User Guide

myReitzFan »Basic«

Inhalt

1. Preface

The present documentation describes the usage and the functions of the selection program for radial fans from the REITZ GROUP. The manual refers to program version 2.2.0.92 L. Find the program version number in left bottom line of the entry mask.

2. Start of program and login

With double-click on RV2012.exe in the program folder the login screen opens. Insert **kunde** as **user name**. A codeword is not required.

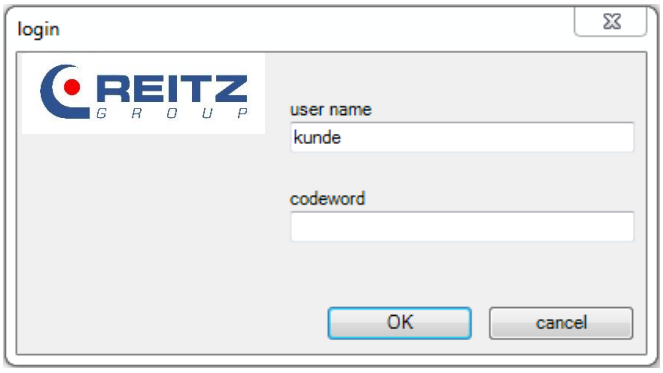


fig. 1: login screen

Click OK to open the program with the last settings:

3. Program structure

The program is available in German, English; French, Spanish; Polish, Russian, Czech, Italian; Portuguese, Chinese and Brazilian language. Select the language from the dropdown menu in the button “file” → “Language”.

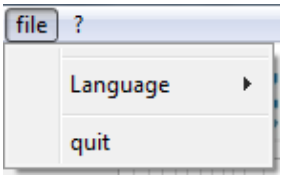


fig. 2: selection of language

The program is divided into a menu bar above the fan selection, an information line below the menu bar, the axes for pressure difference and volume flow and the fan “point cloud”.

Apart from the input window for the ventilation data, the menu bar offers the selection of the pressure options and the request of dimension sheet, several control options for the operating points as well as various representation options of the characteristic curves.

The information line below the menu bar contains the ventilation parameter in the first operating point (BP1)

4. The “point cloud”

Each red dot in the start window represents a radial fan of the chosen structural design. This fan is clearly defined by corresponding pressure, volume flow and speed.

The point cloud follows the volume flow [m³/min] on the x-axis and the total pressure difference [daPa] on the Y-axis.

