



Statistics
and Quality
Management Ltd.

Draft

ISAVE Manual

Integrated control system for statistical quality control and test planning
of chemical air quality data

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1. Fundamentals

The ISAVE program is based on two data bases, both of which are given in the ACCESS format.

- Station data
This data base contains data relating to the operation of the station with entries for equipment and service activities. The data base is used by the program exclusively for evaluation purposes. Processing of the data or new entries are not envisaged.
- Measured data
This data base contains all information relating to the project, measured variables, calibration data and measured values (signals).

The measured value data base is structured in a way as to allow the parallel storage of several projects. Measured variables and parameters, equally the basic data for calibration gases, are available to all projects. The proper measured value data are filed specifically for measured variables in various tables. The table name is identical with the name of the measured variable, special characters and mutated vowels possibly existing in the name will be automatically removed for the table name.

The measured value data base is not automatically set up, it shall be available always as a blank data base (contained in the scope of supplies).

Access to the data base is provided through the microsoft jet 4.0 OLE DB provider which does not form part of the scope of supplies. This data base engine is, in general, available if microsoft ACCESS was installed in the target computer.

The structure of the data base is described in detail in Annex 1 (Measured value data base). The station data base corresponds to the definition contained in the problem definition.

The ISAVE program was programmed with the development system Delphi 5.0 from INPRISE Corp containing a number of additional components from third-party bidders. Essential Add-Ons are the ActiveX-Control VCF15.OCX (spreadsheet component), TeeChart (chart component) and RX (component collection).

2. Data base selection

After reinstallation of the program the storage location of the two data bases shall be set in advance before any other action will be undertaken.

This preadjustment is carried out in the file menu.

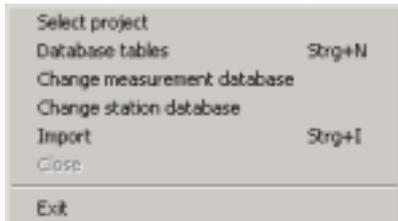


Fig. 1. Submenus of the file menu

You select subsequently the submenus *Change measured data base* and *Change station data base*. Select directory and file in the dialogue windows displayed to combine the program with these data bases.



Fig. 2. Selection of data base

This selection will be only required after reinstallation or if the name or storage location of the data bases have changed.

3. Basic data

The data relating to

- Project (*Projects*),
- Measured variable (*Parameter*),
- Calibration (*Calibration*),
- Measuring instrument (*Instruments*),
- Timer series (*Data set*) and
- Parameter measuring instrument combination (*Params/Instruments*)

are assigned to the basic or meta data in the program.

