data

The converter supports the various data of the PC-DMIS™ measurement program.

- PC-DMIS™ program data
  The header data of the PC-DMIS™ measurement program are read in. They are an essential element in the definition of the output file name.

- Trace fields as header data
  Trace fields transmit additional information for statistical evaluation in PC-DMIS™ as standard. In conjunction with the PC-DMIS – Result Converter, it is now possible to also use them for transferring header data to inspection reports.

- Dimensional data
  The converter reads and processes all dimensions in PC-DMIS™ format up to version 4.2. This also includes the dimensional settings in the header of each dimension (e.g. output format, feature name, dimension ID, etc.).

- Comments
  Comments can be used to provide additional information or a more detailed description of dimensional data. Some rules must be observed as comments in PC-DMIS™ can be used for a variety of purposes.

- Additional data provided by the converter
  In addition to the data retrieved from the PC-DMIS™ measurement program, the converter also calculates an action control limit for each dimension. The action control limit is defined as percentage value in addition to the tolerance limit.
5.2. **PC-DMIS™ program data**

The active PC-DMIS™ program retrieves the PC-DMIS™ program data automatically during the reading of data.

- The PC-DMIS file name shows the complete path of the active PC-DMIS™ program.
- The program name is taken from the header data of the active PC-DMIS™ program (PART NAME).

**TIP:** It can be easily overwritten in the PC-DMIS program.

- The update status is also retrieved from the header data of the active PC-DMIS™ program (REV NUMBER).
- This also applies to the drawing number (SER NUMBER).
5.3. Header data (trace fields)

- Trace fields in the measurement program

The management of header data is also offered as an option. As this is a specific setting which can vary completely from customer to customer, this area of the software was designed to have a high degree of flexibility. However, some rules with respect to the data format cannot be ignored.

To enable recognition of these data by the converter, they must be entered in the trace field of the measurement program. A trace field consists of two important components:

- the trace field name
- the trace field value

The excerpt of the PC-DMIS™ program shown above contains two examples of trace fields. The first trace field is not displayed during runtime. The input is derived from a variable (C1.INPUT) that was acquired by the program beforehand. The second trace field is displayed during runtime. Direct user input during runtime is possible.

The name of the trace field in our first example is "PRUEFER". The related value corresponds to the variable "C1.INPUT". The name of the trace field in the second example is "TEILENUMMER". The related value is "A234567".

**TIP:** In general, trace fields are not displayed in the measurement report, but they allow the transmission of additional data to an interfaced statistic program or (as in our case) to a converter which includes this type of command.

**TIP:** If required, it is also possible to set the date and time values via the header data while the measurement process is running. In the following example, this is shown by an excerpt of a sample program:

```
ASSIGN/DATE = SYSTEMDATE("dd':''MM'':''yyyy")
TRACEFIELD/NO_DISPLAY,LIMIT=15 ; Datum : DATE
ASSIGN/TIME = SYSTEMTIME("HH':''mm':''ss")
```
Configuration of header data

You can create the field description for your header data under the menu option "Settings – Setup Header data". The defined descriptions are saved in a file called "HeaderData.cfg" in the directory where the software was installed.

You can save the settings with the [Export settings] button. The "HeaderSettings.cfg" file can also be transferred to a second computer where it can be read in with the [Import settings] button.

To make the settings:

- a) Enter the desired description in the text field in the lower part of the window. Please note that the notation must correspond exactly to the notation of your trace field name. The order of the list must correspond to the desired output sequence, and not necessarily to the sequence of your measurement program.

- "Shift" the name into the list box with the arrow key

- Repeat the procedure for all desired values.

- Exit the header data– setup with the [OK] button.
If you want to remove a value from the list, select this value in the list and then use the arrow key to delete it from the list.

The whole list can be cancelled by pressing the button.

When the configuration is complete, your desired descriptions must be displayed in the header data list of the main window.

