

MEASURING PROGRAM for ANALOG-MEASURING-CASE with integrated Datenlogger

Operation manual

□□□□□□ Standard data rate of 1 second

- 1000 days long time logging
- 8 universal analog inputs
- 4 different measuring points



WF STEUERUNGSTECHNIK GMBH

WF Steuerungstechnik GmbH, Zeppelinstr. 7-9, 75446 Wiernsheim,
Tel. 07044/91 11 00, Fax 07044/5717

CONTENTS

Page 1	contents, system requirement, installation instruction
Page 2	introduction and operation
Page 3	Connecting current clamps for compressor measurement
Page 4 + 5	programming with keys
Page 6	start measuring
Page 7	read 4 different measuring points
Page 8	create folder for measuring files
Page 9	Import measurement data
Page 10	define measuring channels
Page 11	evaluating data
Page 12	Define compressor channels
Page 13	define analog sensor channels
Page 14 + 15	Set loaded and unloaded compressor-current thresholds
Page 16 + 17	Configure variable-speed compressors
Page 18	scaling pressure diagram
Page 19	scaling the flow diagram
Page 20 + 21	evaluating of data
Page 22	Change the compressed-air consumption averaging interval
Page 23	printer and page settings
Page 24	mounting the flow sensor
Page 25	data list for the analog inputs

SYSTEM REQUIREMENTS

WINDOWS 98, WINDOWS NT 4.0, WINDOWS 2000, XP

INSTALLATION

Insert the CD-ROM in your computer.

Setup starts automatically. If it does not, double-click setup.exe.

PROGRAM LICENSE

The license for the PC program exclusively applies to the control number given under the identification code and may be copied only for safeguarding purposes.

Multiple installations only are allowed provided that this concerns the data of the control number named under the identification code

Introduction and operating

The compressed air measuring with this program contains the following measuring forms:

1. Compressed air measuring with analog current clamp

2. measuring with different sensors:

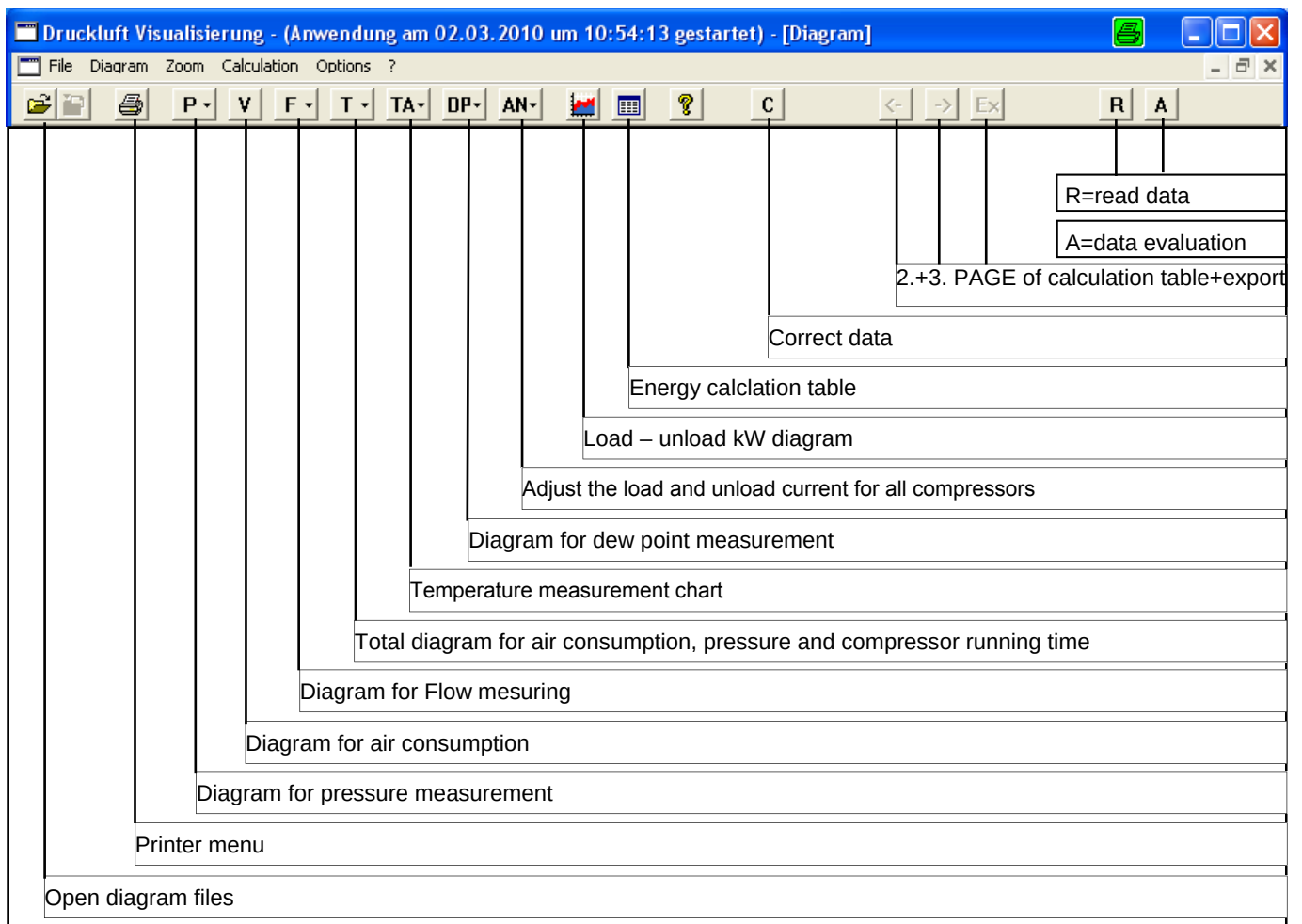
- Pressure Transducer
- Dew Point
- Temperature
- Flow
- Power

The PC program makes the energy consumption for compressed air transparent.

The compressed air consumption in your compressed air station is documented and evaluated. You receive a compressed air consumption graphic for a graphic reproduction for every day, compressor running time and an energy table.

The energy table lists the running time of your compressors for load and idle times and evaluates the compressed air costs in the respective national currency.

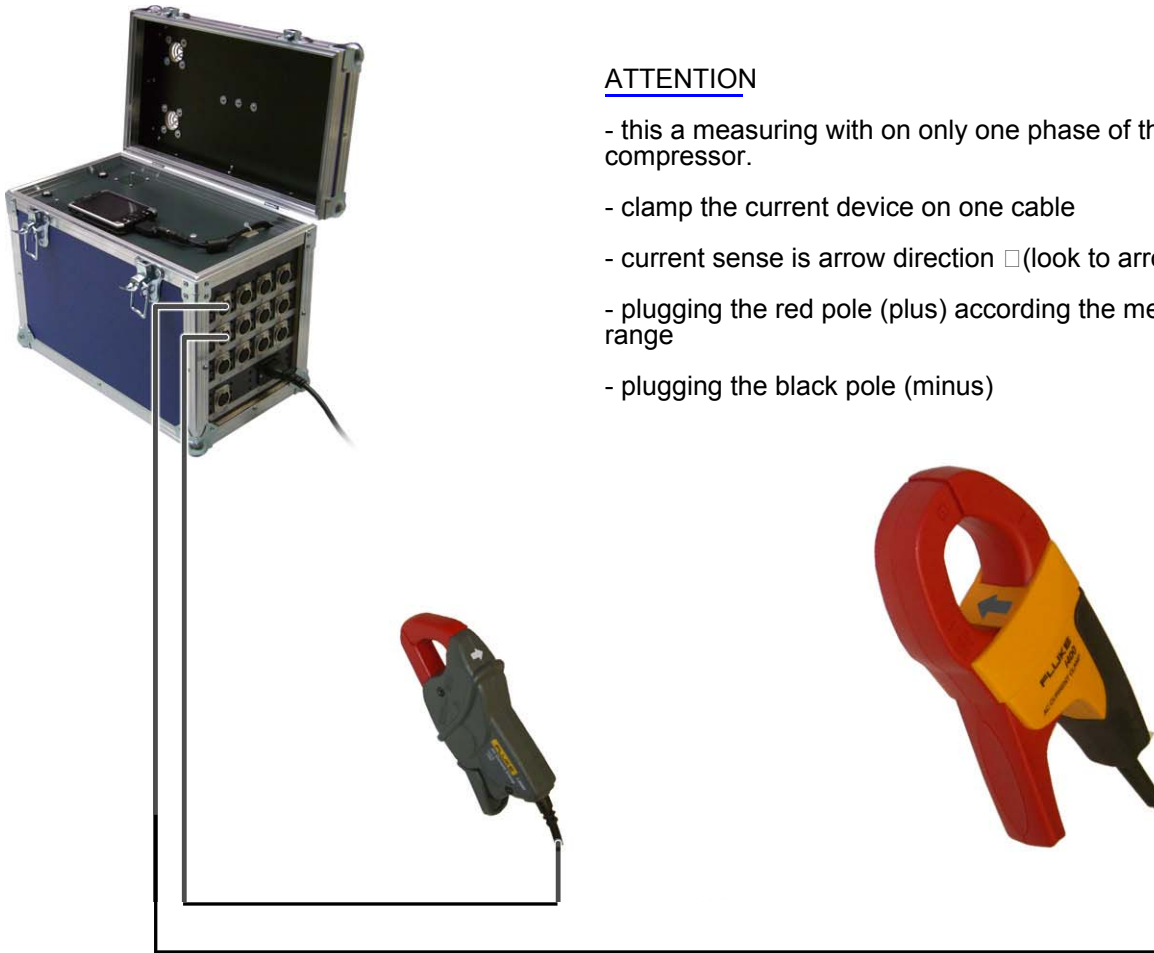
The produced compressed air crowd gets moreover single for every mpressor and in the sum pointed. The operation explains herself by the badge marking of themselves



Current clamp connection for compressor measuring

ATTENTION

- this a measuring with on only one phase of the compressor.
- clamp the current device on one cable
- current sense is arrow direction □ (look to arrow)
- plugging the red pole (plus) according the measuring range
- plugging the black pole (minus)



Current adapter:

The output of the current clamp is 4-20 mA and will be connected to the analog inputs of the measuring case

Example:

Clamp type	Measuring range	Output signal	Max. Motor kW
200 A	0-200 A	0-200 mA	75 kW
400 A	0-400A	0-400 mA	160 kW
1200 A	0-1200 A	0-1200 mA	500 kW

Programming with the keys

Start measuring

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20

AE1 = 04,3 AE1 = 09,1
AE3 = 06,5 AE3 = 16,0
AE5 = 10,4 AE5 = 13,6
AE7 = 11,0 AE7 = 05,2
```

E

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20

START MEASUREMENT
EDIT MEASURING DATA
FORMAT SD CARD
PROGRAMMING
```

E

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20

START MEASURING

NO
YES
```

E

```
MEASUREMENT    ACTIVE
27.02.2010      08:50:20

AE1 = 04,3 AE1 = 09,1
AE3 = 06,5 AE3 = 16,0
AE5 = 10,4 AE5 = 13,6
AE7 = 11,0 AE7 = 05,2
```

Edit measuring data

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20

AE1 = 04,3 AE1 = 09,1
AE3 = 06,5 AE3 = 16,0
AE5 = 10,4 AE5 = 13,6
AE7 = 11,0 AE7 = 05,2
```