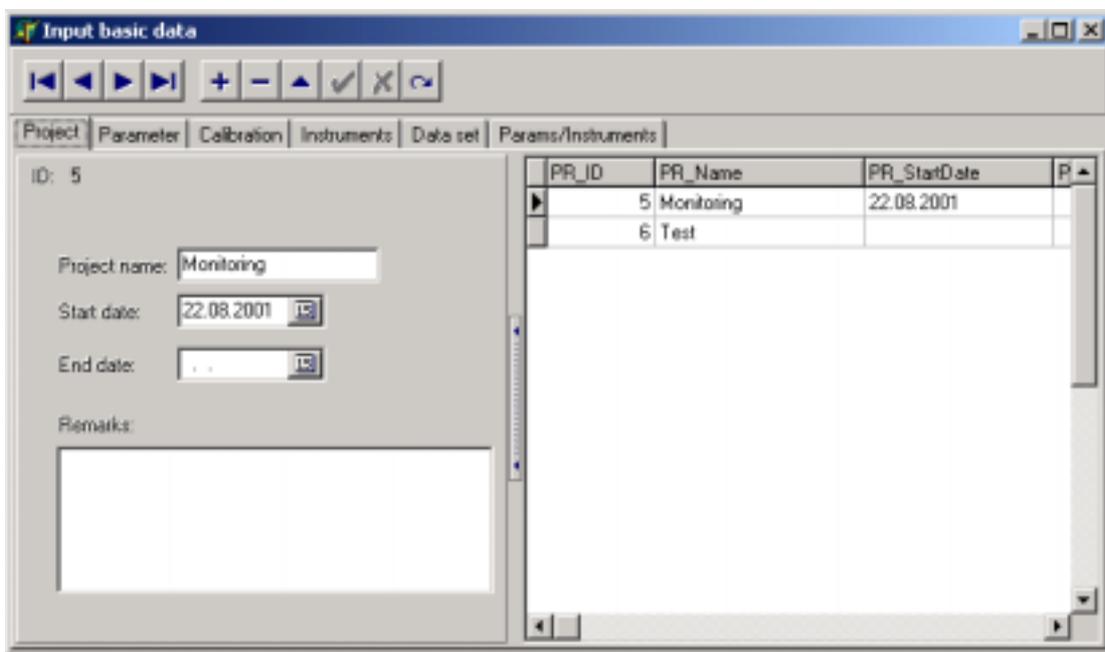


Fig. 3 Project processing window

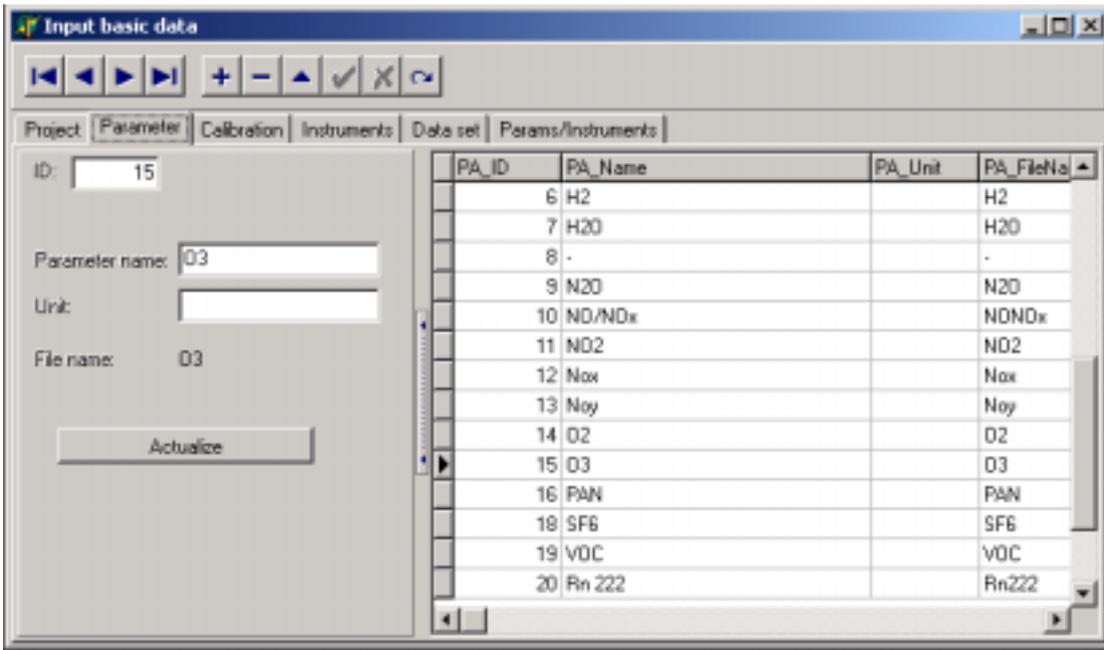


Fig. 4. Parameter processing window

The parameter list is taken over from the station data base by actuating the *Actualize* button. This station data base has to agree exactly with the structure of Annex 2.