5.4. Dimensional data

- **Dimension list**

  The term "dimension" characterizes a parameter of the component you have measured. Sometimes PC-DMIS™ uses also the term "feature" (this applies to older versions in particular).

  After the converter has been started offline or online, all dimension data are retrieved from your PC-DMIS™ program. Now you can display the various dimensions by selecting the desired dimensional description in the dimension list. Every dimension description of the list is preceded by a checkbox. Only dimensions where this checkbox is enabled are considered for output. The selection can be set or reset by clicking the checkbox.

  Some buttons were added to the list to simplify the search for dimensions that violate the tolerance limits. The

  button enables all the checkboxes of the list. The button only selects those checkboxes where the tolerance limits have not been exceeded. The button selects all dimensions that exceed the action control limit. The action control limit can be defined under the menu option Setting – Output file. The button selects all dimensions that exceed the tolerance limit.

  In version 1.3.1 and higher, the user is asked if the selections already made should be deleted. This allows a combination of
dimensions that exceed the tolerance limit and dimensions that are critical for the output to be selected, for example.

The \( \times \) button disables all checkboxes. The \( \text{bold} \) button highlights all dimensions that had already been selected by the PC-DMIS™ measurement program and could be considered as valid because they were recalculated during program run time.

- **Dimension values**

  The values of the related dimension currently active in the list are displayed in the area of the dimension values.
5.5. Comments

Comments can be used for additional explanation of each dimension. The related comment is specifically linked to a particular dimension. Some rules must be observed in the PC-DMIS™ program to achieve this effect.

Whether a comment is used or not depends on the type of comment and its position in the measurement program.

- The comment must be a report comment.
- The comment must directly precede the dimension.
- Multi line comments of up to 20 lines are considered. If more than 20 lines are used, the remaining lines are ignored.

In addition, there is a setting in the Output file – Setup of the software. This dialog is accessed via the menu option Settings – Output file.

Depending on the status of the "Multi-line comments" checkbox, you will obtain different interpretations of PC-DMIS multi-line report comments.

Please see the following two examples for a more detailed explanation:
Example 1:

```
COMMENT/REPORT;comment for X-Axis
  ,comment for Y-axis
  ,comment for Z-axis
  ,comment for diameter "axis"

MOVE/CLEARPLANE
DIM LOCATION1= LOCATION OF CIRCLE CIRCLE1  UNITS=IN
```

This comment is not used due to the Move/Clearplane Command located between the comment and the dimension.

Example 2:

```
COMMENT/REPORT;Pos Axis X
  ,Pos Axis Y
  ,Pos Axis LF
  ,Pos Axis WF
  ,Pos Axis TP

DIM LOCATION3=POSITION OF ROUND SLOT RSLOT1  UNITS=MM ;$

GRAF=OFF TEXT=OFF MULT=1.00  OUTPUT=BOTH PERPTO CENTERLINE =OFF’ SHOW=DIAM.
```

This comment is used because there is no command located between the comment and the dimension. The output result depends on the status of the "Multi line Comments" checkbox. If this checkbox is enabled, one comment line is used for each dimension line. This would produce the following result:

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Comment 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOC3.X</td>
<td>Pos X-Axis</td>
</tr>
<tr>
<td>LOC3.Y</td>
<td>Pos Y-Axis</td>
</tr>
<tr>
<td>LOC3.LF</td>
<td>Pos LF-Axis</td>
</tr>
<tr>
<td>LOC3.WF</td>
<td>Pos WF-axis</td>
</tr>
<tr>
<td>Loc3.TP</td>
<td>Pos TP-axis</td>
</tr>
</tbody>
</table>
If the "Multi line comments" checkbox is disabled, the following output would result:

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Comment 1</th>
<th>Comment 2</th>
<th>Comment 3</th>
<th>Comment 4</th>
<th>Comment 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOC3.X</td>
<td>Pos X-Axis</td>
<td>Pos Y-Axis</td>
<td>Pos LF-axis</td>
<td>Pos WF-axis</td>
<td>Pos TP-axis</td>
</tr>
<tr>
<td>LOC3.Y</td>
<td>Pos X-Axis</td>
<td>Pos Y-Axis</td>
<td>Pos LF-axis</td>
<td>Pos WF-axis</td>
<td>Pos TP-axis</td>
</tr>
<tr>
<td>LOC3.LF</td>
<td>Pos X-Axis</td>
<td>Pos Y-Axis</td>
<td>Pos LF-axis</td>
<td>Pos WF-axis</td>
<td>Pos TP-axis</td>
</tr>
<tr>
<td>LOC3.WF</td>
<td>Pos X-Axis</td>
<td>Pos Y-Axis</td>
<td>Pos LF-axis</td>
<td>Pos WF-axis</td>
<td>Pos TP-axis</td>
</tr>
<tr>
<td>Loc3.TP</td>
<td>Pos X-Axis</td>
<td>Pos Y-Axis</td>
<td>Pos LF-axis</td>
<td>Pos WF-axis</td>
<td>Pos TP-axis</td>
</tr>
</tbody>
</table>

This does not appear very useful in the example shown above, but can be quite practical for a different comment structure.

If the string `<<` is present at the beginning of the comment line, there will be no dimension output.

The string `<<` at the beginning of a comment line is deleted for the output.

5.6. Action control limit
The action control limit allows the converter to restrict the percentage of the tolerance limit. If, for example, a tolerance of ±0.1 mm is set and a control limit of 80% is defined, dimensions with deviations of more than ±0.08 mm are considered to be critical. Thus, they can be selected for output using the filter property of the converter (see chapter 6.4.1).

The action control limit is defined in the dialog Setup – Output file. This dialog is opened via the menu option Settings – Output file.

5.7. Starting the input process
- The difference between online and offline conversion
  online conversion means that the converter receives the dimensions during the measurement program run time. The converter must be
started at the beginning of the measurement program for this purpose. This can be carried out manually via the user interface as well as by an external command from the measurement program.

Offline conversion takes place when the measurement program has already been processed and the converter reads in the dimensions subsequently. To do this, the converter is started at the end of the measurement program. This can also be carried out manually via the user interface of the converter or by a command from the measurement program.

5.8. Use BOSCH Rules

If this option is enabled, dimension IDs without axes and only the data of a position (no axes) will be evaluated. Nominal values and results will only be described in absolute data.
Axes output with positional data evaluation

In the past we have seen various methods of reporting and evaluating positional data. Sometimes axes values are output, sometimes not. The “Axes output for positional evaluation” function was developed to give converter even greater flexibility in this respect. It can be accessed under the menu option “Output file”. If this option is not enabled, all positional evaluations are processed like in the previous version (without FCF, V3.7 compatible positional evaluation with axes). If you check mark the “Constraint” option, you will be able to choose whether to output positional data with or without axes.

Starting the input process manually

Starts the input process online
First, open the PC-DMIS™ measurement program. Then, start the converter to receive the data online.
Finally, start the execution of the measurement program. The connection will be terminated automatically at the end of the measurement program.

|   | Starts the input process offline
Run your measurement program as usual or open a measurement program that already contains measurement values. Then start the input process with the button shown above on the toolbar of the converter. |   |
The progress of the input process is displayed in the lower part of the converter window by the progress bar.

- Starting the input process from the measurement program

  The entire process of transferring measurement results, system files and header data can be started as an external object directly from the measurement program. As a rule, the output is defined at the same time as the automatic start of the converter. For this reason, the process is described in greater detail in chapter 7.
6. Data output

Various procedures are available for the output of data:

6.1. Output to an ASCII file

Before exporting the data to an ASCII file, you must define the file name and destination directory as well as the values and dimensions to be output.

