



Committing to the future

# **easyEmission - Testing Module for Engines**

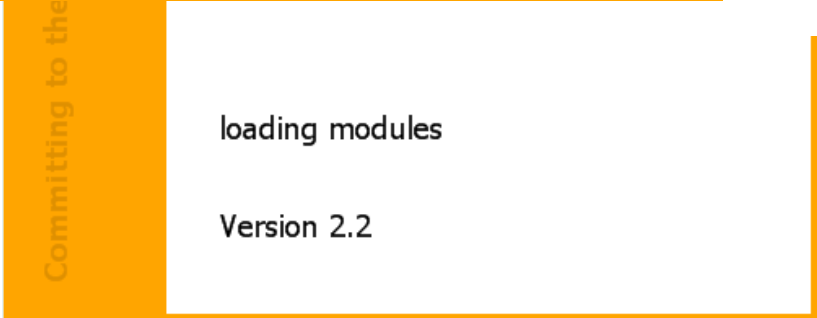
# Install easyEmission



## testo easyEmission

loading modules

Version 2.1

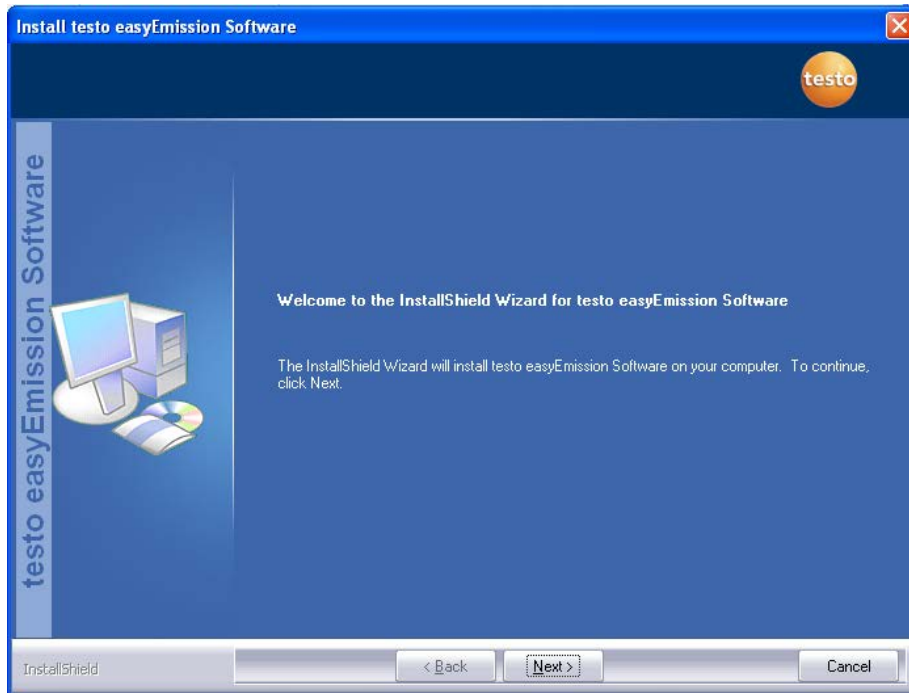


loading modules

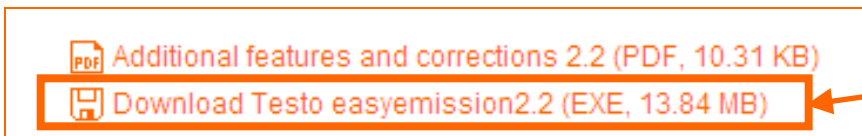
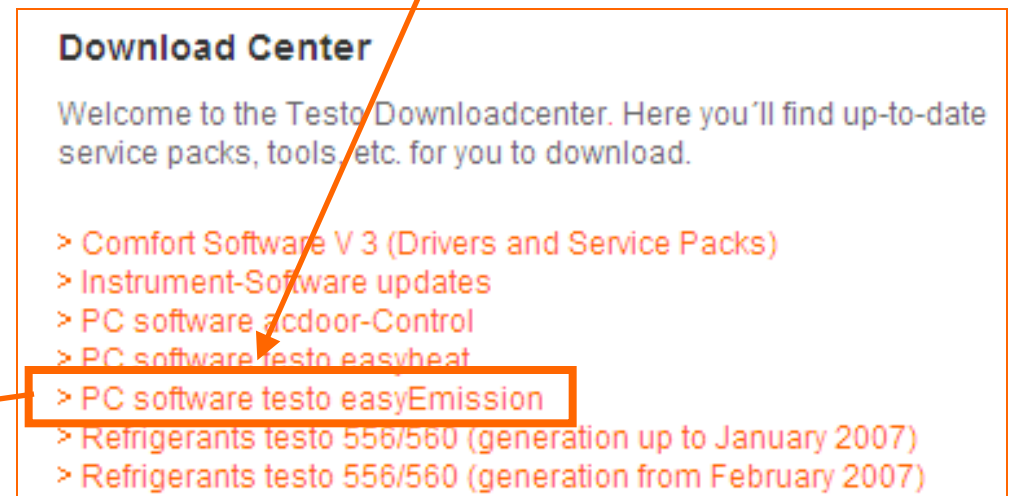
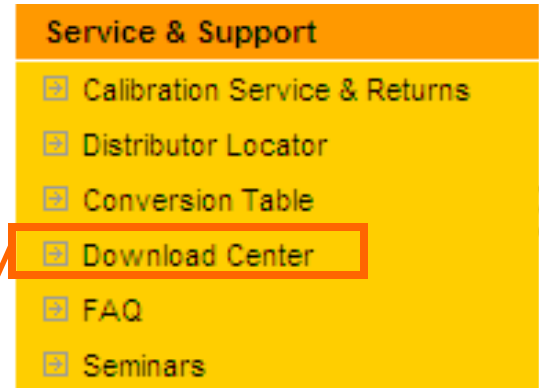
Version 2.2

- The following Installation Guide is based in the actual easyEmission Version 2.1 or higher. If you are using an older version of easyEmission please update your program (see next page)
- You can use the following functions only when you are using your analyser in combination with the easyEmission software ( real time measurement )
- You have to make some inputs / configuration of easyEmission once, to get the full functionality for the engine measurement, the calculations and the report.