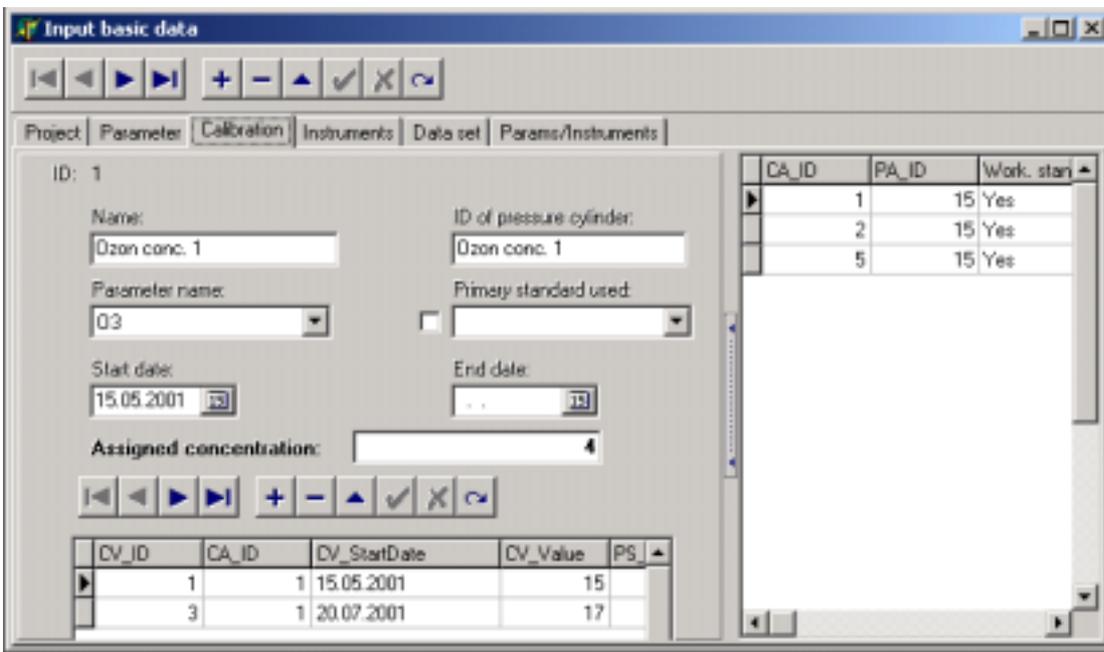


Fig. 5. Calibration processing window

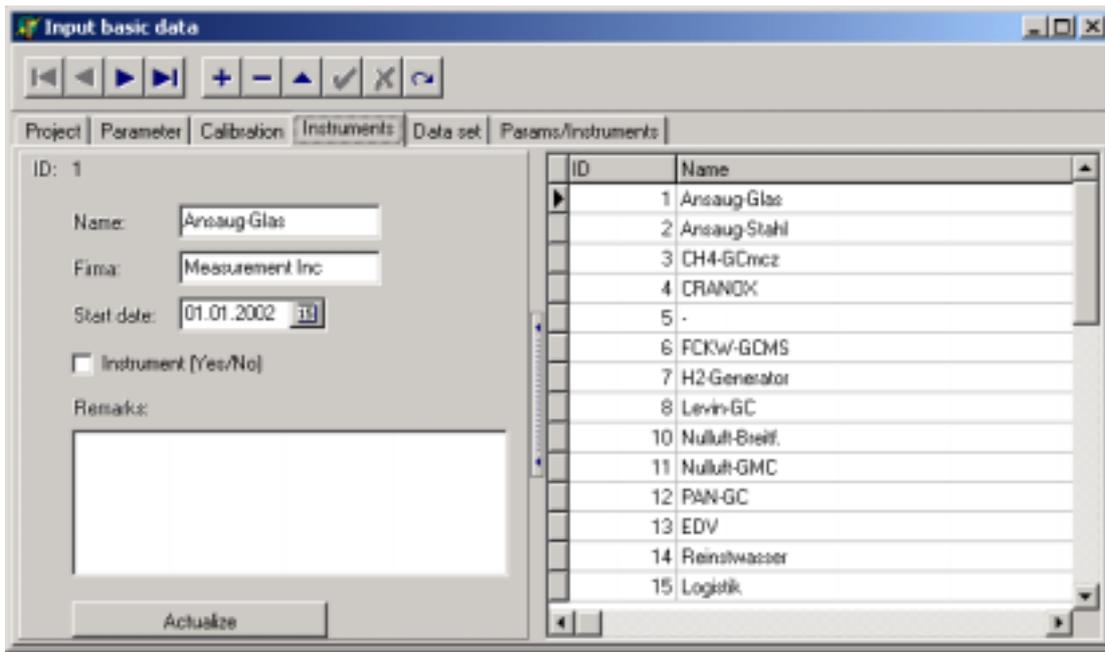


Fig. 6. Instruments processing window

The next to last *Data set* window prepares the data base for taking over data.

The measured data are combined with the project and a parameter/measuring instrument (*Params/Instruments*) combination through a time series (*Data set*).

That is why a data set for the combination of project and parameter/instruments shall be set up before inputting/importing measured data of a project.

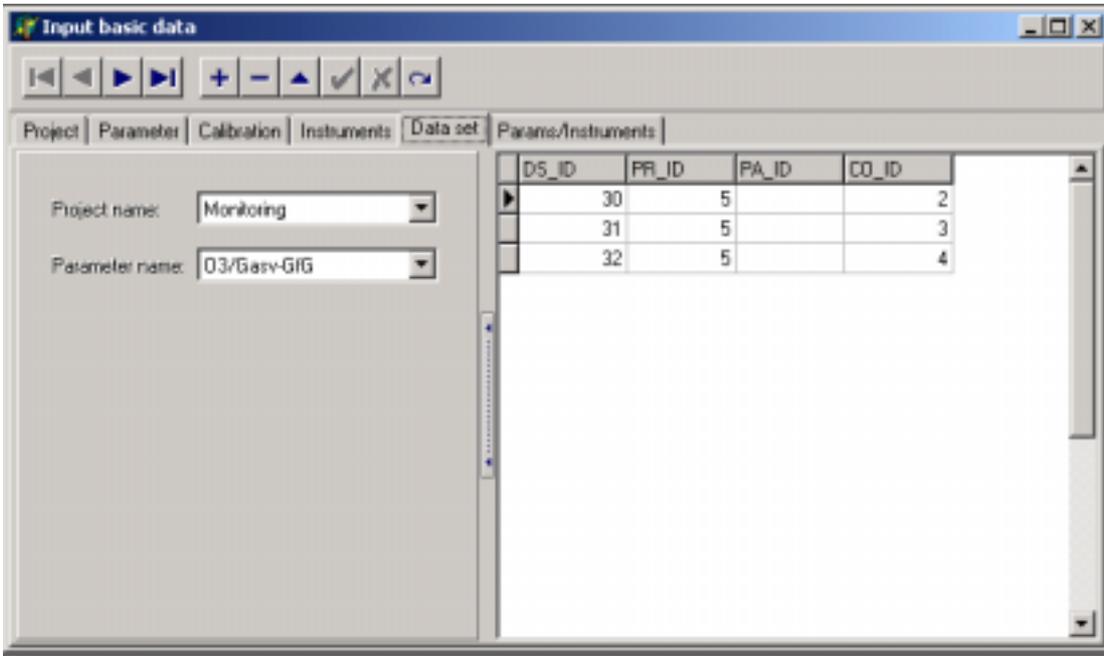


Fig. 7. Data set processing window

The combination of parameters and measuring instrument is formed on page *Params/Instruments*.