- Setting the file name and destination directory

This setup dialog can be divided into three areas:

- the destination directory of the result file
- the file name of the result file
- the program settings

Three possibilities are available for the destination directory:

- The result files are saved in the PC-DMIS™ program folder.
- The user selects an individual directory at every measurement cycle.
- All result files are saved in one destination directory (default directory). The destination folder can only be specified when this setting is enabled.
The result file name can be a combination of up to 6 components. The description, update status and drawing number are taken from the standard header data of a PC-DMIS™ program. The date and time are generated during run time. A separator is inserted between the respective components. A four-digit file counter is often used instead of the date and time. The first free number is always used. *The program settings are explained in the relevant chapters.*

- **ASCII Setup**

The ASCII Setup is based on the question as to which pieces of information should be entered in the file.

All values with enabled checkboxes are included in the output. The field-specific sequence is determined by the order of selection (version 1.3.1 and higher) and is shown on the left of the checkbox. The **Mark all** and **All markins delete** buttons are auxiliary functions provided to conveniently enable or disable all checkboxes. In this input form, you can also define the type of separator to be used between the individual values in the ASCII file. Often a comma or a semicolon is used for this. The choice of file type is restricted by the file name extension. It has no effect on the format itself.

Your settings can be saved with the **Export Settings** and **Import Settings** buttons. The default setting is for the converter to save the settings in the registry of your computer. This takes place on exiting the dialog with the **OK** button. However, for reasons of data safety and possible plans to use the same settings on several computers, we recommend that you export the settings. Then they can be imported again at a later point in time or to another computer. The backup file resides in the directory where the software was installed and is called: "ASCII_Settings.cfg".
• Selecting dimensions for the output
  The selection of the dimensions for the output can be carried out manually by highlighting the dimensions in the dimension list. Filter functions can also be applied (as described in chapter 6.4.1).

• Starting the converter from the measurement program
  If you want to start the converter from the measurement program and create an ASCII file, insert the following command in the measurement program:
  
  `EXTERNAL_COMMAND/NO_DISPLAY, NO_WAIT; C:\PROGRAM FILES\PC-DMIS – RESULT CONVERTER\PCDMIS_ERGEBNIS_KONVERTER.EXE /A`

6.2. Output to an Excel sheet
  If you want to transfer the values to a pre-defined Excel sheet, its layout must already be known. As different table layouts are possible, they can be saved in separate files.

6.3. How to create the report
  Start an inspection report in Excel. The table to be used as the chart template for your report must be called "master".
Save this table under whatever name and path you like. It goes without saying that the file name extension is still "xls".

Now you must configure the converter in such a way that the output values you require appear in the related column/line after the conversion. This is carried out via the menu option Settings - Form Design.

Report format
In the Report format area, you can select whether the single dimensions of the PC-DMIS™ measurement program should be written one below the other (lines) or side by side (columns). Depending on the setting selected, the label in the system and measurement program data area is adjusted accordingly.

Header data
Data can be transferred to the converter using trace fields (see chapter 4.5). They can now be transferred to the clearly defined fields of an Excel spreadsheet. If the output of one value per measurement is required, the line or the column can be labeled as VM. This means that the respective column or line of the value currently measured will then be used automatically. If the dimensions are in lines, the column must be labeled as VM. If the dimensions are in columns, the line must be labeled as VM. Otherwise, lines are entered as integers and columns as character(s).
System data
The date and time are defined while the measured values are being transferred from the converter into the Excel spreadsheet. They are output for each measurement. The Sequence Number is a counter of all output dimensions. Dimensions that are not marked for output but are part of the dimension list are not taken into account.

Measurement program data
This area allows the definition of the fields in which the individual data are to be entered in the Excel spreadsheet. The field labels depend on the selected report format. In the entry "Dimension in column", you can enter a number of consecutive columns. You can specify these with a hyphen (F-N) or through separation with a comma (F,G,H,I,J,K,L,M,N). A combination of the two options is also possible (F,H-N,P). All other fields are filled with numbers (for the lines) or characters (for the columns). Only one value per field is allowed.