# Install easyEmission



- Install easyEmission from CD and follow the “InstallShield Wizard” ...
- ... or download the easyEmission 30 day test version on [www.testo.us](http://www.testo.us)



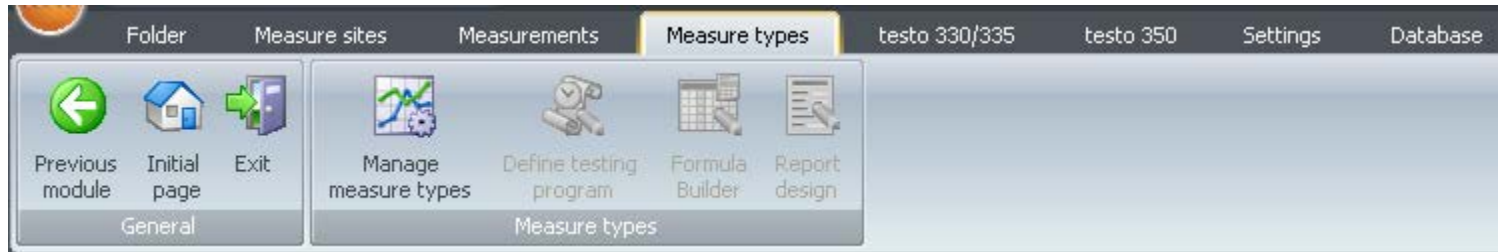


# easyEmission - Software Setup

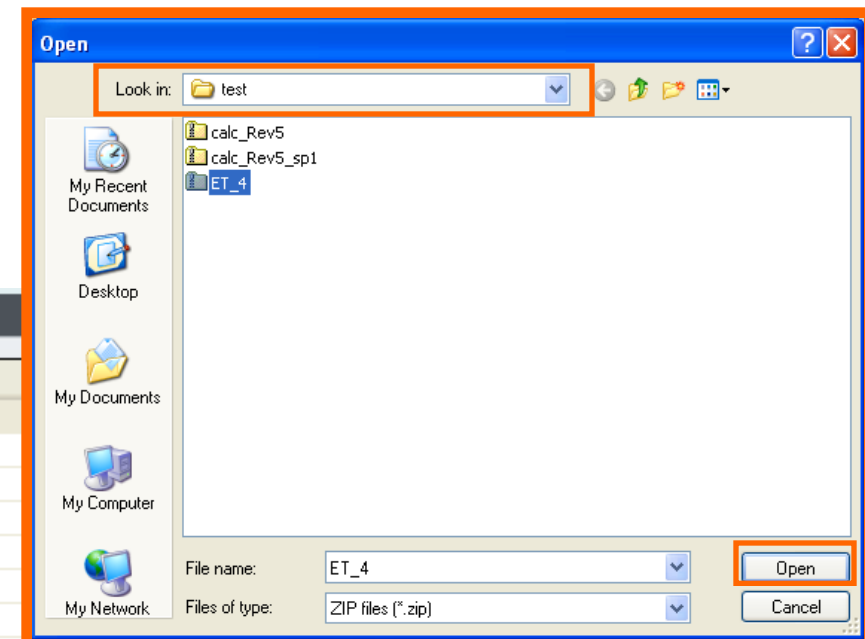
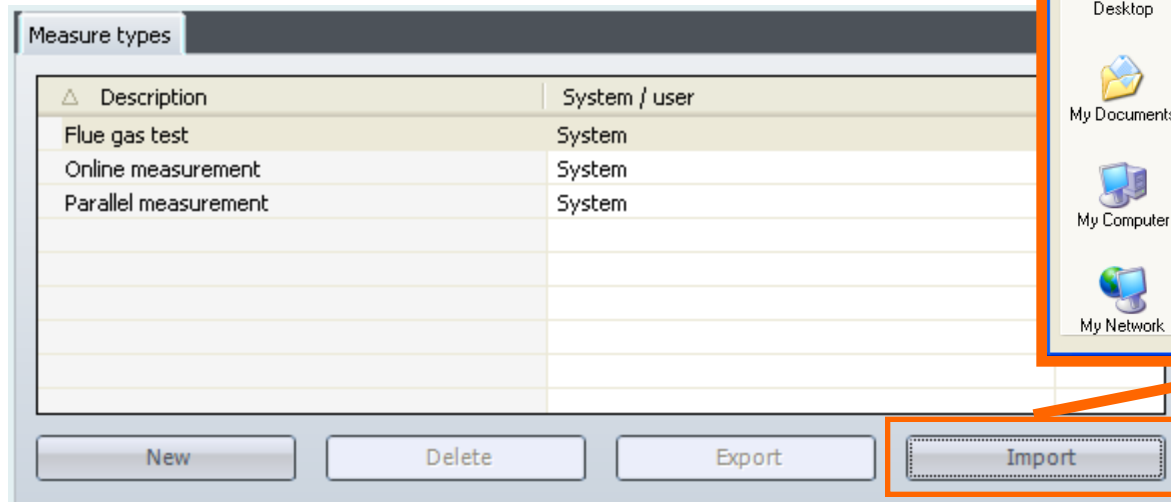
- Importing a Measure type / Report template
- Configure Special Site Data
- Input Own Data / Folder & Site-Information
- Configure Measure type
- Start testing procedure
- Save data & print report

# Import easyEmission ET\_4 file for Engine Testing

- Open the menu “Measure types” → “Manage measure types”