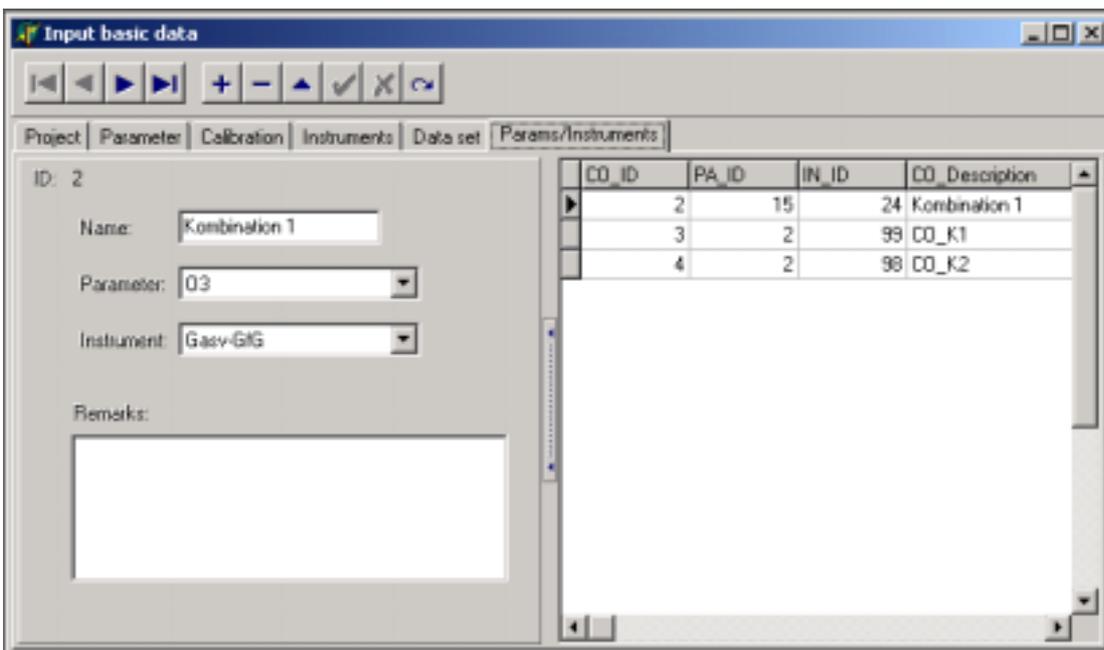


Fig. 8. Parameters/Instruments processing window

4. Project selection

Before continuing work the desired project shall be activated in the *Select file-project* menu. The actual project name is displayed in the title bar of the main window. The project selected last is used as a default value for the next program start.

5. Data input

There are three principle possibilities of data input.

- Import of an individual Excel 5.0 or ASCII file
- Import of a class of files by means of a template
- Manual input of measured values.

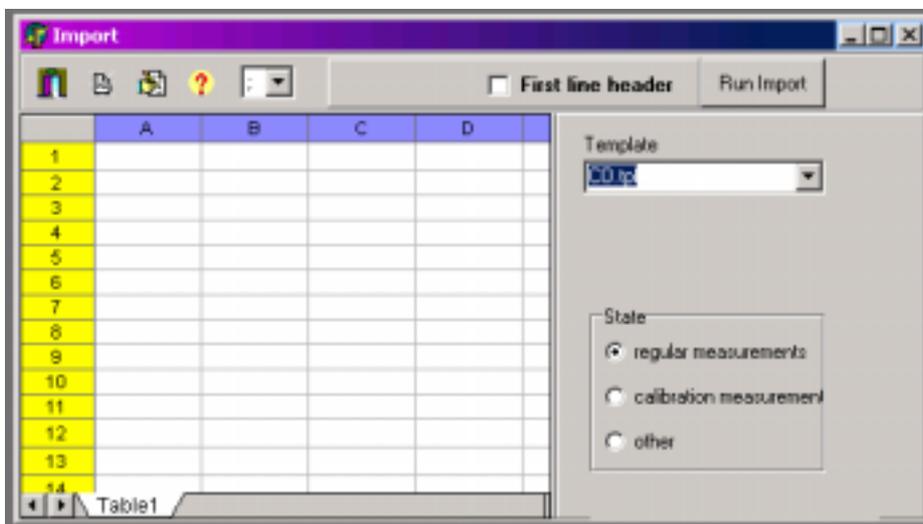


Fig. 9.Import of measurement values

5.1. Individual import

The import file shall contain the columns measuring time and values. One to several measurement values can be grouped next to each other.

By means of the *Open import data* box a file selection dialog is opened where the import file will be selected. Ensure that the correct file type will be adjusted in the lower list window.

After the import file has been opened the columns have to be assigned to the respective fields. To this end, click with the left mouse key on the respective column head and select the appropriate field in the context menu which opens. Finally the correct status for the measured values has still to be adjusted. The data transmission to the data base is started with the *Start transmission* box.