E

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20

START MEASUREMENT
EDIT MEASURING DATA
FORMAT SD CARD
PROGRAMMING
```

E

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20

EDIT MEASURING DATA

COPY MEASURING DATA
DELETE MEASURING DATA
VIEW MEASURING DATA
```

E

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20
COPY MEASURING DATA
2010-02-27 2010-02-21
XXXX-XX-XX XXXX-XX-XX
XXXX-XX-XX XXXX-XX-XX
XXXX-XX-XX XXXX-XX-XX
XXXX-XX-XX XXXX-XX-XX
```

E

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20
COPY MEASURING DATA
2010-02-27.MES

FOR ABORT PUSH KEY
+ AND -
```

E

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20
COPY MEASURING DATA

COPY READY !
```

delete measuring data

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20

AE1 = 04,3 AE1 = 09,1
AE3 = 06,5 AE3 = 16,0
AE5 = 10,4 AE5 = 13,6
AE7 = 11,0 AE7 = 05,2
```

E

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20

EDIT MEASURING DATA

COPY MEASURING DATA
DELETE MEASURING DATA
VIEW MEASURING DATA
```

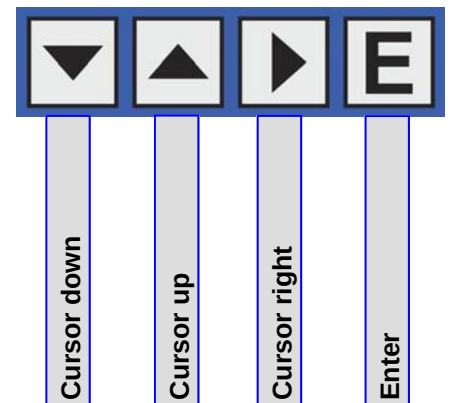
E

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20
DELETE MEASURING DATA
2010-02-27 2010-02-21
XXXX-XX-XX XXXX-XX-XX
XXXX-XX-XX XXXX-XX-XX
XXXX-XX-XX XXXX-XX-XX
XXXX-XX-XX XXXX-XX-XX
```

E

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20
DELETE MEASURING DATA

MEASURING DATA DELETE
```



Programming with the keys

view measuring data

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20

AE1 = 04,3 AE1 = 09,1
AE3 = 06,5 AE3 = 16,0
AE5 = 10,4 AE5 = 13,6
AE7 = 11,0 AE7 = 05,2
```

E

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20

EDIT MEASURING DATA
COPY MEASURING DATA
DELETE MEASURING DATA
VIEW MEASURING DATA
```

E

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20
VIEW MEASURING DATA
2010-02-21 XXXX-XX-XX
XXXX-XX-XX XXXX-XX-XX
XXXX-XX-XX XXXX-XX-XX
XXXX-XX-XX XXXX-XX-XX
XXXX-XX-XX XXXX-XX-XX
```

E

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20
VIEW MEASURING DATA
2010-02-21.MES
2010-02-22.MES
2010-02-23.MES
2010-02-24.MES
2010-02-25.MES
```

formate SD card

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20

AE1 = 04,3 AE1 = 09,1
AE3 = 06,5 AE3 = 16,0
AE5 = 10,4 AE5 = 13,6
AE7 = 11,0 AE7 = 05,2
```

E

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20

START MEASUREMENT
EDIT MEASURING DATA
FORMAT SD CARD
PROGRAMMING
```

E

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20

FORMAT SD CARD ?

NO
YES
```

E

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20

FORMAT SD CARD ?

PLEASE WAIT...
```

programming

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20

AE1 = 04,3 AE1 = 09,1
AE3 = 06,5 AE3 = 16,0
AE5 = 10,4 AE5 = 13,6
AE7 = 11,0 AE7 = 05,2
```

E

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20

START MEASUREMENT
EDIT MEASURING DATA
FORMAT SD CARD
PROGRAMMING
```

E

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20

PROGRAMMING

SET DATE / TIME
LANGUAGE
```

E

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20

SET DATE / TIME

Sa 27.02.2010
08:50:20
```

E

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20

PROGRAMMING

SET DATE / TIME
LANGUAGE
```

E

```
MEASUREMENT    INACTIVE
27.02.2010      08:50:20

LANGUAGE

DEUTSCH
ENGLISH
```

- Start a measurement (see Starting a measurement).
- Stop: set the cursor to NO and press Enter.
- Copy measurement data (see Editing measurement data).
- Select measurement data with the cursor.
- Delete measurement data after copying it.
- Set the time, date and language (see Programming).
- Format the SD card after every five measurements.

Start measuring

Example: measuring of following compressors and pressure

1.
2 Compressors with 12,5 m³/min capacity
2.
1 variable speed Kompressor with the capacity of 4-25,4 m³/min
3.
Net pressure

Note the connected sensors to the data list together with the span of current mesurment.

In the example mentioned above was connected following equipment:

- ☐ ☐
Input 1+2
current clamp of 200 A
- ☐ ☐
Input 3
current clamp of 200 A 0-400 A
- ☐ ☐
Input 5
pressure sensor 0-16 bar

Before the measuring, please, please write down the attached components to the data list,

so that for the measuring analysis, the parameter settings and customer name are available.

Data list for analog measuring																
Input	Compressor Typ or Sensor Typ	Load / unload	variable speed	m ³ /min - Minimal	m ³ /min - Maximal	Motor kW	Cos phi	Value of amperé clamp	Value of kW range	Net pressure sensor	Extra pressure sensor	Temperature sensor	Flowsensor	Value at 4 mA	Value at 20 mA	Input
	1	X100	X			12,5	75	0,9	200						0	
2	X100	X			12,5	75	0,9	200						0	200	2
3	X200-FU		X	4	25,4	132	0,95	400						0	400	3
4																4
5	Drucktransmitter									X				0 bar	16 bar	5
6																6
7																7
8																8
Case No.		1		Date		27.02.2010		Customer name		SIEMENS						

Read 4 different measuring points



Case 1

Data list for analog measuring															
Input	Compressor Type	wt	Load / reduced variable speed	wt/min - Manual	wt/min - Manual	Motor RPM	Core job	Value of impact clamp	Value of 100 range	Net pressure sensor	Extra pressure sensor	Temperature sensor	Fluorescence	Value of 4 m/s	Value of 20 m/s
1	I100	5		12.5	75	0.9		200						0	200
2	I100	5		12.5	75	0.9		200						0	200
3	I200-FU	5	8	25.4	132	0.95		400						0	400
4															
5	Ducttransmitter									X				0 bar	10 bar
6															
7															
8															
Case No.		1		Date		27.02.2010		Customer name		SIEMENS					

Datalist 1



Case 2

Data list for analog measuring															
Input	Compressor Type	wt	Load / reduced variable speed	wt/min - Manual	wt/min - Manual	Motor RPM	Core job	Value of impact clamp	Value of 100 range	Net pressure sensor	Extra pressure sensor	Temperature sensor	Fluorescence	Value of 4 m/s	Value of 20 m/s
1	I100	5		12.5	75	0.9		200						0	200
2	I100	5		12.5	75	0.9		200						0	200
3	I200-FU	5	8	25.4	132	0.95		400						0	400
4															
5	Ducttransmitter									X				0 bar	10 bar
6															
7															
8															
Case No.		2		Date		27.02.2010		Customer name		SIEMENS					

Datalist 2



Case 3

Data list for analog measuring															
Input	Compressor Type	wt	Load / reduced variable speed	wt/min - Manual	wt/min - Manual	Motor RPM	Core job	Value of impact clamp	Value of 100 range	Net pressure sensor	Extra pressure sensor	Temperature sensor	Fluorescence	Value of 4 m/s	Value of 20 m/s
1	I100	5		12.5	75	0.9		200						0	200
2	I100	5		12.5	75	0.9		200						0	200
3	I200-FU	5	8	25.4	132	0.95		400						0	400
4															
5	Ducttransmitter									X				0 bar	10 bar
6															
7															
8															
Case No.		3		Date		27.02.2010		Customer name		SIEMENS					

Datalist 3



Case 4

Data list for analog measuring															
Input	Compressor Type	wt	Load / reduced variable speed	wt/min - Manual	wt/min - Manual	Motor RPM	Core job	Value of impact clamp	Value of 100 range	Net pressure sensor	Extra pressure sensor	Temperature sensor	Fluorescence	Value of 4 m/s	Value of 20 m/s
1	I100	5		12.5	75	0.9		200						0	200
2	I100	5		12.5	75	0.9		200						0	200
3	I200-FU	5	8	25.4	132	0.95		400						0	400
4															
5	Ducttransmitter									X				0 bar	10 bar
6															
7															
8															
Case No.		4		Date		27.02.2010		Customer name		SIEMENS					

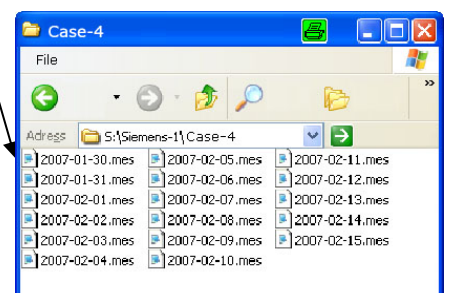
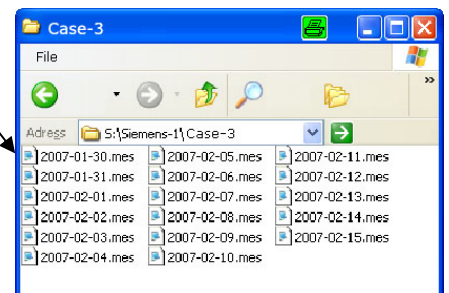
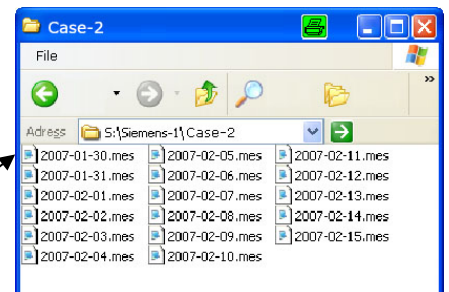
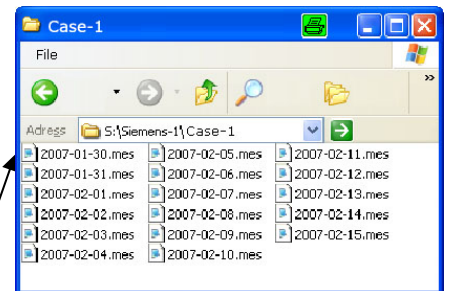
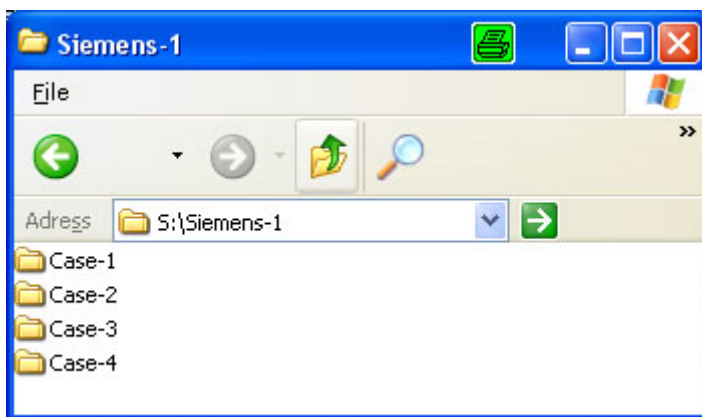
Datalist 4

PC-Program to evaluate the measuring data

Create folder for measuring files

Step 1:

- Create new folder with customers name
- Create in customers folder for each measuring caes an new folder named Case-1, Case-2, Case-3, Case-4.