Save | Load
You can save different report configurations with the Save button. Later, they can be recalled at any time with the Load button.

OK | Cancel
If you exit the dialog with the OK button, the current settings are saved in the registry of the computer. If you exit the dialog with the Cancel button, all changes are discarded.
6.4. Data transfer

After you have configured your report, you can start the data transfer. First, read the data into the PC-DMIS™ - Result Converter as usual. Select all the dimensions you would like to output in the dimension list. Start the output by confirming with the button on the toolbar. Now you are asked in a browser window which inspection report you would like to have. After you have selected the report, it will be opened and filled automatically.

If the checkbox for "Read-only access" is enabled, you are prompted to save it under another name after the report has been filled.

Possible sources of error:

a) The inspection report is already open.
b) Another version of Excel is installed on your computer.
c) The Inspection report was started twice without the converter being closed in the meantime.
6.5. How to start the conversion to Excel files from the measurement program

The entire process of transferring measurement results, system files and header data can be started as an external object directly from the measurement program. For this purpose, you can select the type of output via the start options.

To start the data transfer to an Excel spreadsheet, the following steps are performed manually:

a) Start the converter
b) Read out dimensions and header data
c) Load a report configuration
d) Open the Excel spreadsheet
e) Data transfer
f) Close the converter

If you want to run the whole process automatically from the program, proceed as follows:

First, create a batch file. The batch file is created in the dialog that is accessed via the menu option Actions --- Create batch file.

The batch file is created automatically in the same directory in which the Excel spreadsheet was selected. The file name also corresponds to the name of the Excel Spreadsheet 1. It is recommended not to use blanks in the file names of Excel spreadsheets.
Start the batch file from the measurement program using the "external command" command:

```
EXTERNAL_COMMAND/NO_DISPLAY, WAIT; {Path and name of batch file}
```

Example of the contents of a batch file:

```
"C:\Program files\PC-DMIS - Ergebnis Konverter\PCDMIS_Ergebnis_Konverter.exe" /o "C:\Program files\PC-DMIS - result converter\Example Complete.xls" /C:\Program files\PC-DMIS - result converter\Example.cfg" /ALO "C:\Program files\PC-DMIS - Ergebnis Konverter\Example_OOT.xls"
```

<table>
<thead>
<tr>
<th>Segment of command line</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;C:\Program files\PC-DMIS - result converter\PCDMIS_Ergebnis_Konverter.exe&quot;</td>
<td>Path and file name of the PC-DMIS™ Result Converter. It is important that this entry is enclosed in &quot;&quot; (quotation marks).</td>
</tr>
<tr>
<td>/o</td>
<td>Defines the mode used to launch the converter.</td>
</tr>
<tr>
<td>&quot;C:\Program files\PC-DMIS - result converter\Example Complete.xls&quot;</td>
<td>Path and file name of the Excel workbook where the complete report is to be filed.</td>
</tr>
<tr>
<td>/C:\Program files\PC-DMIS - result converter\Example.cfg&quot;</td>
<td>The configuration file to be loaded for the form layout.</td>
</tr>
<tr>
<td>/ALO</td>
<td>Defines the dimensions to be written into the table or tables (see note below).</td>
</tr>
<tr>
<td>&quot;C:\Program files\PC-DMIS - result converter\Example_OOT.xls&quot;</td>
<td></td>
</tr>
<tr>
<td>/a</td>
<td>Reads and transmits all dimensions to an output file.</td>
</tr>
<tr>
<td>/m</td>
<td>Only transmits the dimensions selected in the measurement program to the output file.</td>
</tr>
<tr>
<td>/o</td>
<td>Launches the converter in ON-LINE mode and closes it automatically after the data transfer.</td>
</tr>
<tr>
<td>/ALO</td>
<td>Two Excel spreadsheets are written. One contains all the dimensions; the other contains only those dimensions in the critical zone or outside the tolerance limits. The second spreadsheet is copied and the related date and time of the measurement is included in the file name. The second spreadsheet must have the same format as the first.</td>
</tr>
<tr>
<td>/OOT</td>
<td>Only one Excel spreadsheet is written which includes the dimensions in the critical zone or outside the tolerance limits.</td>
</tr>
<tr>
<td>/ALL</td>
<td>Only one Excel spreadsheet is written which includes all dimensions.</td>
</tr>
</tbody>
</table>
6.6. Transfer of measurement programs with automatic start of the converter