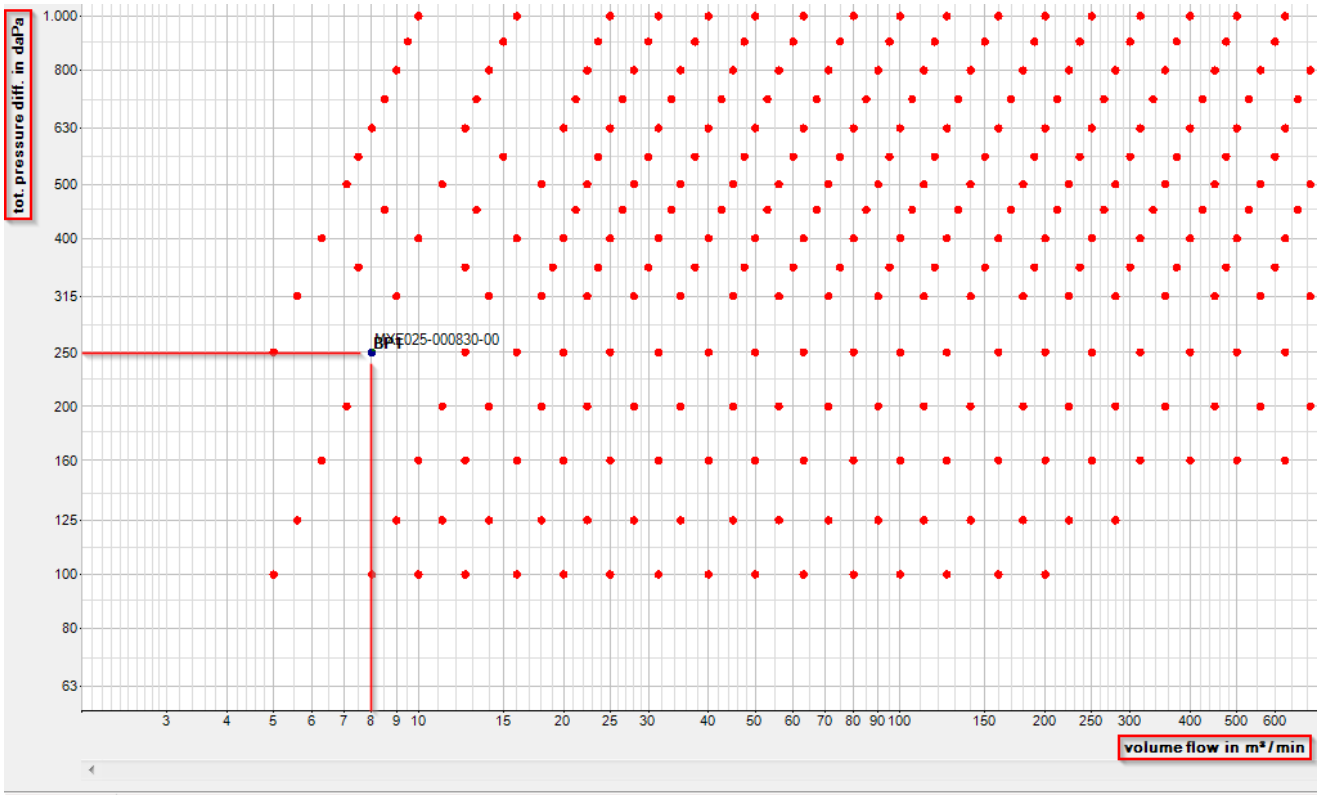


fig. 3: set-up of the point cloud

The type designation reads as follows:

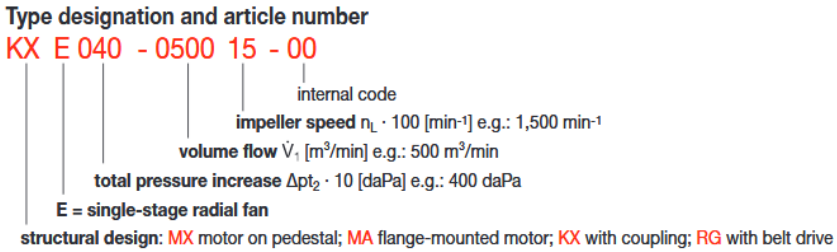


fig. 4: type designation

Please observe that all listed fans are of single-stage design and that the performance data of the nominal points refer to an inlet temperature of 20°C, an atmospheric pressure of 101325Pa and a correspondent density of 1.205kg/m³. Discharge operation is likewise assumed.

Find a more detailed description in the hand book radial fans, which you can request directly from your sales contact at Reitz or request a hardcopy or pdf version on our website in the download area.

5. Series and structural designs

Products from REITZ GROUP are divided into different design series which are defined by operating temperature, materials and design features. The following series are available in the customer version of the selection program. Please note that the addition ES stands for stainless steel.

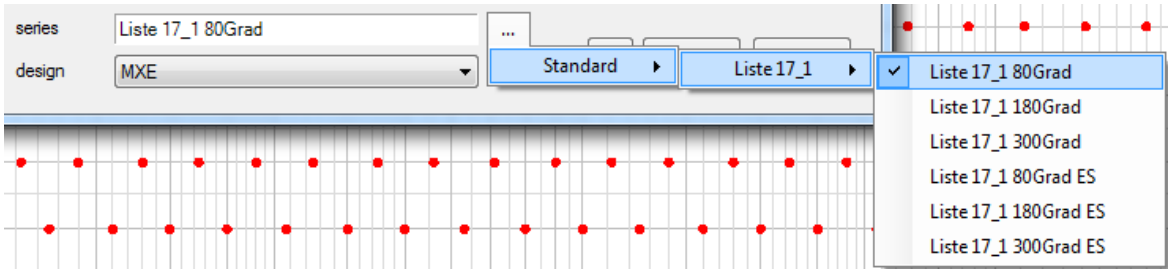


fig. 5: fan series

The following graphics represent the four structural designs that can be chosen:

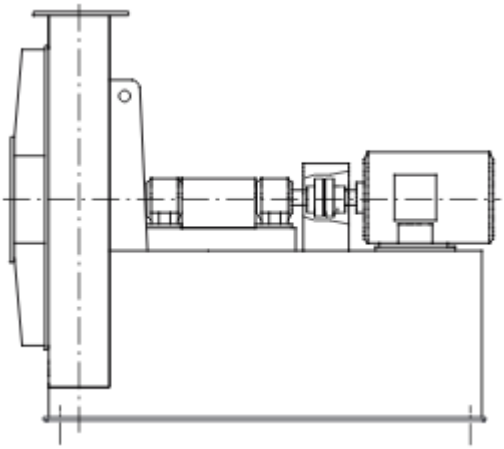


fig. 6: structural design KXE

Power transmission from motor to fan shaft by a flexible coupling. The fan shaft runs in two anti-friction bearings.