Step 2:

- Copy the files from Case-1 to the folder „Case-1“

Step 3:

- Copy the files from Case-2 to the folder „Case-2“

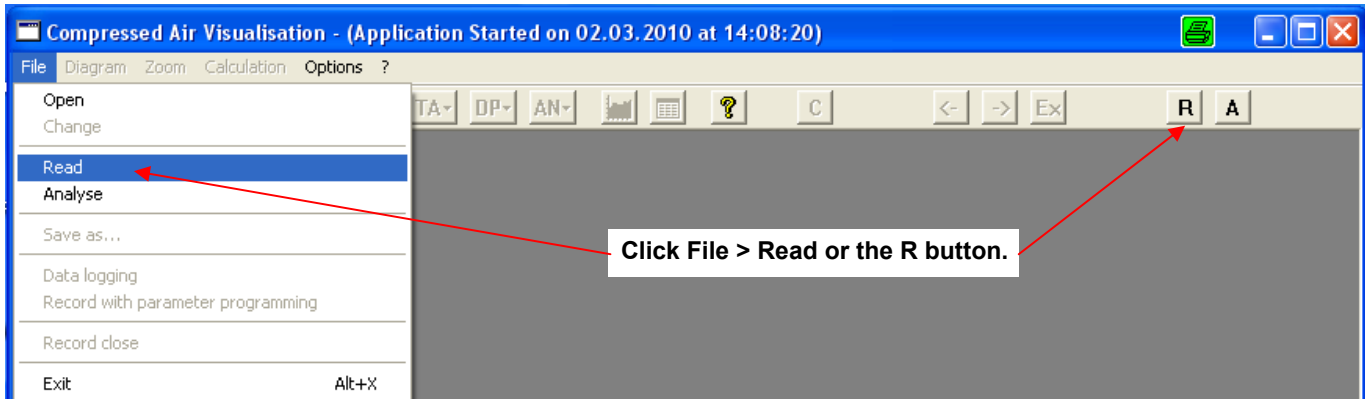
Step 4:

- Copy the files from Case-3 to the folder „Case-3“

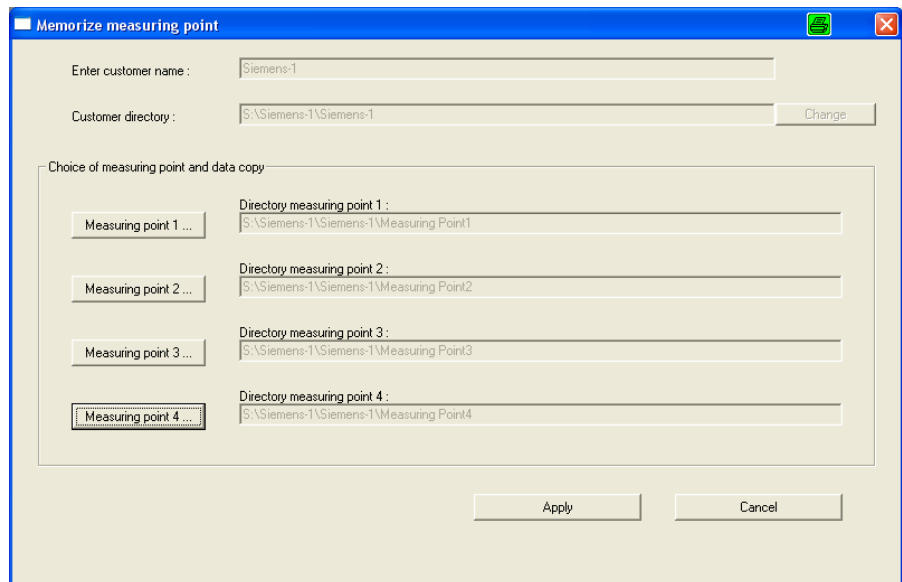
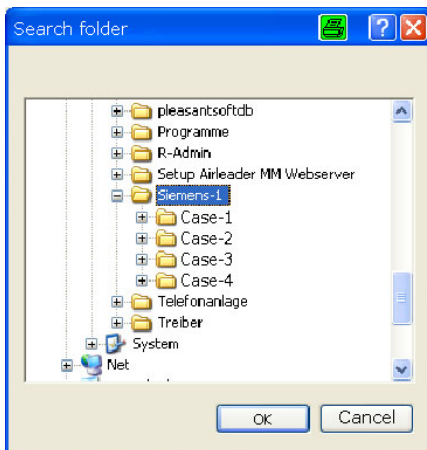
Step 5:

- Copy the files from Case-4 to the folder „Case-4“

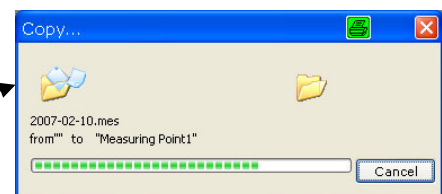
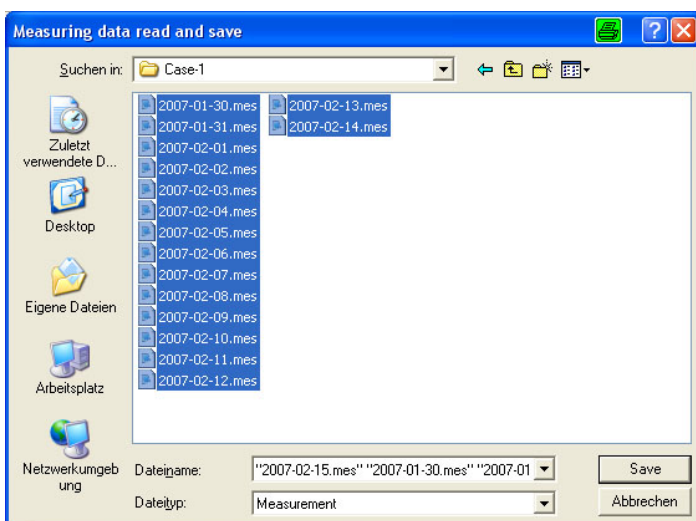
Import measurement data



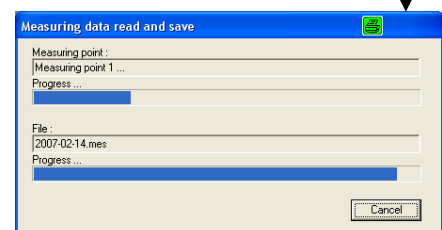
1. Select customers folder
Where the measuring data are stored
2. Enter Customers name
3. Select the folder to store the measuring data
4. the same for measuring point 2-4



5. Select the measurement data and click Save.
Copy measurement data



Measurement data is read after you click Apply.



Define measuring channels

(1)

Define measurement channels

Channels 1-16: compressors only.
 Channels 17-32: sensors with a 4-20 mA output, such as pressure transmitters, flow, temperature and dew-point sensors, power meters (kW), or current transducers (A).

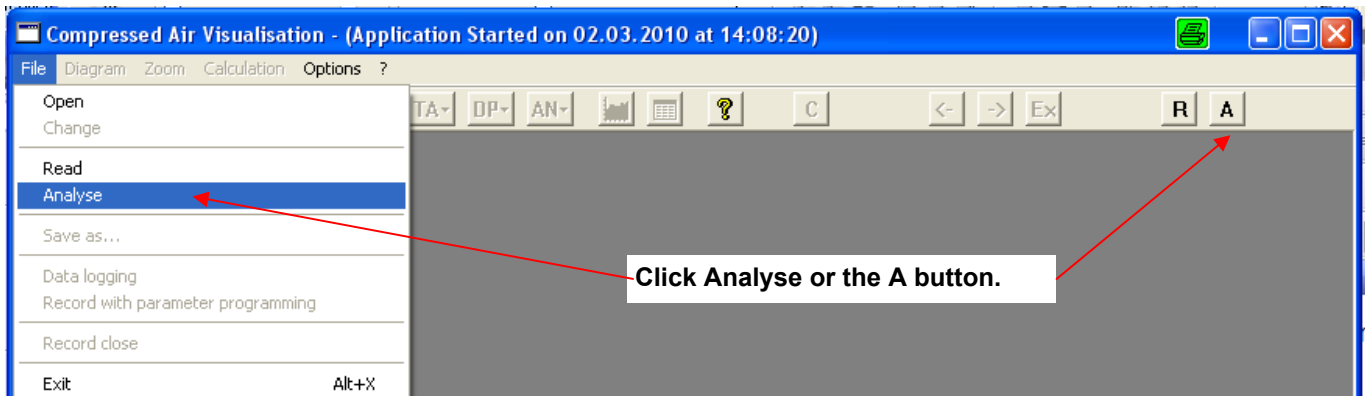
Select K for compressors and S for sensors.

The example in configuration form (1) uses:
 - 12 compressors in four stations
 - Four pressure sensors, one per station.

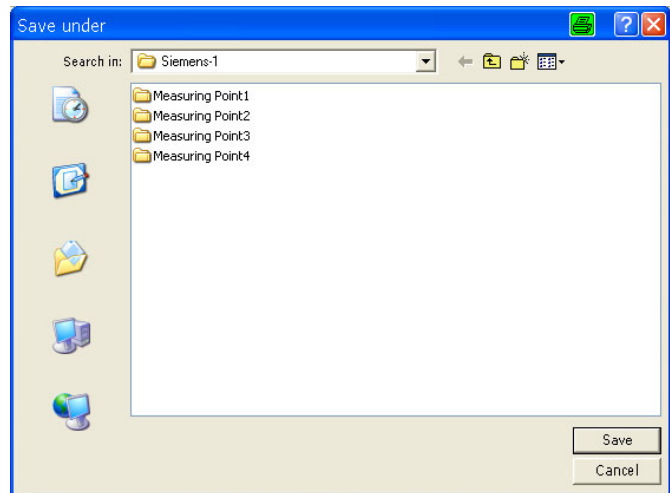
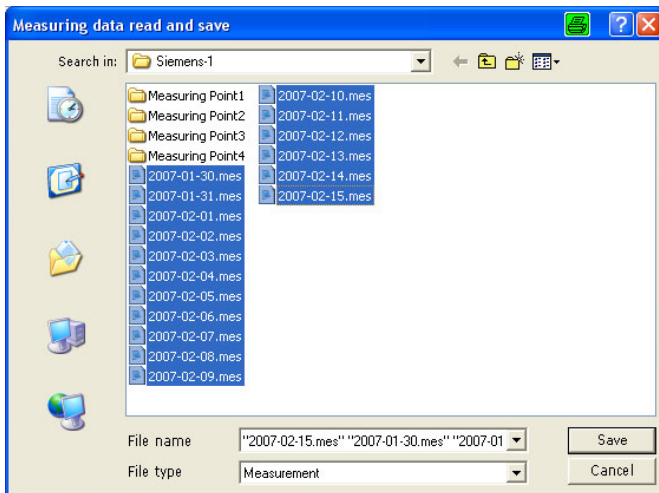
Import data

Click Apply to combine the data from the individual stations and save it in the directory created earlier.