When transferring measurement programs with integrated call up of the converter, the following steps must be observed:

a) Necessary files:
   - \{Name of Excel spreadsheet\}.cfg
   - \{Name of Excel spreadsheet\}.bat
   - HeaderData.cfg

b) First, import the HeaderData.cfg file to the “secondary” system using the menu option Settings \--- Setup header data.

c) It is important that all file paths are fully specified in the batch file. Therefore, the secondary computer must have the same folder structure, or a new batch file must be created.
7. Scrap limits

As is so often the case, not everything which is out of tolerance needs to be scrapped immediately.

Parts can still be fully functional and usable despite having been failed according to the drawings.

Result Converter defines dimensional tolerances that are pass/fail checked as scrap limits.

7.1. Enabling the Scrap Limit Check

In order to monitor scrap limits during the execution of the program, the “Check scrap limits” menu option in the “Output file – Setup” dialog box must be enabled.

After enabling this option, the “Scrap limit(s)” function of the “Settings” tab will be activated. It can be used to view or create scrap limits.
7.2. How to view and create Scrap limits.

Scrap limits can only be displayed or created if the program to which they refer (or for which they are defined) is currently active in PC-DMIS.

When you have selected the "Scrap limit(s)" function, a list of scrap limits is displayed. They are calculated based on nominal values and tolerances, i.e. Upper scrap limit = Nominal value + Upper tolerance and Lower tolerance = Nominal value + Lower tolerance (if the lower tolerance is displayed as a negative value).

Scrap limits which were already defined for the active program are retrieved from the .xml file that is always used for saving them.

After data has been loaded from a program or a file, it can be edited and saved again.

Scrap limits can be assigned to any program.

The files always have the same name as the program (with the .xml suffix) and are saved in the program folder.

Kommentar [P1]: should this read "lower scrap limit"?
7.3. Load scrap limits from a file

If you already have an existing ASCII file with defined scrap limits, you can import and apply them as current scrap limits by using the "Load scrap limits from an ASCII file" function. The application only needs a pattern telling it where and from which line onward the relevant information is to be read. You can define this information by accessing the "Load scrap limit(s) from an ASCII file" function.

When the "Load from ASCII file" menu has been opened, the same ASCII character that was used as delimiter in the file can be defined as delimiter.

After having chosen the "Select ASCII file" option, you have to select the file to be read in. The data is loaded from the file and displayed in a spreadsheet.

Now you have to define references for the data transfer of three parameters (dimension, upper scrap limit, lower scrap limit). Before any definition takes place, the background color is red. Double click the cell that includes the first value of the selected parameter. Its coordinates will then be used as the basis for the data transfer. After this, the parameter background will be displayed in green.

By double clicking, you can define the currently check marked parameter (by radio button).

After having set the coordinates for all parameters (meaning that each background is green), the scrap limits derived from the file can be applied. The appropriate Apply button below the spreadsheet will be enabled automatically.
The converter searches for feature names in the scrap limit spreadsheet and replaces already existing scrap limits by those loaded from the ASCII file.
If several features with identical feature names are identified in an ASCII file, the scrap limits of the first feature in the file are assigned to the feature that is displayed first.
In such a case, the order of features in the file must be the same as in the program. The number of features has no relevance here, because converter runs the search for the feature name as first step.

After having applied the data, converter jumps back to the "Scrap limit(s)" dialog box where the loaded values can be viewed and, if required, edited.