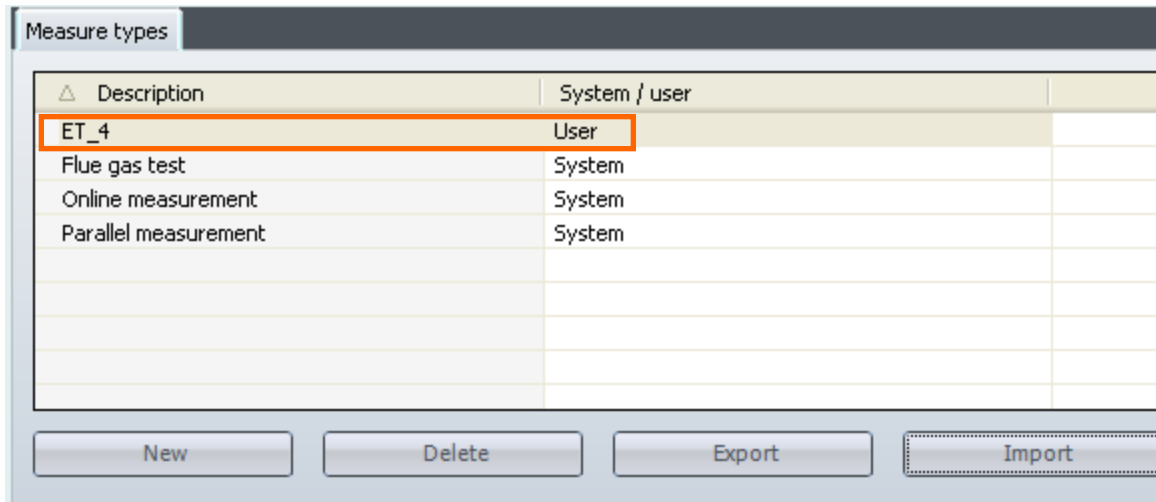


- Import** the file “ET\_4” from the stored place on your computer (**do not unzip the file!!**). Search the file under “Look in: ...” and **Open** the file.



# Import easyEmission ET\_4 file for Engine Testing

- The imported file is listed in the measure type folder with the other default measure types



# Special Site Data - Configuration

- easyEmission is designed to work with various testing applications (Engines, Boilers, Process, ...) and can be configured to special reporting requirements. For regulatory testing, the site permit information may be needed. The special site data sheet is the mechanism to collect this information for the report.

Go to Special site data sheet under “Settings” → “Configuration” → “Special site data” → Fields 1 - 10

The screenshot shows the configuration interface for the 'Special site data' section. The 'Settings' menu is highlighted in orange, and the 'Configuration' sub-menu is also highlighted. The 'Special site data' sub-menu is selected, showing a table with 10 fields. Each field has a text input box, a radio button for 'Entry', and a radio button for 'List'. The 'Entry' radio buttons are selected. The 'List ...' buttons are visible for each field.











Initial Page	Units	Special site data	Program	Own data	Color scheme	Software Update	Backup
		<input type="text"/>	<input checked="" type="radio"/> Entry		<input type="radio"/> List		List ...
		<input type="text"/>	<input checked="" type="radio"/> Entry		<input type="radio"/> List		List ...
		<input type="text"/>	<input checked="" type="radio"/> Entry		<input type="radio"/> List		List ...
		<input type="text"/>	<input checked="" type="radio"/> Entry		<input type="radio"/> List		List ...
		<input type="text"/>	<input checked="" type="radio"/> Entry		<input type="radio"/> List		List ...
		<input type="text"/>	<input checked="" type="radio"/> Entry		<input type="radio"/> List		List ...
		<input type="text"/>	<input checked="" type="radio"/> Entry		<input type="radio"/> List		List ...
		<input type="text"/>	<input checked="" type="radio"/> Entry		<input type="radio"/> List		List ...
		<input type="text"/>	<input checked="" type="radio"/> Entry		<input type="radio"/> List		List ...
		<input type="text"/>	<input checked="" type="radio"/> Entry		<input type="radio"/> List		List ...

## Input – Special site data information

**For engine testing please enter following labels into the free fields**

- Field 1            Permit Limit CO g/bhp-hr
- Field 2            Permit Limit NOx g/bhp-hr
- Field 3            Permit Limit CO lb/hr
- Field 4            Permit Limit NOx lb/hr
- Field 5            Permitted Horsepower
- Field 6            Engine Permit Number

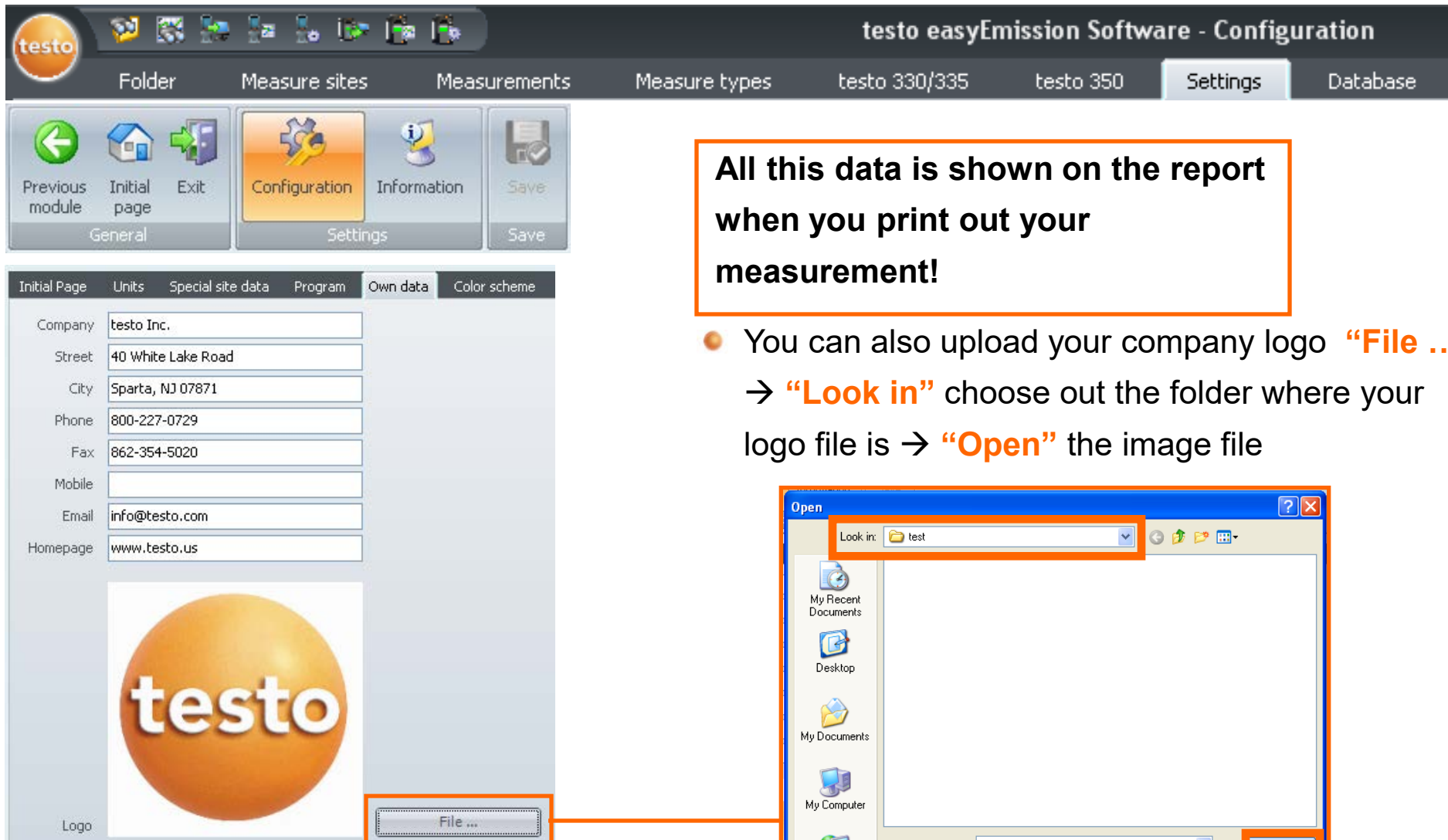
**It is important fill in the “fields” in the order shown. If not done this order, the database “pointers” will be NON functional.**