5.2. *Import by means of file template*

By the input through templates a group of similar measured value files may be automatically imported consecutively. Thereby, the following prerequisites shall be given:

- All files have the ending *.DAT
- The files shall be available in the ASCII format.
- Column formatting was carried out either with a fixed column width or with the blank or tabulator separators.
- All data shall be contained in a directory.
- The source directory shall not contain further *.DAT files.
- The program directory shall contain an appropriate template.

First of all, an appropriate file shall be selected in the *template* list window. By clicking the *Run import* box the import process is started. A directory selection window will be opened where the directory with the *.DAT files is selected. After the directory was confirmed by *OK* the further process will proceed automatically. In a log window various information relating to the import will be displayed.

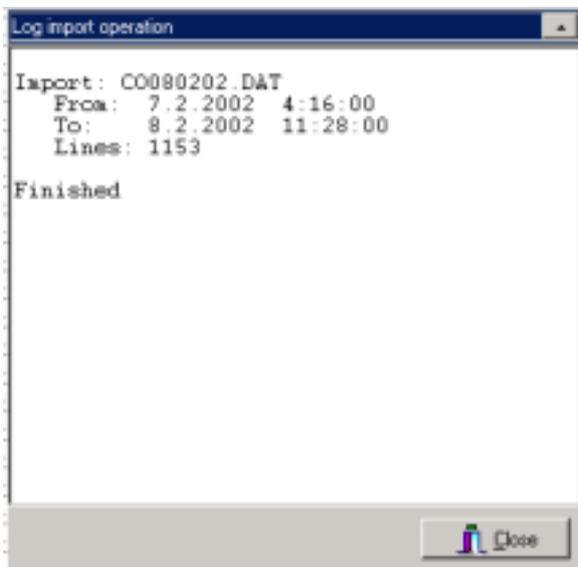


Fig. 10. Log information on import

5.3. *Manual data input*

The manual input is called in the *Edit - Measurement table* menu. At present, this input is not very comfortable, it will be further completed. Take into consideration that except *DV_State* and *DV_LastChange* all fields shall be completed. *DV_Signal* and *DV_Korr_Signal* are identical during the first input.

6. Measurement value diagram

In the *Edit – Graphical editor* menu the measured values are represented in a line diagram. Supplementary, the entries from the station data base are displayed in the upper part of the diagram. A mouse click on the station entries will open a window with further data relating to this entry.

After the diagram window will have been opened the diagram will be, first of all, blank. You have to select the period to be displayed and up to three measured variables. Finally, you will newly display the diagram with the *Actualize* box.

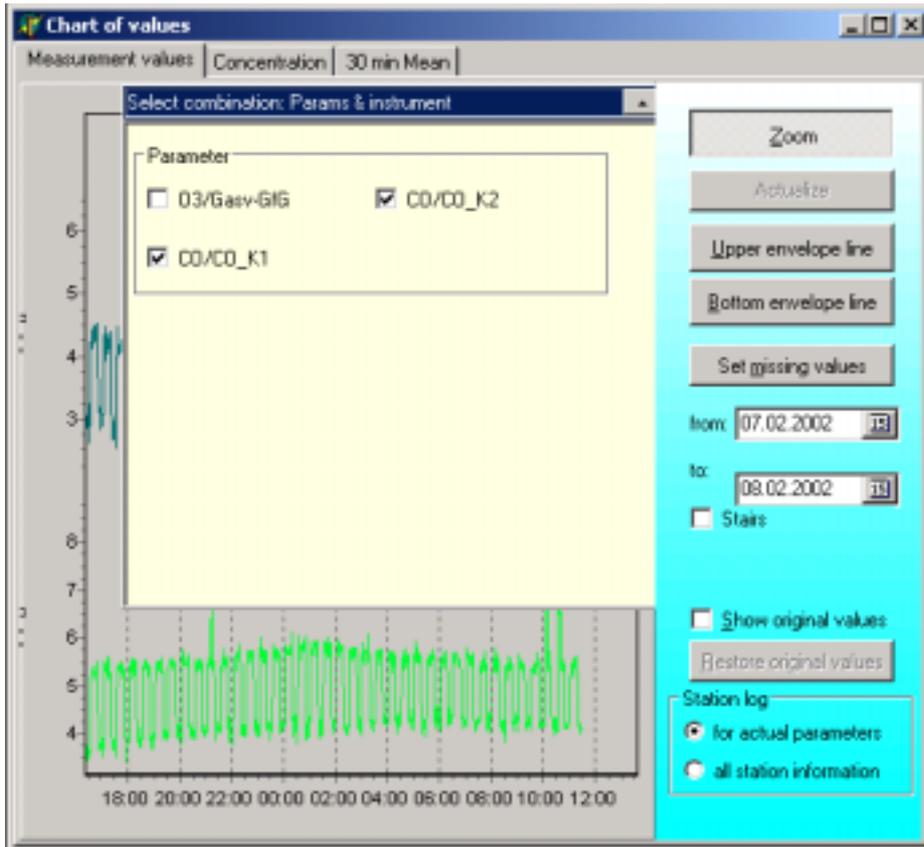


Fig. 11. Graphical editor

To draw envelope lines the *Upper envelope line* or *Bottom envelope line* boxes shall be actuated always before starting a drawing process. Envelope lines may be drawn for all parameters displayed. *Upper* or *Bottom* applies equally to all parameters.