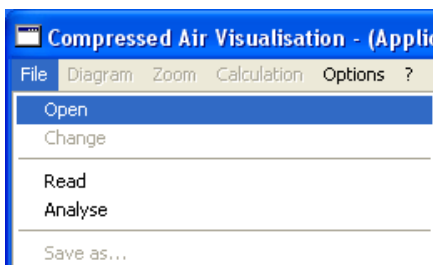
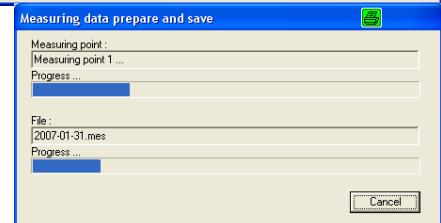
Evaluation data



Select the mes files and click Save.

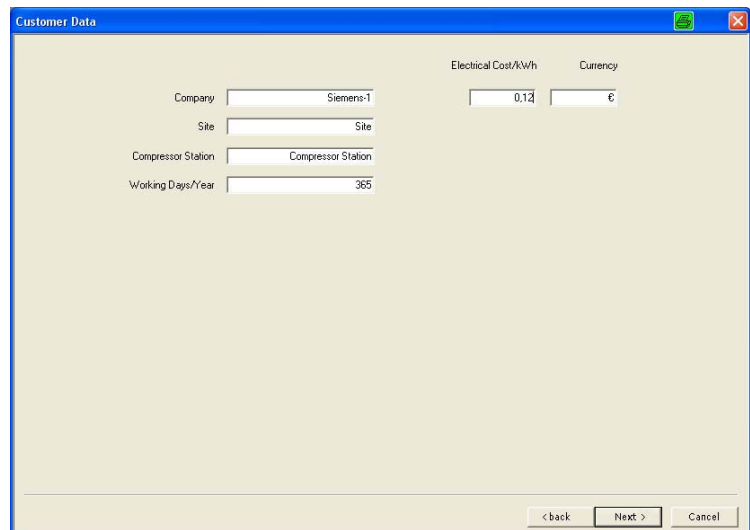


The measuring data will be calculated together saved under the customers folder



Click File > Open. Enter:

- Company name
- Site
- Compressor-station name
- Working days per year
- Electricity cost per kWh



Define compressor channels

AE1...AE4

Channel	Measuring	Application	4mA	20mA	[unit]	[m³/min]	Motor [kW]	Voltage [V]	Load cos phi
1 / AE1	[M1 K01]	Compressor [A]	0,00	200,00	[A]	12,5	75,0	400,0	0,900
									No-load cos phi
									0,600
2 / AE2	[M1 K02]	Compressor [A]	0,00	200,00	12,5	12,5	75,0	400,0	0,900
									No-load cos phi
									0,600
3 / AE3	[M1 K03]	Speed control compressor [A]	0,0	400,0	[A]	min-[m³/min]	Imin [A]	Voltage [V]	Load cos phi
						4,0	0,0	400,0	0,950
						max-[m³/min]	Imax [A]		No-load cos phi
						25,4	400,0		0,600
4 / AE4	[M2 K01]	Compressor [A]	0,00	200	[A]	12,5	75	400,0	0,9
									No-load cos phi
									0,600

AE5...AE8

Channel	Measuring	Application	4mA	20mA	[unit]	[m³/min]	Motor [kW]	Voltage [V]	Load cos phi
5 / AE5	[M2 K02]	Compressor [A]	0,00	200,00	[A]	12,5	75,0	400,0	0,900
									No-load cos phi
									0,600
6 / AE6	[M2 K03]	Speed control compressor [A]	0,0	400,0	[A]	min-[m³/min]	Imin [A]	Voltage [V]	Load cos phi
						4,0	0,0	400,0	0,950
						max-[m³/min]	Imax [A]		No-load cos phi
						25,4	400,0		0,600
7 / AE7	[M3 K01]	Compressor [A]	0,00	200,00	[A]	12,5	75,0	400,0	0,900
									No-load cos phi
									0,600
8 / AE8	[M3 K02]	Compressor [A]	0,00	200	[A]	12,5	75	400,0	0,5
									No-load cos phi
									0,600

AE9...AE12

Channel	Measuring	Application	4mA	20mA	[unit]	min-[m³/min]	Imin [A]	Voltage [V]	Load cos phi
9 / AE9	[M3 K03]	Speed control compressor [A]	0,0	400,0	[A]	min-[m³/min] <td>Imin [A]</td> <td>Voltage [V]</td> <td>Load cos phi</td>	Imin [A]	Voltage [V]	Load cos phi
						4,0	0,0	400,0	0,950
						max-[m³/min]	Imax [A]		No-load cos phi
						25,4	400,0		0,600
10 / AE10	[M4 K01]	Compressor [A]	0,00	200,00	[A]	12,5	75,0	400,0	0,900
									No-load cos phi
									0,600
11 / AE11	[M4 K02]	Compressor [A]	0,00	200,00	[A]	12,5	75,0	400,0	0,900
									No-load cos phi
									0,600
12 / AE12	[M4 K03]	Speed control compressor [A]	0,0	400,0	[A]	min-[m³/min]	Imin [A]	Voltage [V]	Load cos phi
						4	0,0	400,0	0,950
						max-[m³/min]	Imax [A]		No-load cos phi
						25,4	400,0		0,600

< back
next >
Cancel

Measuring point 1 (M1) compressors

- Compressor 1+2 - load/unload measuring device 200 A clamp 12,5 m³/min, 75 kW Motor cos phi of load/unload
- Compressor 3 variable speed measuring device 400 A clamp 4-25,4 m³/min, 132 kW Motor cos phi of load/unload

Measuring point 2 (M2) compressors

- Compressor 1+2 - load/unload measuring device 200 A clamp 12,5 m³/min, 75 kW Motor cos phi of load/unload
- Compressor 3 variable speed measuring device 400 A clamp 4-25,4 m³/min, 132 kW Motor cos phi of load/unload

Measuring point 3 (M3) compressors

- Compressor 1+2 - load/unload measuring device 200 A clamp 12,5 m³/min, 75 kW Motor cos phi of load/unload
- Compressor 3 variable speed measuring device 400 A clamp 4-25,4 m³/min, 132 kW Motor cos phi of load/unload

Measuring point 4 (M4) compressors

- Compressor 1+2 - load/unload measuring device 200 A clamp 12,5 m³/min, 75 kW Motor cos phi of load/unload
- Compressor 3 variable speed measuring device 400 A clamp 4-25,4 m³/min, 132 kW Motor cos phi of load/unload

Define analog sensor channels

Sensor measuring point 1
(M1)

☐ ☐

channel 17 Net pressure

Sensor measuring point 2
(M2)

☐ ☐

channel 18 extra pressure

Sensor measuring point 3
(M3)

☐ ☐

channel 19 extra pressure

Sensor measuring point 4
(M4)

☐ ☐

channel 20 extra pressure

Channel	Measuring	Application	4mA	20mA	[unit]
17 / AE17 [M1 S05]	Net pressure	0,00	16,00	bar	
18 / AE18 [M2 S05]	Extra Pressure	0,00	16,00	bar	
19 / AE19 [M3 S05]	Extra Pressure	0,00	16,00	bar	
20 / AE20 [M4 S05]	Extra Pressure	0,00	16,00	bar	

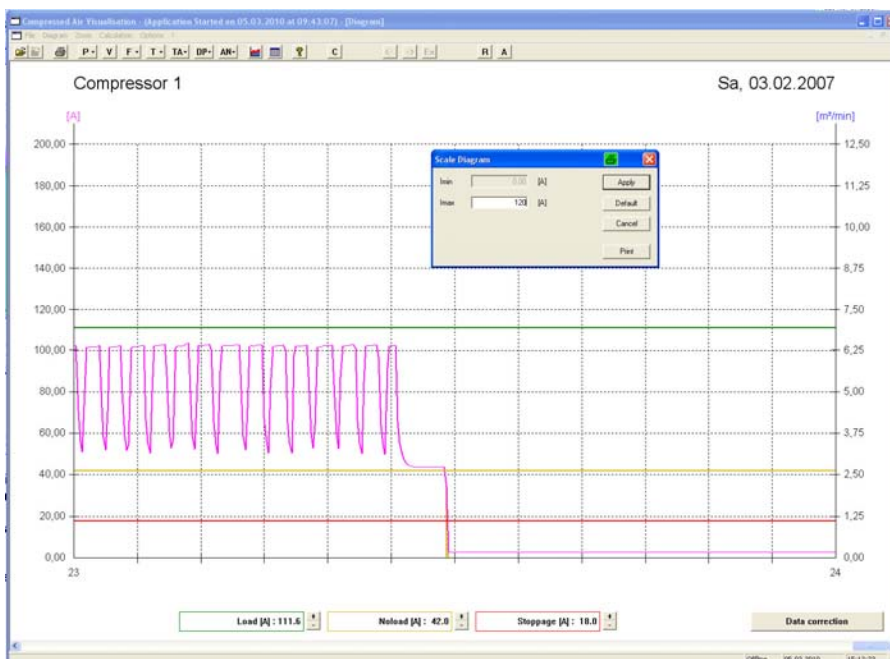
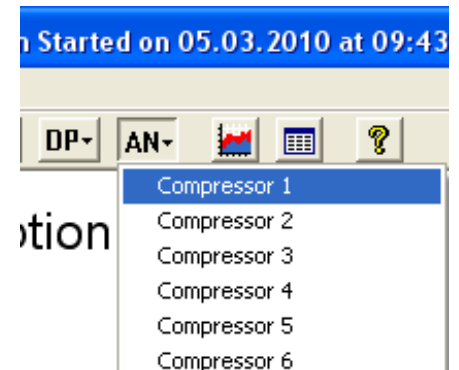
After push OK the data will
be
calculated and stored in
customers
folder.

To select processed
measurement data, click File
> Open, select a day and
click Open.