Initial Page	Units	Special site data	Program
Field 1	Permit Limit CO g/bhp-hr	<input type="text" value="Permit Limit CO g/bhp-hr"/>	 Entry
Field 2	Permit Limit NOx g/bhp-hr	<input type="text" value="Permit Limit NOx g/bhp-hr"/>	 Entry
Field 3	Permit Limit CO lb/hr	<input type="text" value="Permit Limit CO lb/hr"/>	 Entry
Field 4	Permit Limit NOx lb/hr	<input type="text" value="Permit Limit NOx lb/hr"/>	 Entry
Field 5	Permitted Horsepower	<input type="text" value="Permitted Horsepower"/>	 Entry
Field 6	Engine Permit Number	<input type="text" value="Engine Permit Number"/>	 Entry
Field 7		<input type="text"/>	 Entry
Field 8		<input type="text"/>	 Entry
Field 9		<input type="text"/>	 Entry
Field 10		<input type="text"/>	 Entry



## Input “Own data” operator fields

- Fill in your company data under “Settings” → “Configuration” → “Own data”



**All this data is shown on the report when you print out your measurement!**

- You can also upload your company logo **“File ...”** → **“Look in”** choose out the folder where your logo file is → **“Open”** the image file

# Input folder & general site information

1. Create a new folder with the customer data and **Save** the inputs

Folder data

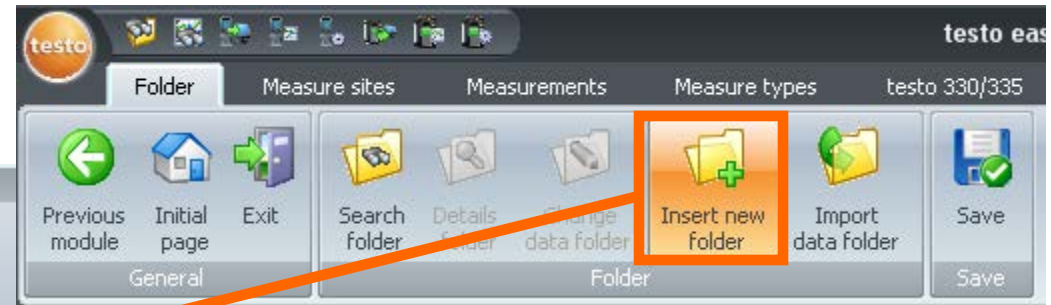
Folder: Engine Owner ★

Contact person: Mr. Customer

Street: Engine Street

City / ZIP code: Power City 99999

P.O.Box:



2. After that create a **New Site** with a the site information

Site Installation Flow data

Site name:

same as folder

Street: Engine Street

City / ZIP code: Power City 99999

Contact person: Mr. Customer

Phone:

Mobile:

Fax:

Email:

Address

Folder: Engine Owner

Contact person: Mr. Customer

Street: Engine Street

City: Power City 99999

Change Delete Search

---

List of sites

Site name	Street	City	ZIP code

Show Change Delete **New**

Disable the checkmark if the "Site information" is different than the Customer Data in the Folder data!



# Input Site specific information

- Fill in the Engine data

The screenshot shows the 'Change measure site data' form in the testo software. The form is divided into three tabs: 'Site', 'Installation', and 'Flow data'. The 'Flow data' tab is currently selected. The fields in this tab are:

- Telltale number
- Factory number
- Fuel (dropdown menu)
- Permit Limit CO g/bhp-hr
- Permit Limit NOx g/bhp-hr
- Permit Limit CO lb/hr
- Permit Limit NOx lb/hr
- Permitted Horsepower
- Engine Permit Number

An orange box highlights the last five fields: Permit Limit CO g/bhp-hr, Permit Limit NOx g/bhp-hr, Permit Limit CO lb/hr, Permit Limit NOx lb/hr, and Engine Permit Number. An orange arrow points from this box to a text box on the right.

**This input used for reports and used to calculate the emission values!**

- Telltale number is the Engine Model in the report
- Factory number is the Serial number in the report

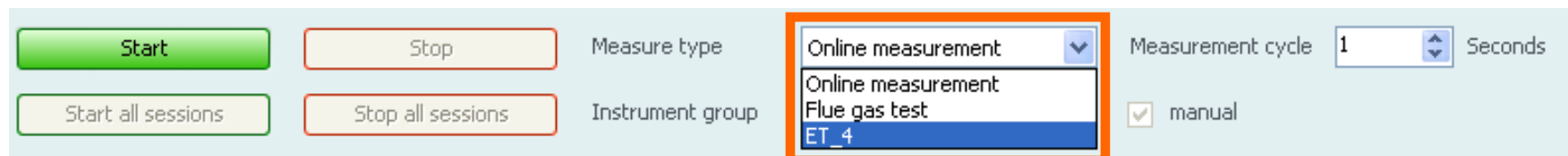
These are the fields defined under "Input – Special site data information" 3 pages before!