By means of the *Set missing values* box the values above the *upper envelope line* or below the *bottom envelope line* will be replaced by Missing Data values in the area of the respective envelope lines.

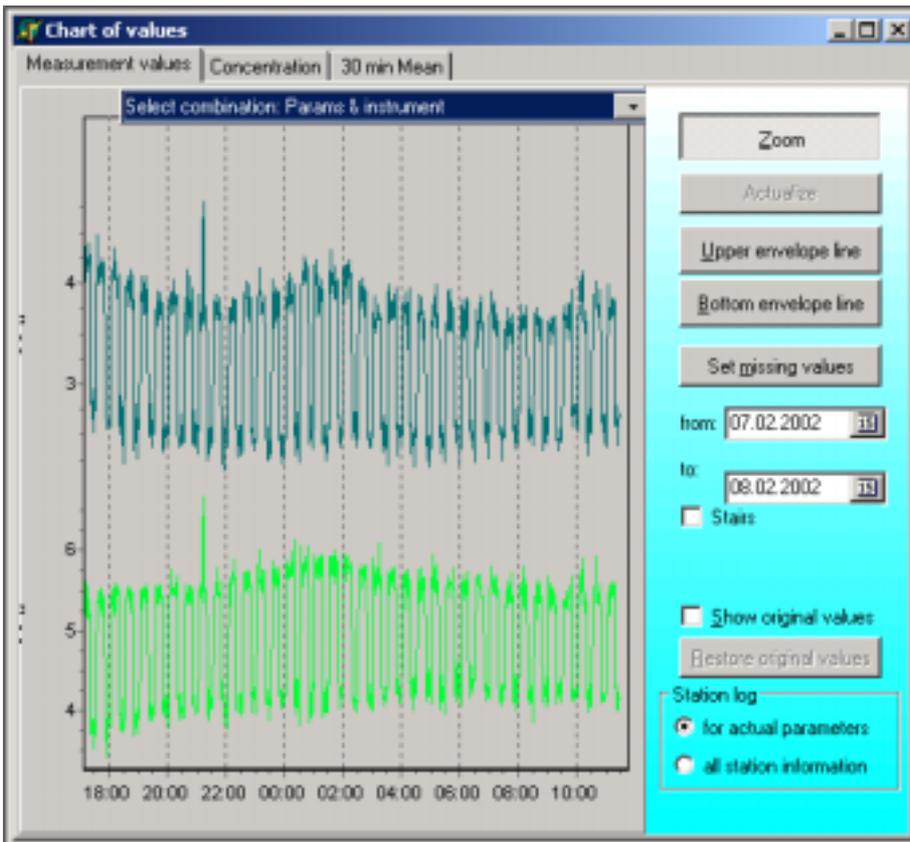


Fig. 12. Usable signals after the setting of failure values

If the *Show original values* checkbox will be activated original signals will be displayed instead of the corrected usable signals.

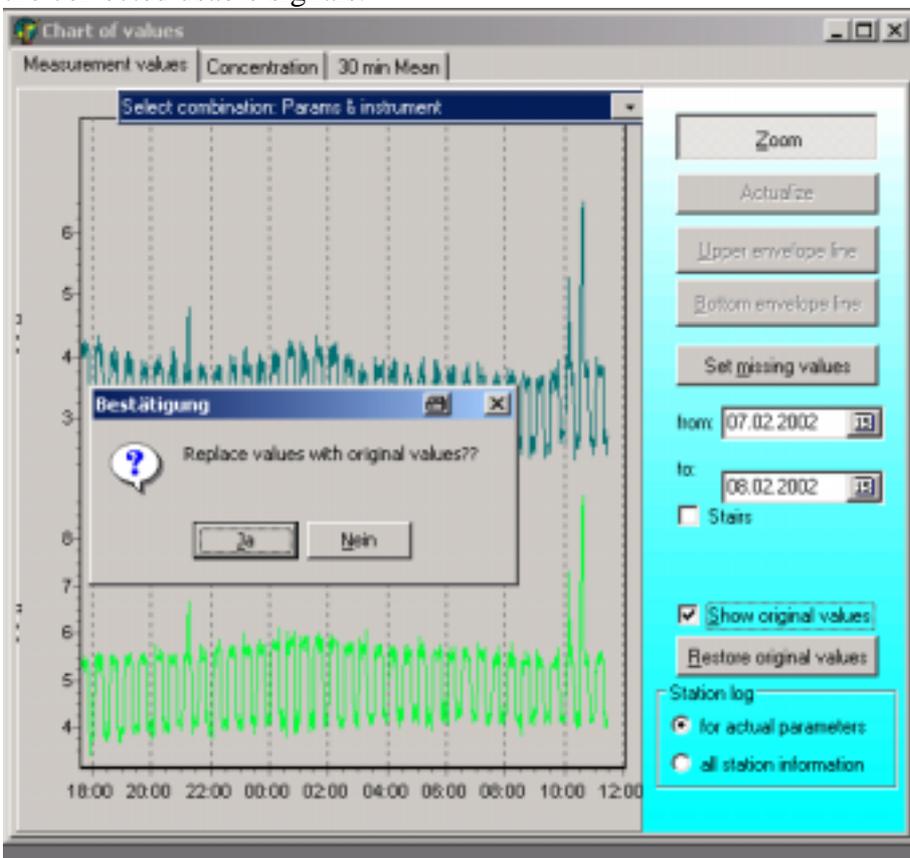


Fig. 13. Set failure values if original value has been activated.