Use the "Create scrap limits" button to write the changed values into the .xml file.
7.4. Displaying violated scrap limits after the data transfer

With the "Check scrap limits" function enabled and after having completed the transfer of the measurement data to the target file, the actual measured values are compared with the scrap limits. Values that are out of scrap limit are shown in a dialog box.

At this point the user has the possibility to translate the scrap limits. To translate on measurement value:
- Decrease or increase by percentage on one side.
- Decrease or increase by percentage on both sides.
- Decrease or increase by value on one side
- Decrease or increase by value on both sides

The listed functions are only applied for lines that have been highlighted in the last column. The limit can be translated directly within the grid if you wish to change it by another value. To apply your changes, you have to confirm them with the "Update scrap limits" button.
8. Special functions of the converter

Apart from the conversion function described above, the converter includes two other functions that are usually very helpful in practice. These functions are discussed in this chapter.

8.1. Excel Online

8.2. Function

Excel can be run in parallel to the execution of the PC-DMIS™ program or during manual measurements with PC-DMIS™. This function is provided by the converter. All retrieved dimensions are written directly (online) into the open excel spreadsheet.

8.3. Supported Excel version

The function was tested with the following Excel version under Windows XP:
- Office 2003 (Format xls)
- Office 2007 (Format xlsx)

Please contact your software supplier if you run into any problems with other Excel versions.
8.4. How to start the connection

- Do not open Excel.
- Start the PC-DMIS™ - Result Converter.
- Confirm the Excel icon on the converter toolbar.

The connection has been enabled. The actual-size view is divided in a 2:1 ratio between PC-DMIS™ and Excel.

8.5. How to work with Excel Online

Now, you should see the following screen view:

As soon as a dimension is created or executed in PC-DMIS™, it is simultaneously inserted into the Excel spreadsheet. This process can be aborted at any time by pressing the button <Ignore values>. This changes the label of the button. The connection is re-enabled by clicking the button again.

To exit the Excel Online function, use the <Stop> button. However, the Excel spreadsheet stays open. You can save the spreadsheet separately. However, a restart of the Excel Online function is only recommended after the previous Excel session has been closed.
Subroutines are also supported by this online function as they are processed during run time.

8.6. Working with result converter in a loop
If the converter shall be set up in a loop, the following has to be observed:

In PCDMIS PP after starting a loop a *.BAT file has to be selected which is configured for the online transfer of data from PCDMIS. Before end of a loop a protocol comment for documentation with the content EEK (case sensitive!) has to be integrated.
The part of the program should appear as follows:

```plaintext
; The comment (EEK) is used to tell converter to send data to an excel sheet after each loop procedure and to close converter afterwards
```

16.05.2013
9. How to save PC-DMIS™ programs

9.1. Purpose
PC-DMIS™ programs are saved for a number of different purposes. Thus, it is possible to insert evaluations into the program at a later point in time, to run case studies ('what would be if'), or to convert measurement data into other formats, etc.

9.2. What is saved?
A copy of the *.prg file of the currently active program is saved.

9.3. File name of the saved copy
The file name of the saved copy is a combination of the:

- path and name of the active measurement program
- date
- time
- part identification (e.g. serial number of the measured part)

The related components are separated by two underscores (__) so they can be easily distinguished. The file extension .sav was used to ensure clear differentiation from a "normal" measurement program. If the backup copy is opened again at a later point in time, the extension (.prg) must be changed.

9.4. Starting the save process
The save process is started by confirming the button on the converter toolbar. The user can enter the related part ID in the subsequent dialog. It is recommended to use a serial number or similar for the ID.
10. Software information

10.1. Further objectives
All suggestions received from our clients are verified and implemented where applicable.

10.2. Thanks
Hexagon Metrology GmbH would like to thank you for your interest in this product. We will continue to implement proposals for improvement resulting from practical experience with our software products. We would especially like to express our thanks to those customers who have supported us with their proposals and tips during the creation of this product – and who still are giving us their continued support.