# Configure “Measure type”

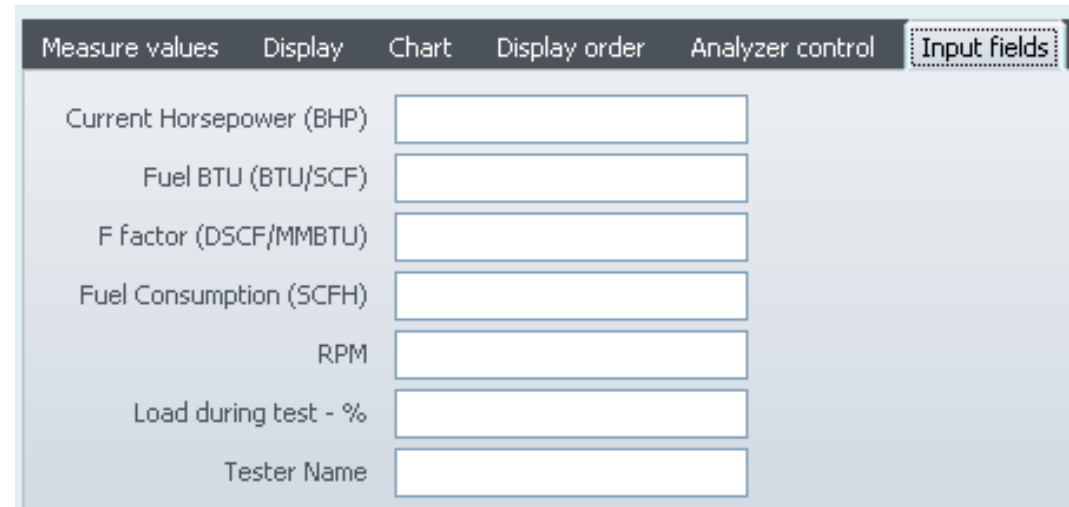
- Start Menu “Real time measurement” under “testo 350” → “Real time measurement”



- Choose the imported measure type **ET 4**



- Fill in the actual Engine Operation Data



# Configure display screen

- You can choose the data channels to be shown in the Real Time measurement and later in the report! Please not more than 14 channels (the report will be printed on multiple sheets of paper)!

- Start** “Real time measurement” → For a quick test or to run an automatic program see next page

Date / time	% O2	ppm CO	ppm NO	ppm NOx	% CO2	CO g/bhp-hr	CO lb/hr	NOx g/bhp-hr	NOx lb/hr
1/12/2009 4:00:00 PM	20.94	0	0	0	-	0	0	0	0
1/12/2009 4:00:01 PM	20.86	0	0	0	-	0	0	0	0
1/12/2009 4:00:02 PM	20.86	0	1	1	-	0	0	-	-

# Configure “Measure type” - Set the “Testing program”

- Disable the checkmark **“Manual”** and

ET\_4 Measurement cycle 1 Seconds

All  manual

use the default testing program **“Real time testo 350”** measurement and use the default “Testing program”

- You can change the default settings of the testing program in the menu “Measure type” → “Manage measure types” → choose out “ET\_4” → “Testing program” → **Edit** → **Real time testo 350** (see next page)

testo eas

Folder Measure sites Measurements **Measure types**

Previous module Initial page Exit **Manage measure types** Define testing program Formula Builder Report design

Measure types

Description	System / user
ET_4	User
Blue gas test	System
Online measurement	System

New Delete Export

**Testing program** Input fields Formula builder Ranges of measure values

**testo 335**

Cycle	1 sec
Gas time	1 min

**testo 350**

Start condition	Time
Start time	1/12/2009 4:07:04 PM
Stop condition	Time
Stop time	1/12/2009 4:07:04 PM

Edit

# Configure “Measure type” - Set the “Testing program”

- You can use the default setting or change the parameters
- Go back to **“Real time measurement”** and **Start** the online measurement and your configured measuring phases are running

testo 330/335	testo 350	Real time testo 350	
Description	Max duration (min)	Phase	Cycle (sec)
Gas Phase 1	5	Gas	30
Purge Phase 1	5	Fresh air	250
Gas Phase 2	5	Gas	30
Purge Phase 2	5	Fresh air	250
Gas Phase 3	5	Gas	30

Folder Measure sites Measurements Measure types testo 330/335 **testo 350** Settings

← Previous module
Home Initial page
→ Exit

Upload measure sites
Upload testing programs
Download measurement data
**Real time measurement**
Set-up testo 350
Manage instrument groups

**Start**
Stop
Measure type
ET\_4
Measurement cycle

Start all sessions
Stop all sessions
Instrument group
All
 manual

Measure values Display Chart Display order Analyzer control Input fields

Date / time	% O2	ppm CO	ppm NO	ppm NOx	% CO2	CO g/bhp-hr	CO lb/hr	NOx g/bhp-hr	NOx lb/hr
1/12/2009 4:33:56 PM	20.94	0	0	0	-	0	0	0	0

Save as ...
Export Excel
Clipboard
**Real time logger program. Phase 1: Gas Phase 1**

5 %

# Save readings of “Real time measurement”

- Use “**Save as ...**” to store the readings

Start Stop Measure type ET\_4 Measurement cycle 30 Seconds

Start all sessions Stop all sessions Instrument group All  manual

Measure values Display Chart Display order Analyzer control Input fields

Date / time	% O2	ppm CO	ppm NO	ppm NOx	% CO2	CO g/bhp-hr	CO lb/hr	NOx g/bhp-hr	NOx lb/hr
1/12/2009 4:33:56 PM	20.94	0	0	0	-	0	0	0	0
1/12/2009 4:34:26 PM	20.94	0	0	0	-	0	0	0	0
1/12/2009 4:34:56 PM	20.94	0	0	0	-	0	0	0	0
1/12/2009 4:35:26 PM	20.94	0	0	0	-	0	0	0	0
1/12/2009 4:35:56 PM	20.94	0	0	0	-	0	0	0	0
1/12/2009 4:36:26 PM	20.94	0	0	0	-	0	0	0	0

Save as ... Export Excel Clipboard Real time logger program finished.

- Choose the inserted Site folder (in this example Engine Owner) and confirm with **OK**

Save selected measurements under the site ...

Folder Site name

Search

Folder	Site name	Street	City	ZIP Code
Engine Owner		Engine Street	Power City	99999
Noname	Noname			
testo	office	Site Street	Site City	
testo	Engine Site	Site Street	Site City	

OK Cancel

Measurement values correctly saved under the site Engine Owner/.

OK



## Save the measurement and print the report

- Choose the measurement under “Measurements” → “Search measurement” → Double click on the desired measurement

The screenshot shows the 'testo easyEmission Software - Search' interface. The 'Measurements' tab is active, and the 'Search measurement' button is highlighted. Below the toolbar, a table displays measurement data.