By the *Restore original values* box the wanted values set will be overwritten by the original values after the safety inquiry was confirmed.

The diagram is connected to a context menu. If the right mouse key will be actuated within the diagram area the context menu with the entries will be displayed.

- Diagram editor
You will find detailed information relating to the diagram editor in the document TEEChart.DOC
- Delete envelop curves
deletes the envelop curves contained in the data base without modifications.

7. Calibration of measured values

You will find the *Concentration* page in the *Edit – Graphical Editor* window for calibrating measured values.

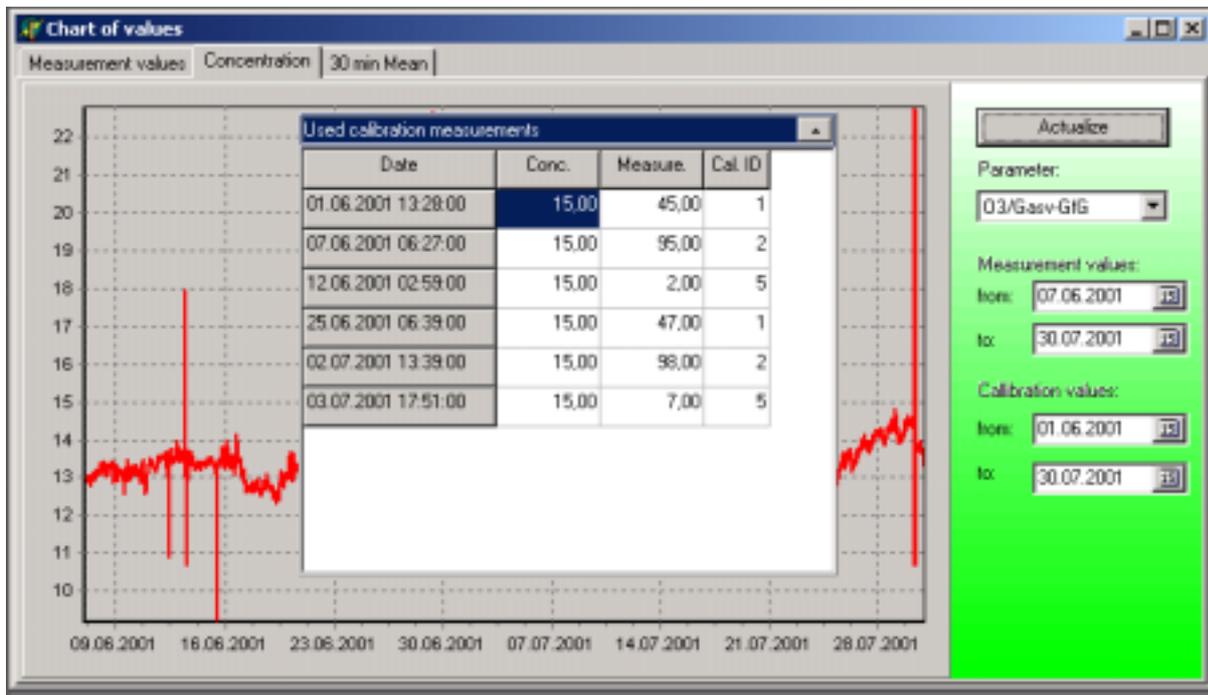


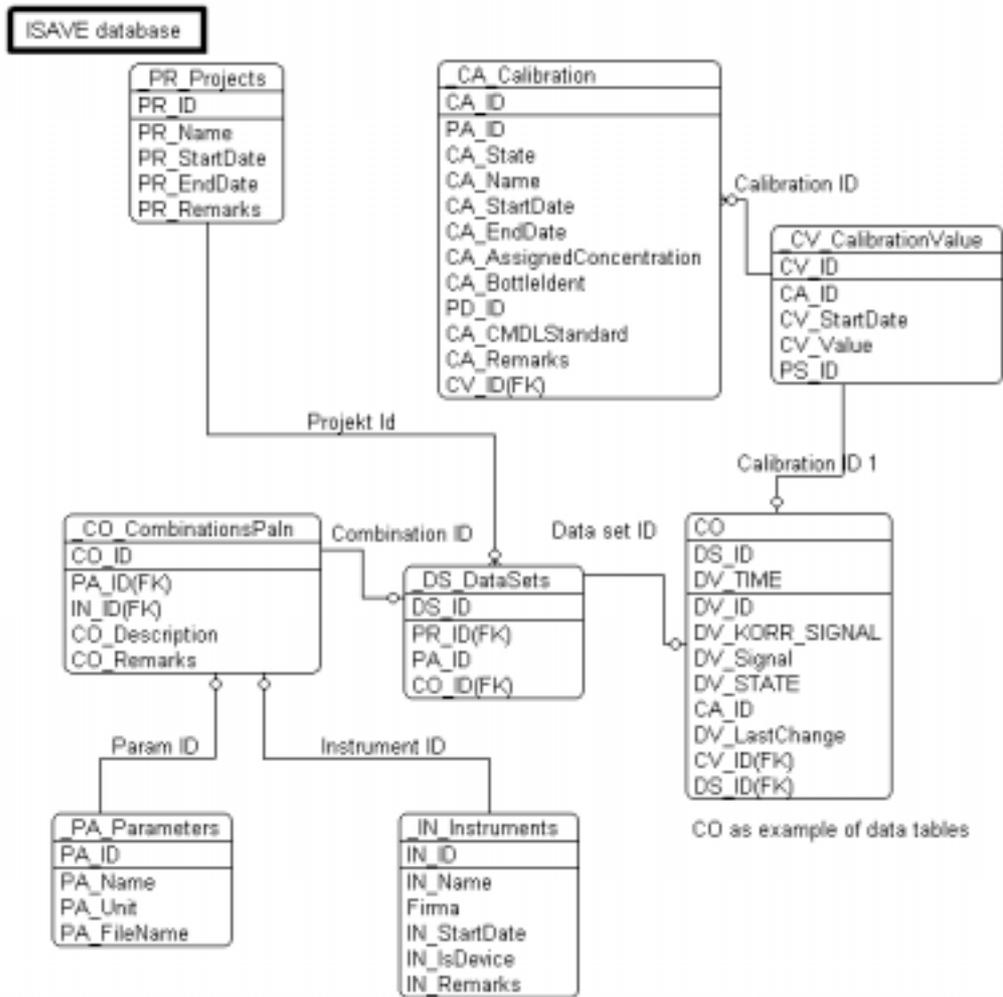
Fig. 14. Page Concentration for calibrating measured values

After selection of the parameter/instruments combination (*Parameter*) and the time domains for *Measurement values* and *Calibration values* the calibration will be started with *Actualize*. Depending on the throughput of the computer and the given time domain the calibration process may take up considerable time.

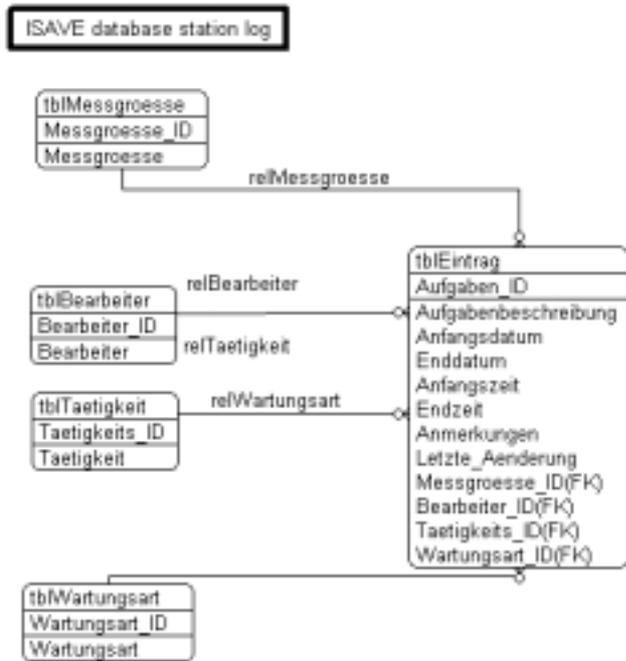
The result of calibration is represented as a diagram. Furthermore, the measured values used for calibration will be displayed in a window for information.

At the same time, the 30 min mean of the concentrations is calculated which will be displayed on page *30 min mean*.

8. Annex 1: Measurement value data base model