Compressor current thresholds: loaded and unloaded

With this configuration the program will separate the load and unload time and calculate the air flow, based on compressor load time

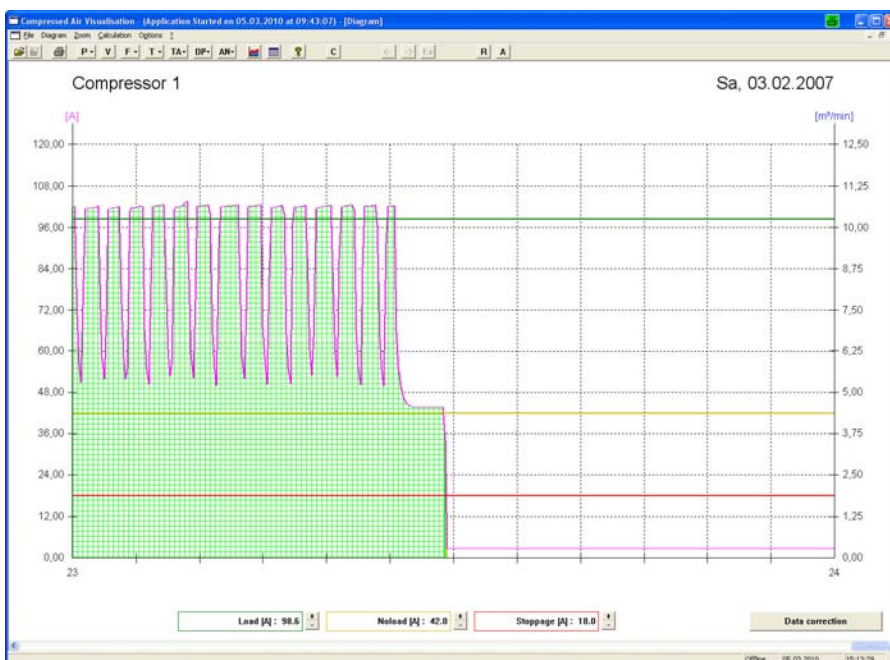
1. click on button „AN“
2. select compressor 1
3. set zoom to 1 h



Scale the compressor chart
Right-click in the chart, set the flow scale (m³/min), then click Apply.

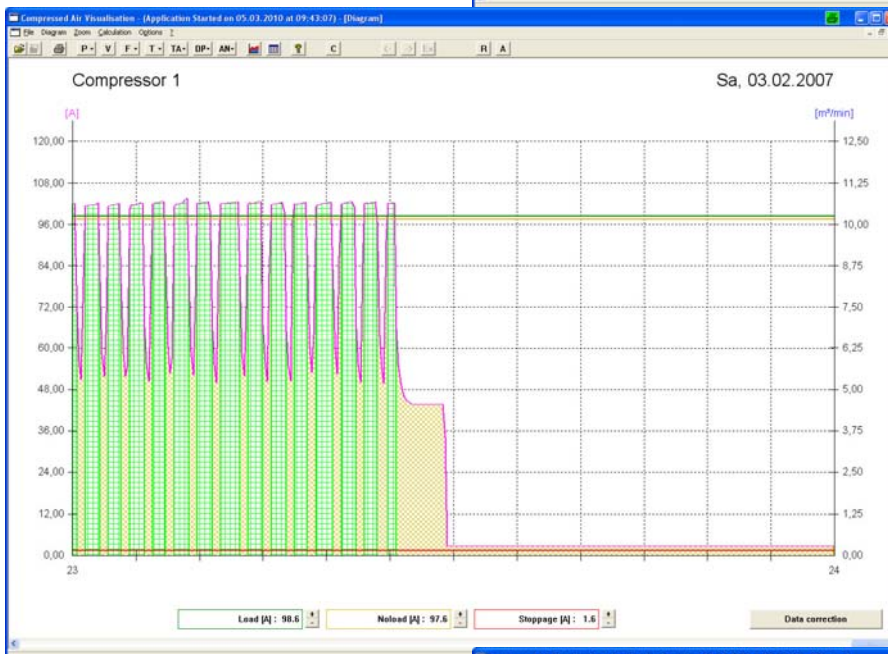
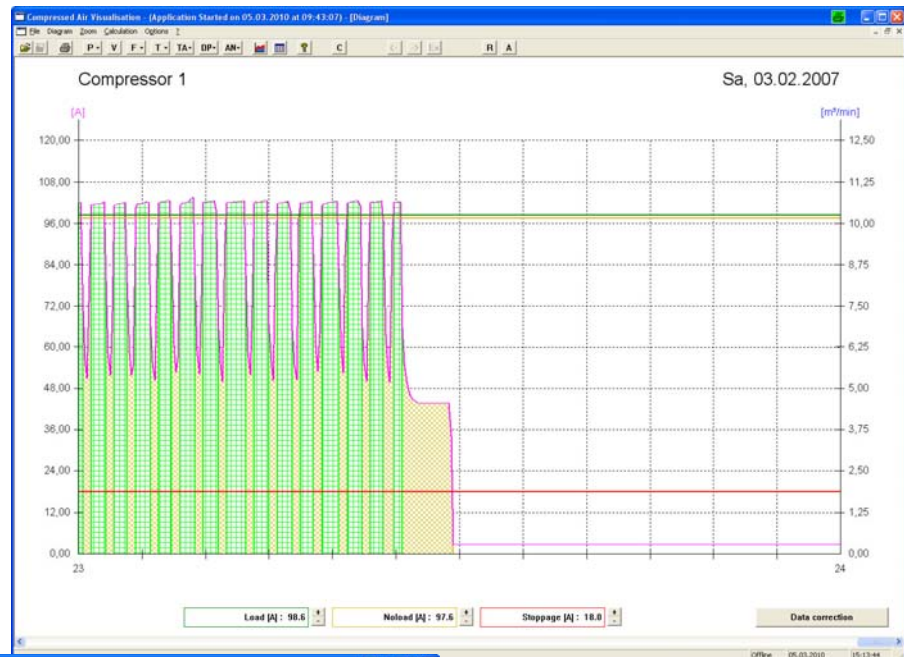
Line colours:
- Green: loaded current
- Yellow: unloaded current
- Red: stopped current

Set loaded power (kW)
Move the green line to the start of the loaded phase. Current increases as pressure rises.



Setting unload kW

- Set the yellow line with the mouse arrow to beginning unload phasis. Best directly below the green line.
- The unload kW will be calculate propotioately to the yellow field



Current of not running compressor

□ □

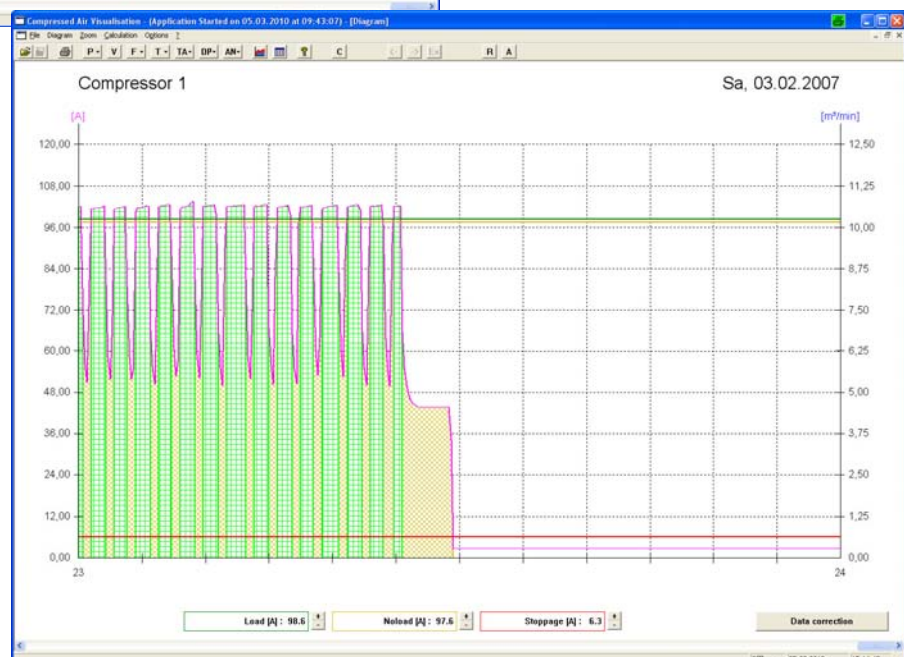
If current clamp was connected to the cable who supply the compressor controller it will show some current..

□ □

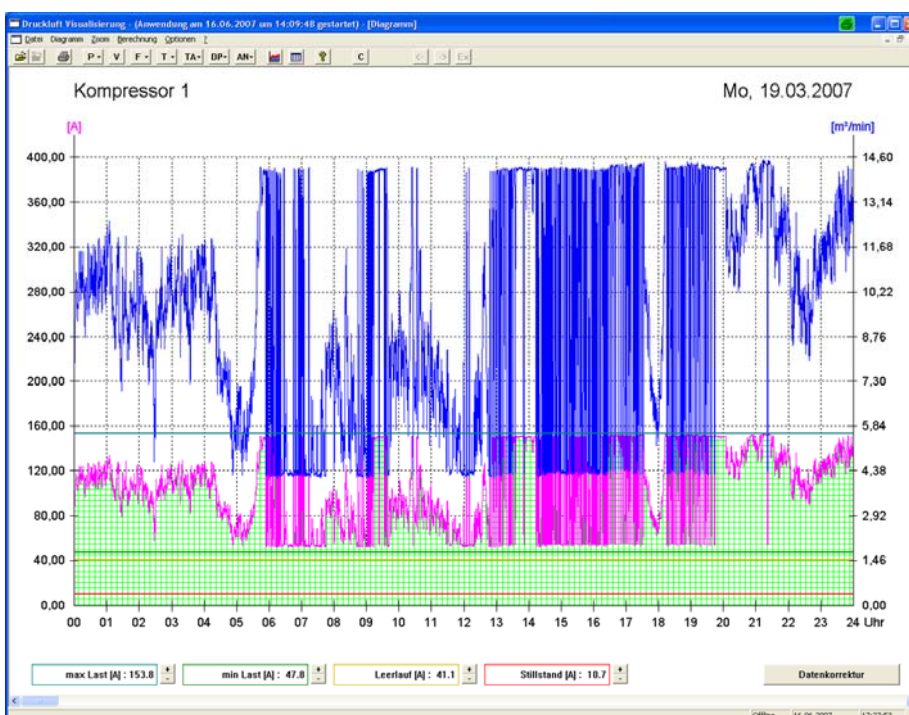
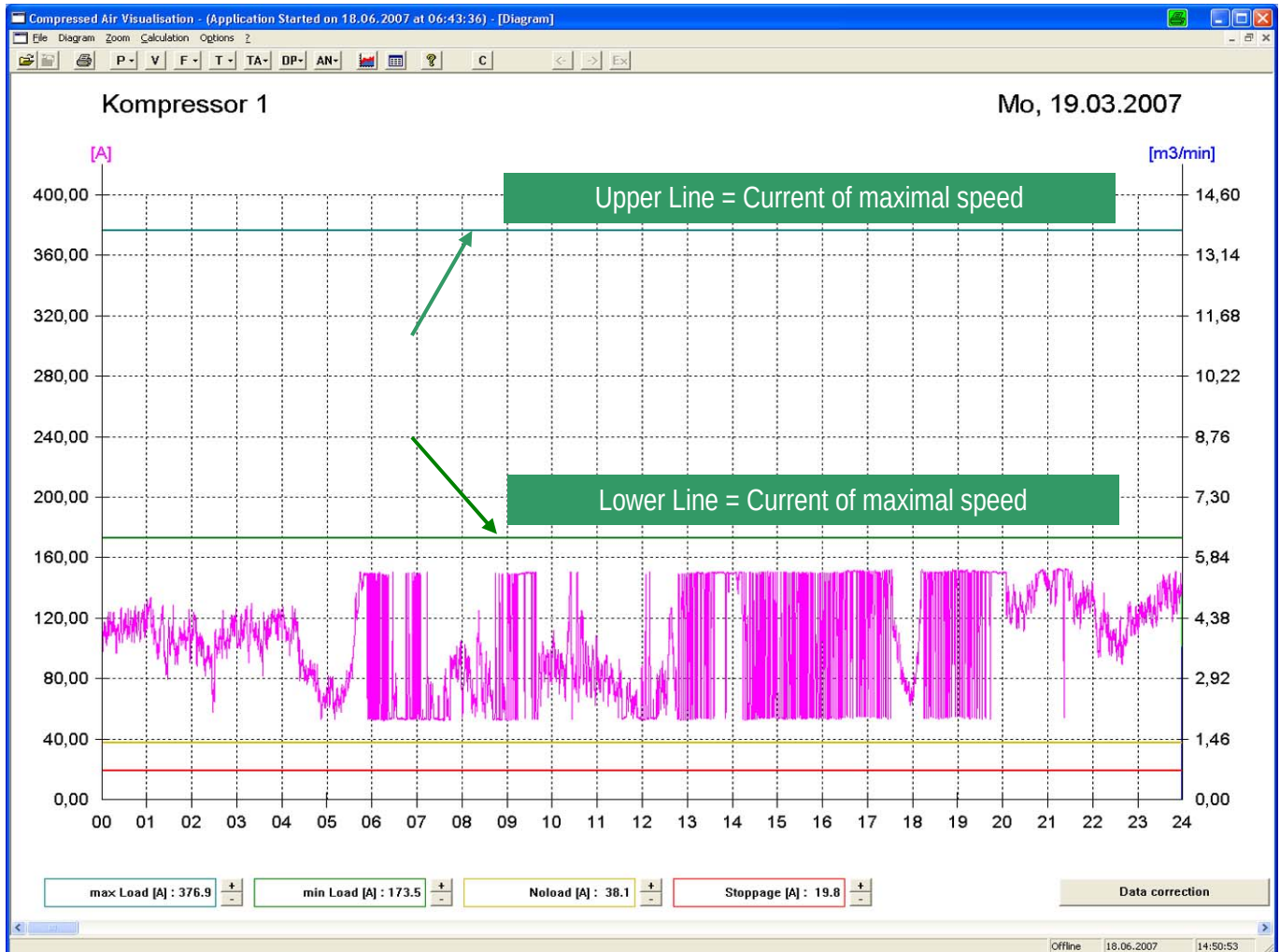
This is not the current of unload. This is the current of the compressor controller.