Folder	Site name	Start measurement	End measurement	Type
		=	=	
▶ Engine Owner		1/12/2009 4:33:56 PM	1/12/2009 4:37:56 PM	ET_4

# Save the measurement and print the report

- Mark the checkmark **“Average”** to calculate the average of the “Real time measurement

The screenshot shows the testo easyEmission Software interface. The main window displays a table of measurement data. A dialog box titled "Compute Min/Max/Average of measure data" is open, with the "Average" checkbox selected. The "Print" button in the main interface is also highlighted.

Date / time	% O2	ppm ...	ppm ...	ppm ...	% CO2	CO ...	CO l...	NOx...	NOx...
1/12/2009 5:04:39...	20.94	0	0	0	-	0	0	0	0
1/12/2009 5:04:41...	20.93	0	0	0	-	0	0	0	0
1/12/2009 5:04:43...	20.87	0	0	0	-	0	0	0	0
1/12/2009 5:04:45...	20.85	0	0	0	-	0	0	0	0
1/12/2009 5:04:47...	20.85	0	0	0	-	0	0	0	0
1/12/2009 5:04:49...	20.89	0	0	0	-	0	0	0	0

- Choose out ET\_4 for the Engine Test Report and confirm with **OK**

The screenshot shows a dialog box with a list of engine test reports. "ET\_4" is selected. The "OK" button is highlighted.

# Example easyEmission report

- Now that your measure type is downloaded, the input parameters are set, your program defined, your site information is loaded, these do not need to change again.
- For subsequent testing, simply input the on-site testing information and save the measurement to the proper site.

**testo Inc.**  
 40 White Lake Road  
 Sparta, NJ 07871  
 Phone 800-227-0729  
 Fax 862-354-5020  
 Mobile  
 Email info@testo.com  
 Internet www.testo.us

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**OWNER**

Engine Owner  
 Engine Street  
 Power City 99999

**LOCATION**

Engine Street  
 Power City 99999

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**SITE INFORMATION**

**ENGINE INFORMATION**

Engine Model 987654  
 Serial Number 123456  
 Fuel

**ENGINE OPERATING INFORMATION**

Current Horsepower 1000  
 Fuel Flow (DSCF/hr) 4000  
 Fuel Efficiency HHV (BTU/bhp-hr) 2000  
 Current Load (bhp) 75  
 Engine Speed (RPM) 1000  
 Permitted horsepower 5555

---

**ENGINE PERMIT LIMITS**

Permit Number 321654  
 CO (g/bhp-hr) 111111  
 NOx (g/bhp-hr) 222222  
 CO (lb/hr) 333333  
 NOx (lb/hr) 44444

---

**MEASUREMENT & ANALYZER INFORMATION**

Time 1/12/2009 5:51:12 PM Measurement ID 11  
 Instrument testo 350  
 Serial number 01577181

---

**EMISSION TEST RESULTS**

PARAMETER	AVERAGE			
% O2	20.93%			
CO	0ppm	0g/bhp-hr	0lb/hr	
NOx	0ppm	0g/bhp-hr	0lb/hr	
NO	0ppm			
NO2	0.0ppm			
	AVERAGE g/bhp-hr	ENGINE PERMIT LIMIT g/bhp-hr	AVERAGE lb/hr	ENGINE PERMIT LIMIT lb/hr
CO	0	111111	0	333333
NOx	0	222222	0	44444

Engine Tester \_\_\_\_\_ Measurement Date 1/12/2009 5:51:48  
 Tom Tester

**MEASUREMENT INFORMATION**

Time 1/12/2009 5:51:12 PM  
 Instrument testo 350  
 Instrument Serial Number 01577181 Measurement ID 11

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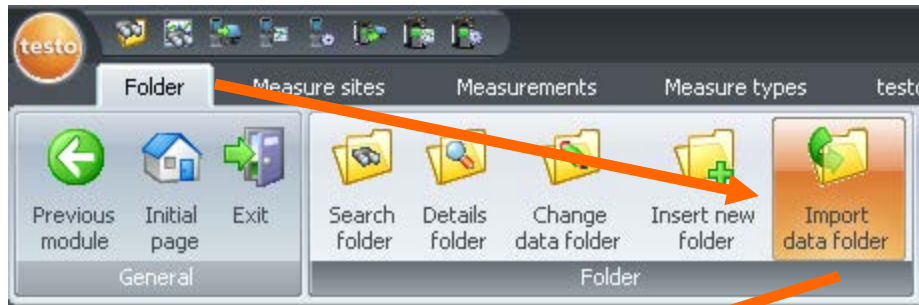
**RAW DATA**

Date Time	% O2	ppm CO	ppm NO	ppm NOx	ppm NO2	°F TI	Bara Pump	CO g/bhp-hr	CO lb/hr	NOx g/bhp-hr	NOx lb/hr
1/12/2009 5:51:12 PM	20.94	0	0	0	0.0	-	1.20	0	0	0	0
1/12/2009 5:51:14 PM	20.91	0	0	0	0.0	-	1.20	0	0	0	0
1/12/2009 5:51:16 PM	20.90	0	0	0	0.0	-	1.18	0	0	0	0
1/12/2009 5:51:18 PM	20.90	0	0	0	0.0	-	1.20	0	0	0	0
1/12/2009 5:51:20 PM	20.90	0	0	0	0.0	-	1.20	0	0	0	0
1/12/2009 5:51:22 PM	20.94	0	0	0	0.2	-	1.20	0	0	0	0
1/12/2009 5:51:24 PM	20.94	0	0	0	0.2	-	1.20	0	0	0	0
1/12/2009 5:51:26 PM	20.94	0	0	0	0.0	-	1.20	0	0	0	0
1/12/2009 5:51:28 PM	20.94	0	0	0	0.0	-	1.20	0	0	0	0
1/12/2009 5:51:30 PM	20.94	0	0	0	0.0	-	1.20	0	0	0	0
1/12/2009 5:51:32 PM	20.93	0	0	0	0.0	-	1.20	0	0	0	0
1/12/2009 5:51:34 PM	20.93	0	0	0	0.0	-	1.20	0	0	0	0
1/12/2009 5:51:36 PM	20.93	0	0	0	0.0	-	1.20	0	0	0	0
1/12/2009 5:51:38 PM	20.93	0	0	0	0.0	-	1.20	0	0	0	0
1/12/2009 5:51:40 PM	20.90	0	0	0	0.0	-	1.20	0	0	0	0
1/12/2009 5:51:42 PM	20.93	0	0	0	0.0	-	1.20	0	0	0	0
1/12/2009 5:51:44 PM	20.93	1	0	0	0.0	-	1.20	-1	-1	0	0
1/12/2009 5:51:46 PM	20.93	1	0	0	0.0	-	1.20	-1	-1	0	0
1/12/2009 5:51:48 PM	20.93	0	0	0	0.0	-	1.20	0	0	0	0
Average	20.93	0	0	0	0.0	-	1.20	0	0	0	0

For the greatest flexibility, the measurement type can be changed to satisfy user defined parameters. You can change it as your testing requirements dictate!