9. Annex 2: Station data base model



10. Annex 3: Explanation of the template file

The template file is an ASCII text file with the following structure:

[General]

; File extension

Extension=Data (*.DAT)|*.DAT

; Column separator: fix – fixed column width; otherwise tabulator

Separator=Fix

; Number of lines to be skipped at the beginning of the document

Line_Skip=6

; Information relating to the date

; Years only if the years are given as a two-digit number in the format

Date_Year=1999

; Format of the date

Date_Format=mm-dd

; Column position of the date

; Fix: position of the first character

; Tabulator column number

Date_Start=8

; Fix: width of the column in characters, otherwise blank

Date_Length=5

; Time information

Time_Format=hh:mm

; Column position of the time

; Fix: position of the first character

; Tabulator: column number

Time_Start=1

; Fix: width of the column in characters, otherwise blank

Time_Length=5

[Cols]

; Number of columns with relevant measured values

Count=1

; Description of the measured value

; CO_ID – identification number from the CO_Combination table

Colx_ID=2

; Column position of the respective measured value

; Fix: position of the first character

; Tabulator: column number

Colx_Start=24

; Fix: width of the column in characters, otherwise blank

Colx_Length=7

X stands for the current column number 1.. Count

(Lines with the leading semicolon are commentary lines and optional):