Current of Compressor controller

- To disable this current of the compressor controller set the mouse arrow to the red line make the setting of current higher that it shows the current line of the compressor controller



Configuration variable speed compressors

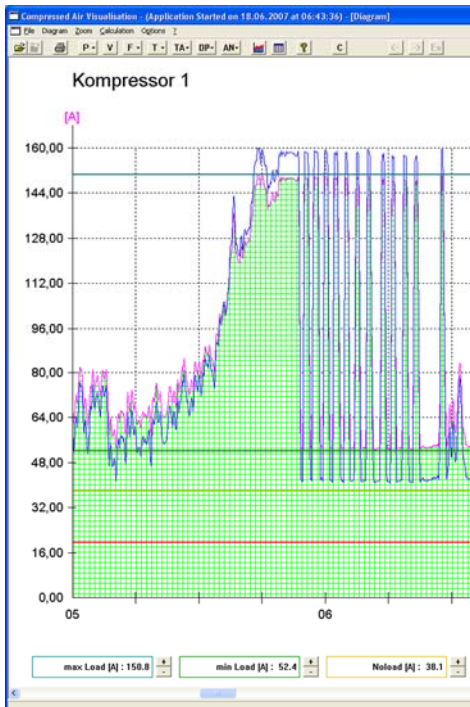
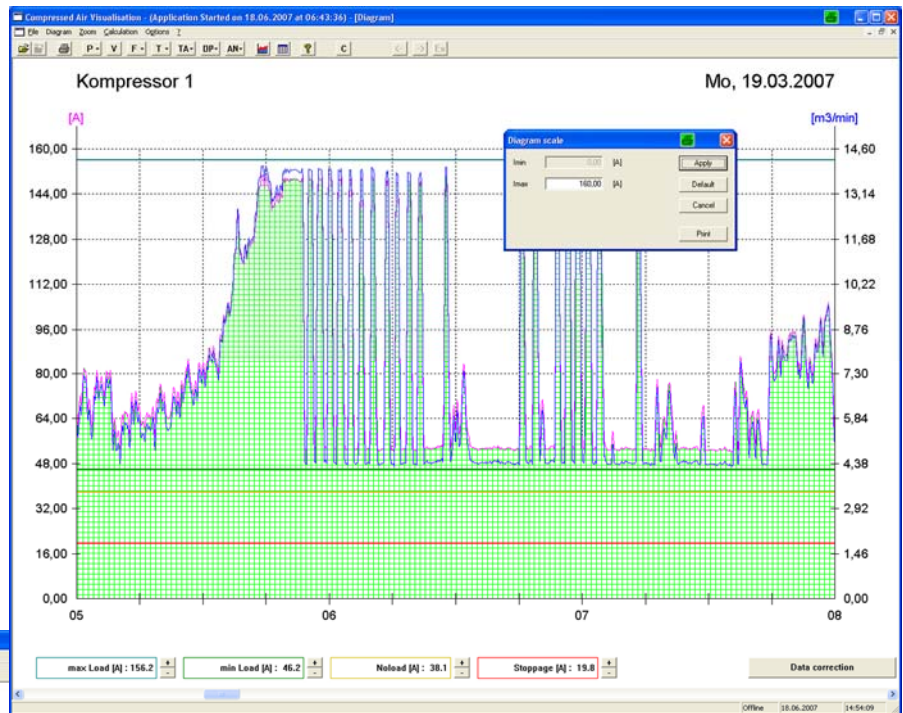


Scaling the current line

- ☐ Pull the upper green line to the maximum current
- ☐ Pull the lower green line to the lowest current
- ☐ The yellow line must be adjusted if the regulated compressor has the function idle running.
- ☐ The red line must be adjusted if the regulated compressor shows current in not running position.

Scaling diagram

- ☐ ☐ Set mouse arrow in the diagram
- ☐ ☐ click right
- ☐ ☐ Set the max current to 160A
- ☐ ☐ Click on apply

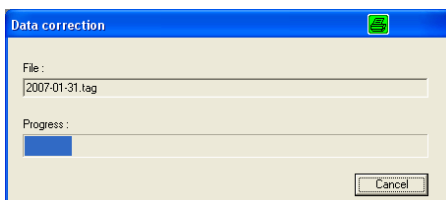
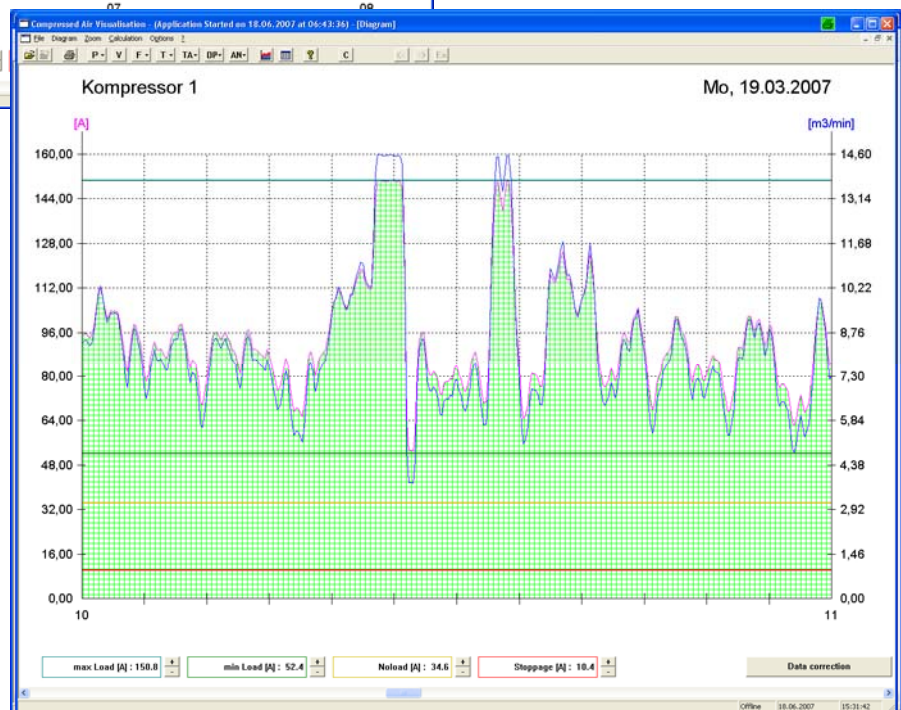


Exactly current scaling

- ☐ ☐ Pull the upper green line exactly to the maximum current
- ☐ ☐ Pull the lower green line exactly to the lowest current
- ☐ ☐ Control the settings over the time of the whole day.

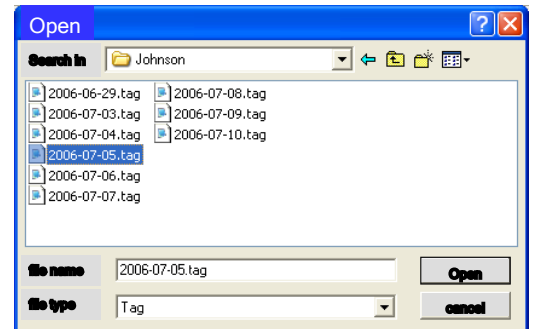
Zoom the chart

Zoom to a one-hour interval to check the current thresholds. After checking, click Data correction. The data from all selected files is recalculated using the compressor settings.