# Import Folder information from an Excel-List

# Import Folder information from an Excel-List



Textfile with delimiters (Comma, Tab)  
 Access database  
 Excel Worksheet

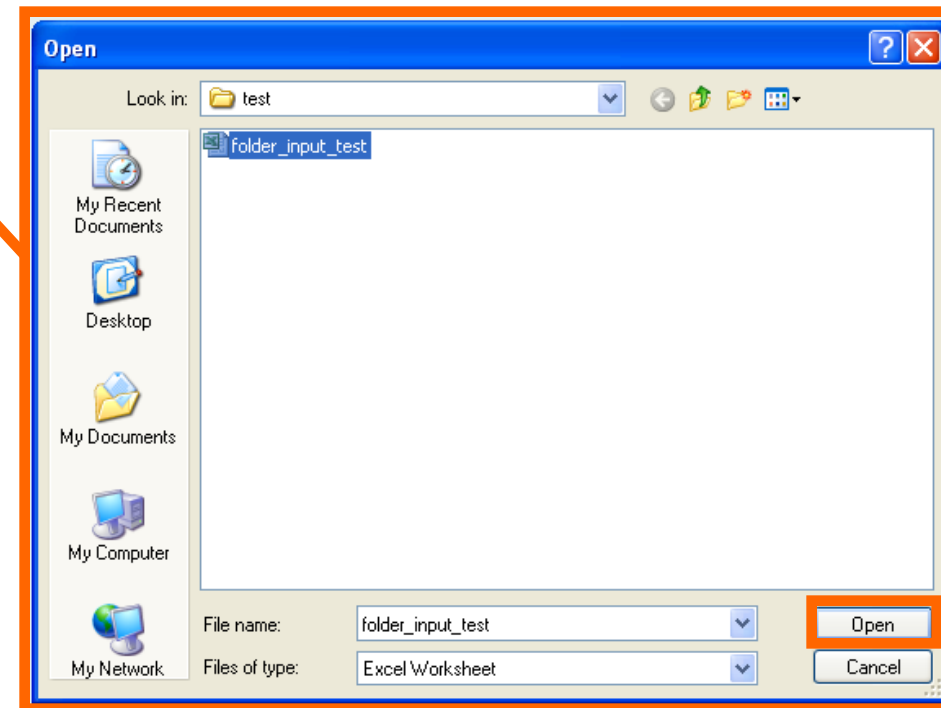
File:   
 User ID:   
 Password:

**Locate**

- Choose the data base

**Folder → Import data folder → Excel worksheet**

- Locate the excel file on your computer, mark the desired file and **Open**



# Import Folder information from an Excel-List

Textfile with delimiters (Comma, Tab)  
 Access database  
 Excel Worksheet

File:

User ID:   
 Password:

• The chosen Excel sheet is shown

→ klikk **Next**

Worksheets

- Sheet1
- Sheet2
- Sheet3

Define data columns

Folder name:

Contact person:

Street:

City:

Zip Code:

Phone:

2nd Phone:

Mobile:

Fax:

Email:

Remark:

• Define the columns for the import

Define data columns

Folder name:

Contact person:

Street:

City:

Zip Code:

Phone:

2nd Phone:

Mobile:

Fax:

Email:

Remark:

Folder name	Contact person	Street	City	Zip Code	1	20	300	500	Email
Folder name1	Contact perso	Street1	City1	Zip Code1	1	20	300	500	Email
Folder name2	Contact perso	Street2	City2	Zip Code2	2	21	310	510	Email
Folder name3	Contact perso	Street3	City3	Zip Code3	3	22	320	520	Email
Folder name4	Contact perso	Street4	City4	Zip Code4	4	23	330	530	Email
Folder name5	Contact perso	Street5	City5	Zip Code5	5	24	340	540	Email
Folder name6	Contact perso	Street6	City6	Zip Code6	6	25	350	550	Email
Folder name7	Contact perso	Street7	City7	Zip Code7	7	26	360	560	Email
Folder name8	Contact perso	Street8	City8	Zip Code8	8	27	370	570	Email
Folder name9	Contact perso	Street9	City9	Zip Code9	9	28	380	580	Email
Folder name1	Contact perso	Street10	City10	Zip Code10	10	29	390	590	Email

Preview of imported data

Folder	Contact perso	Street	City	ZIP code	P.O.Box	City (P.O.Box)	ZIP code (P.O)	Region	Cou

# Import Folder information from an Excel-List

**Define data columns**

Folder name

Contact person

Street

City

Zip Code

Phone

2nd Phone

Mobile

Fax

Email

Remark

N:\350MXL EMISSIONS\SOFTWARE\easyEmissions\Develop\Engine Testing\test\folder\_input\_test.xls

Folder name	Contact perso	Street	City	Zip Code	Phone	2nd Phone	Mobile	Fax	Ema
Folder name1	Contact perso	Street1	City1	Zip Code1	1	20	300	500	Emai
Folder name2	Contact perso	Street2	City2	Zip Code2	2	21	310	510	Emai
Folder name3	Contact perso	Street3	City3	Zip Code3	3	22	320	520	Emai
Folder name4	Contact perso	Street4	City4	Zip Code4	4	23	330	530	Emai
Folder name5	Contact perso	Street5	City5	Zip Code5	5	24	340	540	Emai
Folder name6	Contact perso	Street6	City6	Zip Code6	6	25	350	550	Emai
Folder name7	Contact perso	Street7	City7	Zip Code7	7	26	360	560	Emai
Folder name8	Contact perso	Street8	City8	Zip Code8	8	27	370	570	Emai
Folder name9	Contact perso	Street9	City9	Zip Code9	9	28	380	580	Emai
Folder name	Contact perso	Street	City	Zip Code	0	29	390	590	Emai