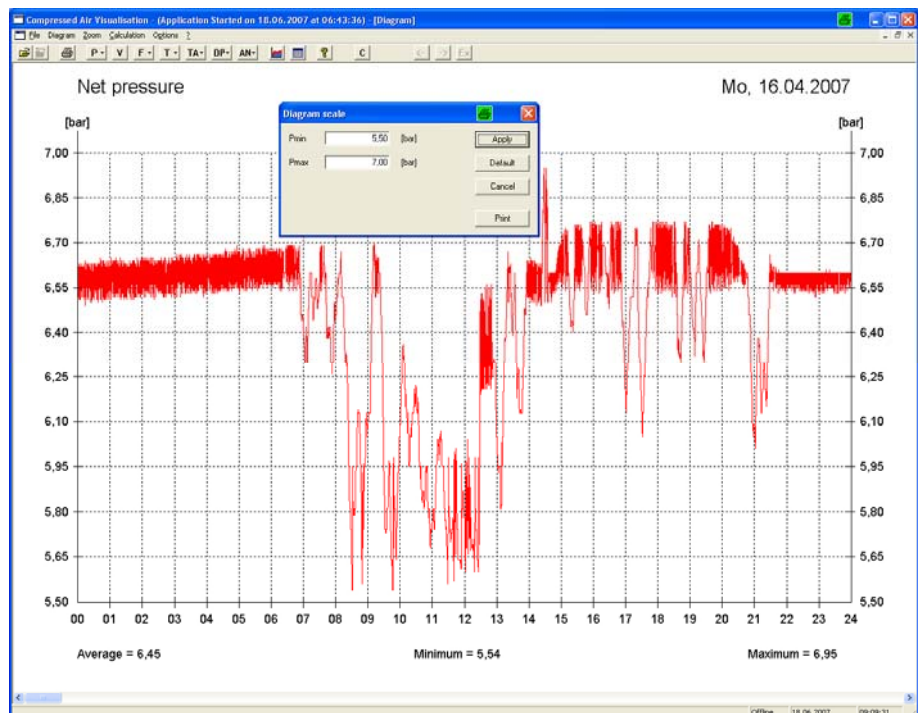


Scaling the pressure Diagram

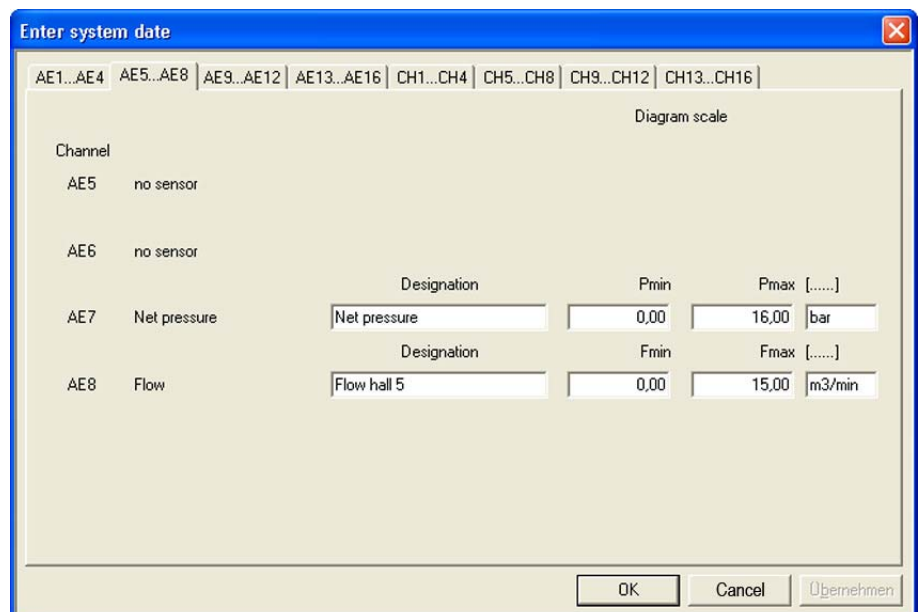
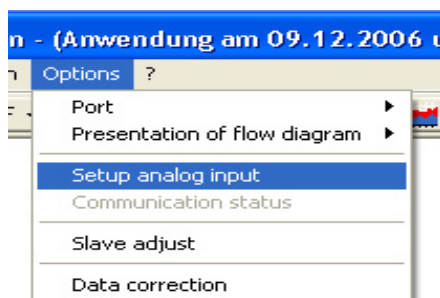
1. Open measurement data
Click **File > Open** and select a daily file. Click **P** to open the pressure chart.



2. Scale the pressure chart
Click **P** to open the pressure chart. Right-click in the chart, set **Pmin** and **Pmax**, then click **Apply**.



3. Define the chart scale
Click **Option > Setup analog input**. Rename analogue input 7 to System pressure.



Scaling the Flow diagram

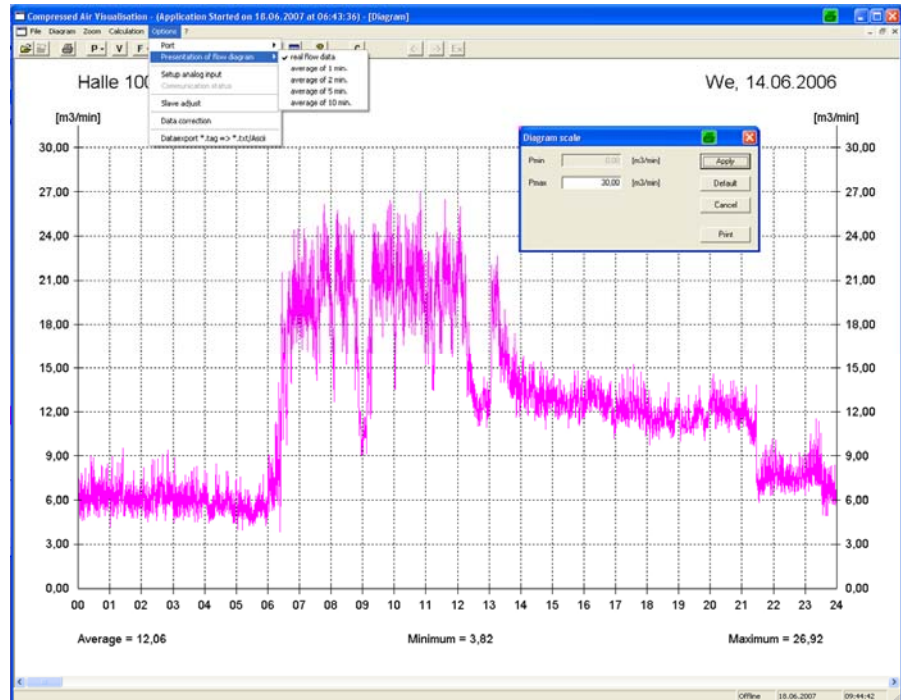
Use these forms to name the connected compressors and analogue sensors and to set the chart scales.

1. Scale the flow chart

Open the flow chart. Right-click in it, set the flow scale (m^3/min), then click Apply.

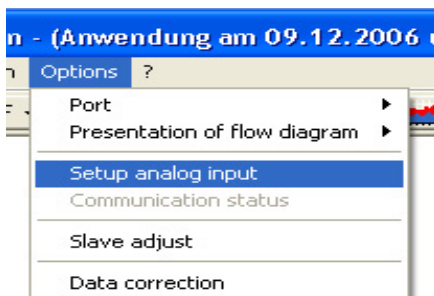
2. Choose flow averaging

Click OPTION > Presentation of flow diagram. Select raw flow data or a 1, 2, 5 or 10 minute average.



3. Define the chart scale

Click Option > Setup analog input. Rename analogue input 8 to Flow measurement.

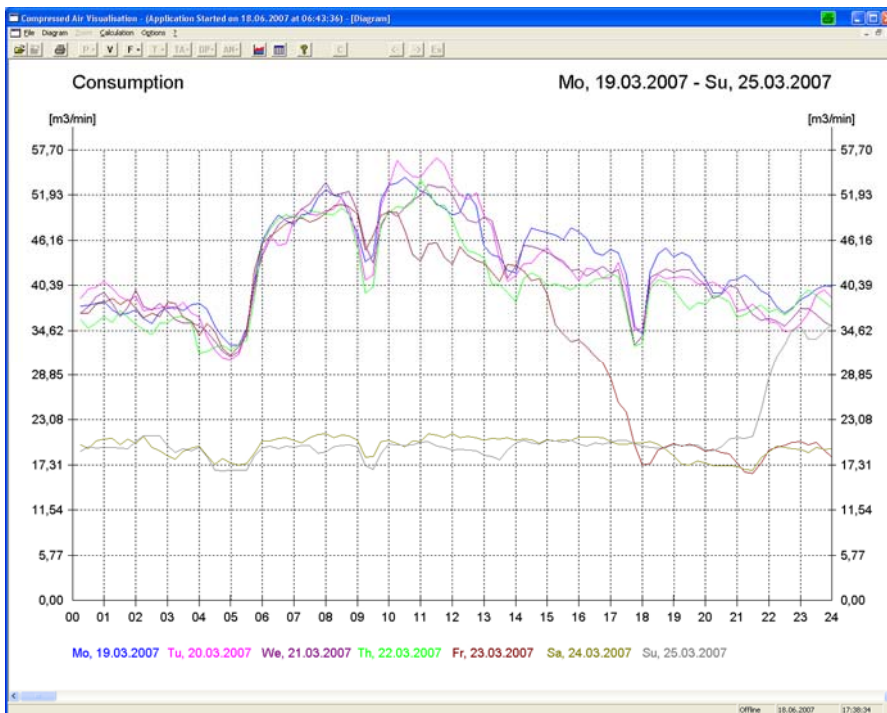
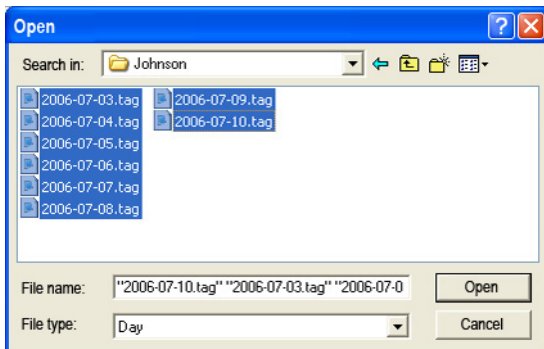


The screenshot shows the 'Parametereingabe' (Parameter Input) dialog box. The 'Diagramm Skalierung' (Diagram Scaling) section is active. It lists channels (Kanal) and their corresponding sensor types (Sensor) and scales (Pmin, Pmax, Fmin, Fmax).

Kanal	Sensor	Bezeichnung	Pmin	Pmax	[.....]
AE5	kein Sensor				
AE6	kein Sensor				
AE7	Netzdruck	Netzdruck	8,20	10,00	bar
AE8	Durchfluss	Analog Eingang 8	0,00	30,00	m^3/min

Buttons at the bottom: OK, Abbrechen, Übernehmen.

Evaluating the data



Evaluate data

Select the days to evaluate. For up to seven days, the chart shows each day in a different colour. For more than seven days, it shows the average of all selected days.