**Define data columns**

Folder name

Contact person

Street

City

Zip Code

Phone

2nd Phone

Mobile

Fax

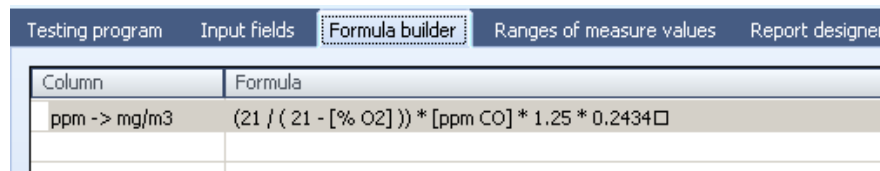
Email

Remark

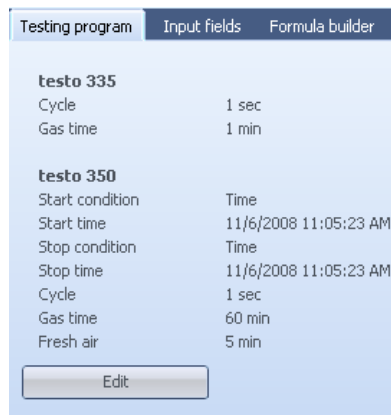
- Define the columns for the import and **Apply** when you are finished

# ET\_4 – What is this file doing?

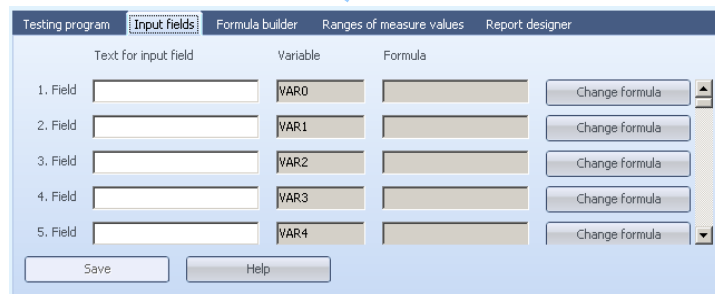
- ET\_4 is a predefined Measure type. A measure type relates many different functions of easyEmission for user-specific applications. Here is an overview!



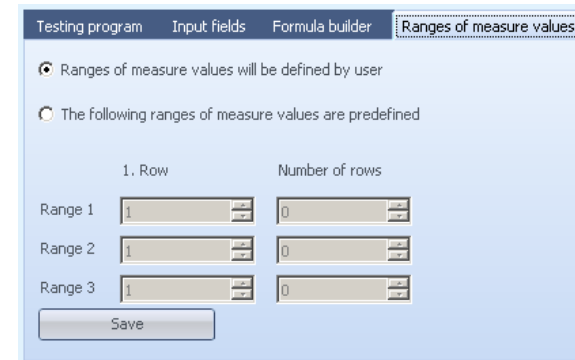
**Implement calculations**



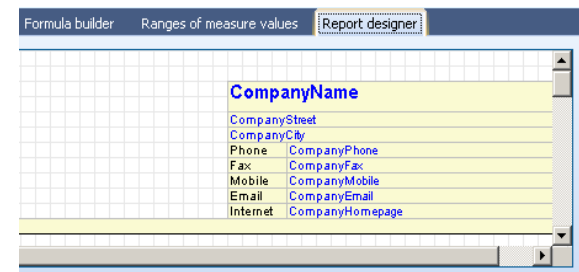
**Define measurement program**



**Define user specific input-fields**



**Define ranges in your measurement for Minimum, maximum and average calculations**



**Define specific reports for your printouts**




## ET\_4 – On-site Testing Information

- Input parameters for engine parameters for the calculation of the engine specific readings. Make this inputs before the “Real time measurement” or even after, before printout saving the readings and make the printout.
- Specific report for an Engine testing protocol
- Engine specific calculation of the emissions in g / bhp-hr and lb / hr

Current Horsepower (BHP)	<input type="text"/>
Fuel BTU (BTU/SCF)	<input type="text"/>
F factor (DSCF/MMBTU)	<input type="text"/>
Fuel Consumption (SCFH)	<input type="text"/>
RPM	<input type="text"/>
Load during test - %	<input type="text"/>

Editor (Page 1)
Preview (Page 1)



<b>OWNER</b>		<b>LOCATION</b>	
CustomerNameComplete		SystemStreet	
CustomerStreet		SystemCityComplete	
CustomerCityComplete			
<b>SITE INFORMATION</b>			
<b>ENGINE INFORMATION</b>		<b>ENGINE OPERATING INFORMATION</b>	
Engine Model	SystemFactoryNumber	Current Horsepower	VAR0
Serial Number	SystemTelltaleNumber	Fuel Flow(DSCF/H)	VAR3
Fuel	MeasurementFuel	Fuel Efficiency HHV (BTU/bhp-hr)	VAR1
<b>ENGINE PERMIT LIMITS</b>		Current Load (bhp)	VAR6
Permit Number	SystemSpecial10	Engine Speed (RPM)	VAR5
CO (g/bhp-hr)	SystemSpecialD1	Permitted horsepower	SystemSpecialD5
NOx (g/bhp-hr)	SystemSpecialD2		
CO (lb/hr)	SystemSpecialD3		
NOx (lb/hr)	SystemSpecialD4		
<b>MEASUREMENT &amp; ANALYZER INFORMATION</b>			
Time	MeasurementStartTime	Measurement ID	MeasurementID
Instrument	MeasurementInstrument		
Serial number	MeasurementSerialNumber		

## ET\_4 – Site Specific Input Parameters

- Input field for site engine information: This information can be stored once under “Measure site” → “Installation” and will be used for every measurement at the site

Site	Installation	Flow data
	Telltale number	<input type="text"/>
	Factory number	<input type="text"/>
	Fuel	<input type="text" value="v"/>
	Permit Limit CO g/bhp-hr	<input type="text"/>
	Permit Limit NOx g/bhp-hr	<input type="text"/>
	Permit Limit CO lb/hr	<input type="text"/>
	Permit Limit NOx lb/hr	<input type="text"/>
	Permitted Horsepower	<input type="text"/>
	Engine Permit Number	<input type="text"/>