Tabular evaluation

Compressor data table:

- Capacity (m³/min)
- Loaded/unloaded power (kW)
- Total measurement duration
- Running time (%)
- Loaded and unloaded time

Measurement data table:

- Motor starts
- Load cycles
- Loaded, unloaded and total energy (kWh)
- Compressed air produced (m³)
- Loaded, unloaded and total costs in the selected currency

Compressed Air Visualisation - Application Started on 18.04.2007 at 06:43:36 - [Diagram]

File Diagram Calculation Options

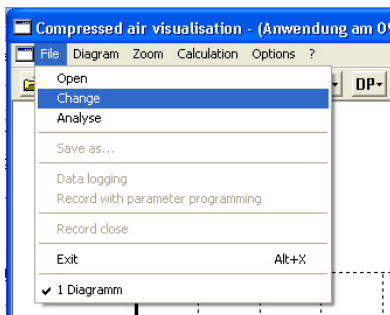
<

Changing the average of compressed air consumption diagram

If compressor go not more than 2-4 cycles per hour in on load mode it is possible to change the calculation time of compressed air diagram

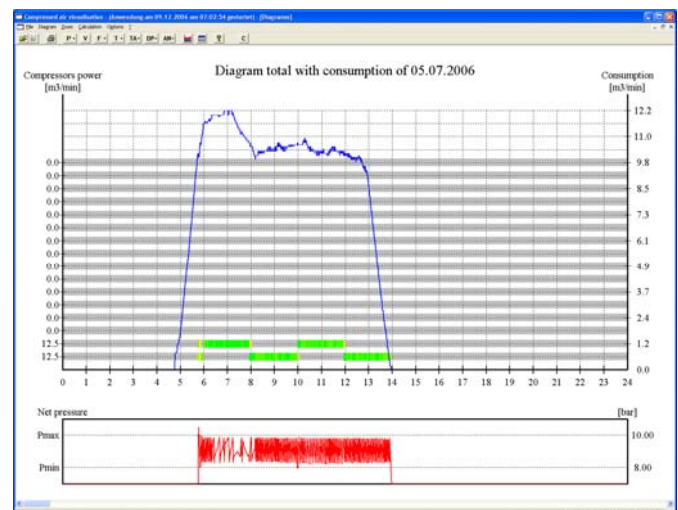
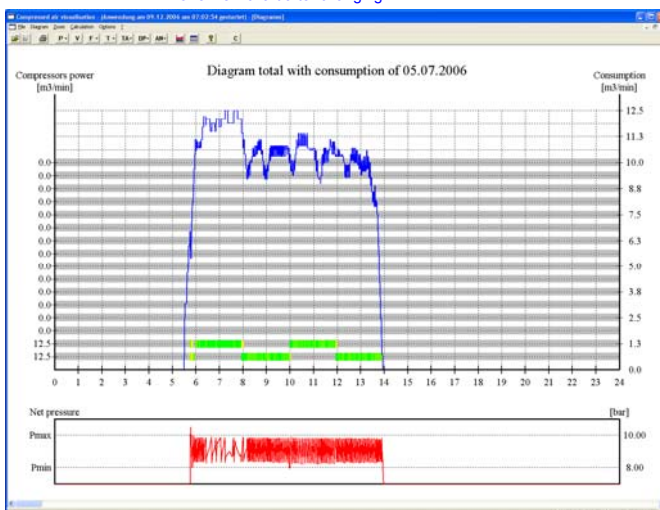
[This Mask shows also the default settings of different sensors](#)

1. Click FILE > Change.
2. Select Sensor default value.
3. Set the calculation interval to 60 minutes.
4. Click Next, then OK.
5. Recalculate the data using the C button.



Form before changing
Form after changing

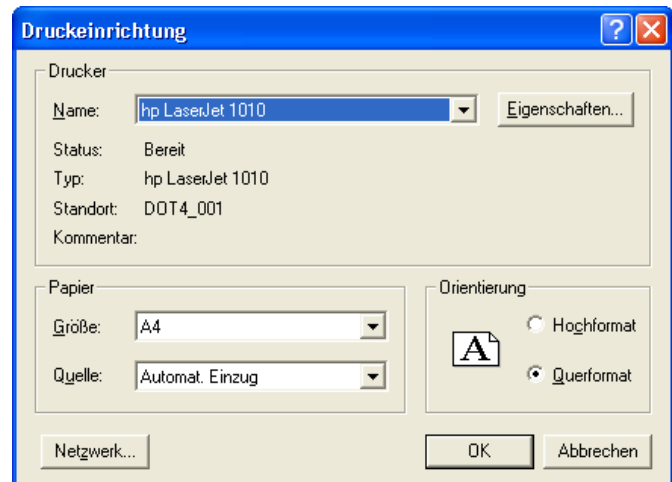
Overview chart before changing
Overview chart after changing



Setup printer

PRINTER SETUP

Open Diagram > Printer setup and select your printer.

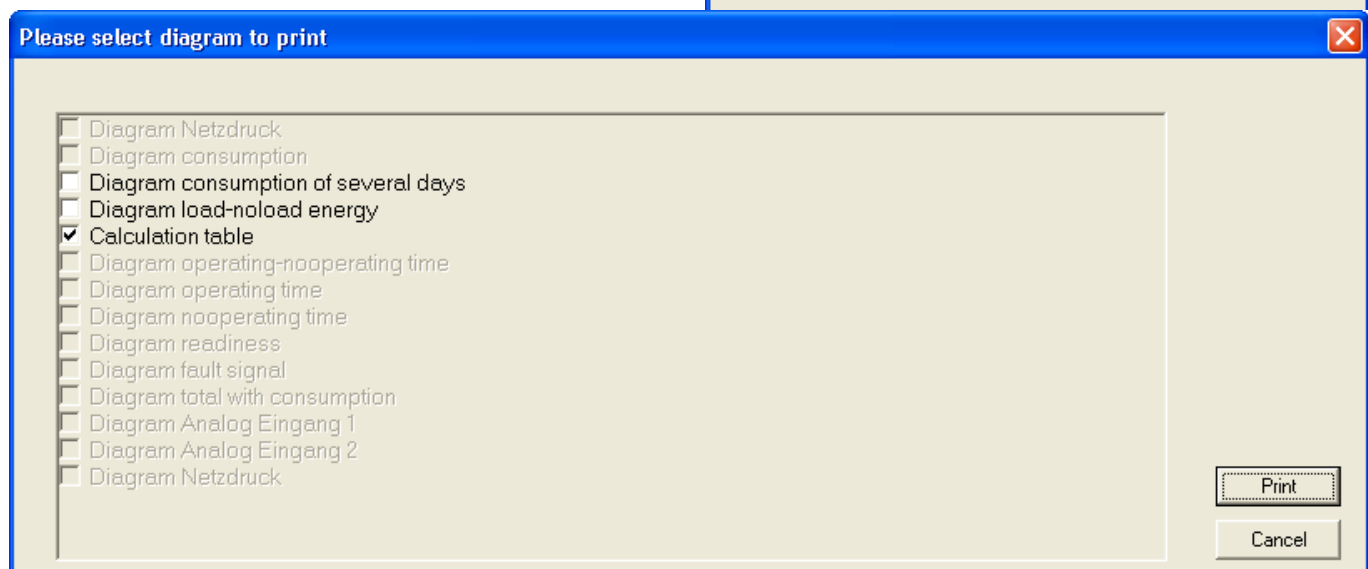
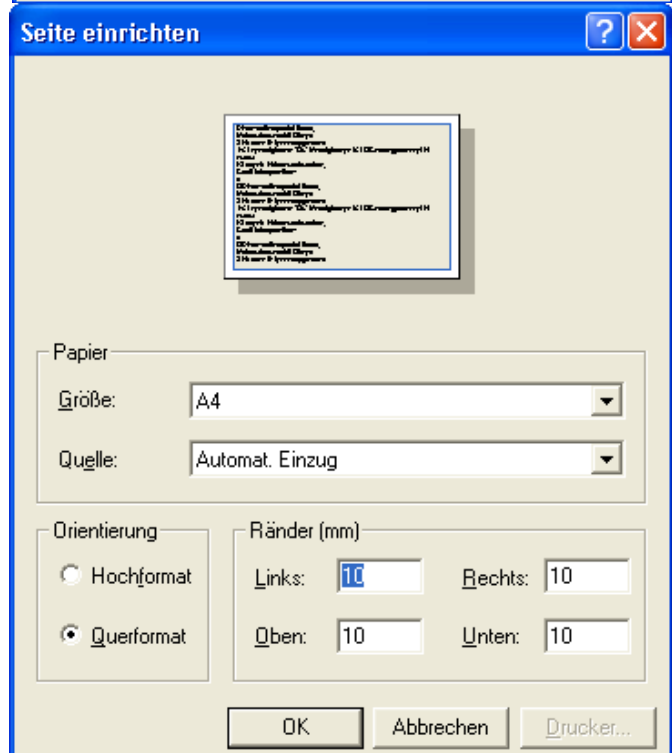


PAGE SETUP

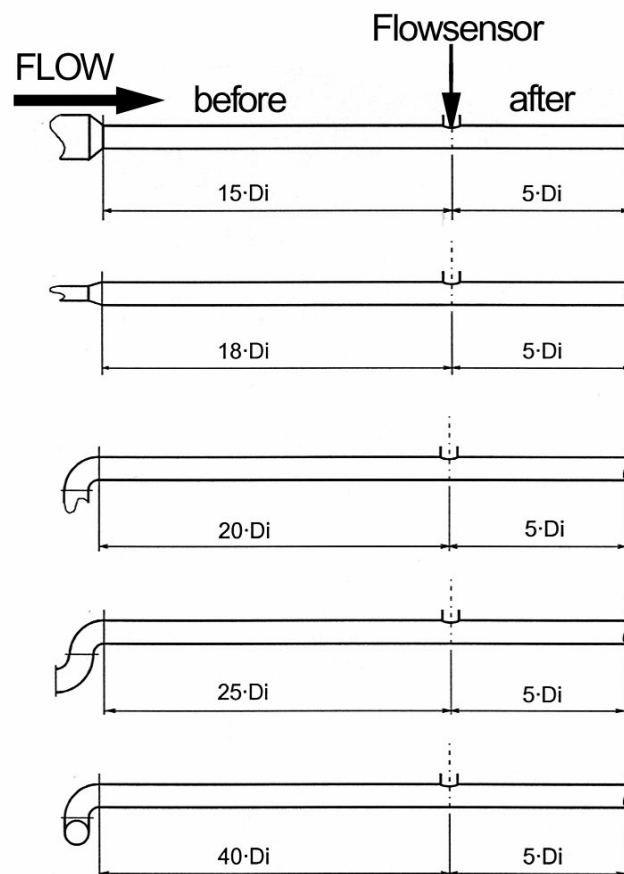
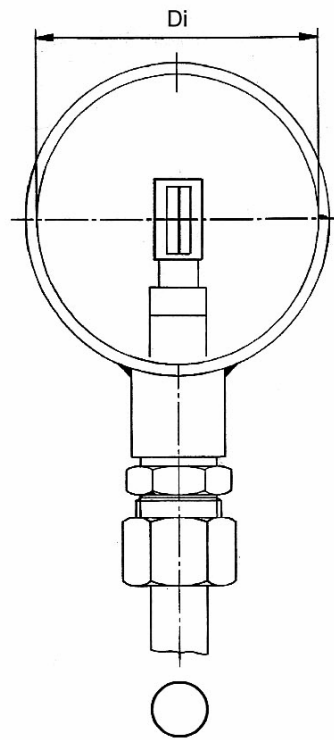
Open Diagram > Page setup. Set the page margin to 10 mm; the default is 25 mm.

PRINT CHARTS

Click the printer and select the charts to print.



Mounting the Flow Sensor



Datenliste für die Analog-Messung

Eingang	Kompressor Typ oder Sensor Typ	Last / Leerlauf	geregelt	m ³ /min - Minimal	m ³ /min - Maximal	Motor kW	Cos phi	Kunden Name		Datum	Messkoffer Nr.
1								Ampere - Zangenwert	kW Messung Wert		
2											
3											
4											
5											
6											
7											
8											
Eingang											
								Netzdrucksensor	Extra Drucksensor	Temperatur Sensor	Flowsensor
								Wert bei 4 mA	Wert bei 20 mA		