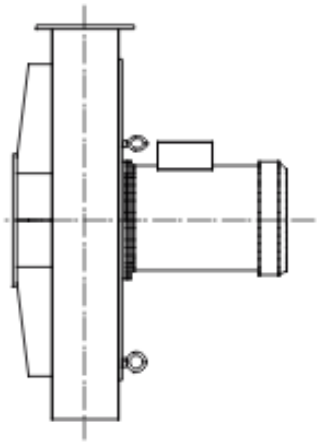


fig. 7: structural design MAE

Directly driven by the motor shaft on which the impeller is mounted. The motor of flange design (IMB5, IMV1) is directly flanged to the fan housing.

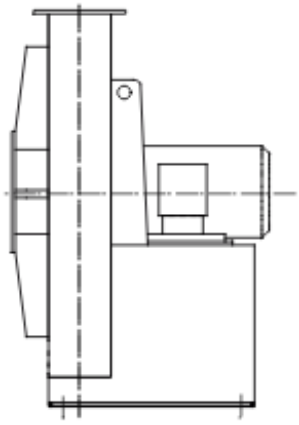


fig. 8: structural design MXE

Directly driven by the motor shaft on which the impeller is mounted. The motor of foot mounting type (IMB3) is placed on the pedestal.

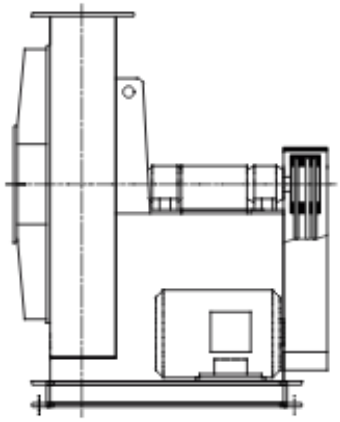


fig. 9: structural design RGE

Power transmission from motor shaft to fan shaft by V-belts. The fan shaft runs in two anti-friction bearings. The motor is laterally arranged on a base frame.

6. The entry mask

To find a suitable fan for your application from the point cloud, insert your operating parameter like required pressure increase, desired volume flow, inlet temperatures etc. as operating point(s) in the window that opens when you click the button **operating point**:

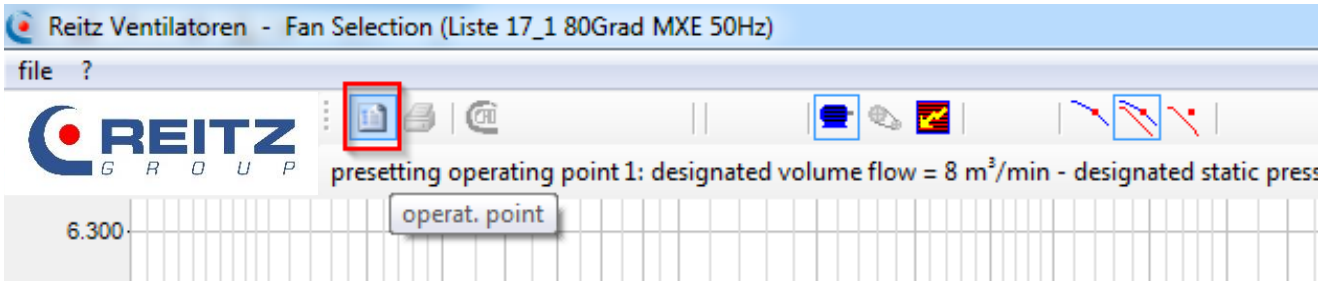


fig. 10: entry of operating points

An input window opens where you can enter up to 6 different operating points. We recommend pressing the #-button prior to the first entry to reset any previous settings. The selection of series and structural design as well as the current settings will not be reset.

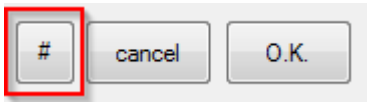


fig. 11: reset previous settings

The structural designs stored in the program are divided into temperature classes and materials. The maximum temperature class is restricted to 300°C in this program, available materials are carbon steel and stainless steel (marked with addition ES). Furthermore, fans of selectable lists are generally designed for handling clean air. Always inquire for fans for handling dust laden gas, abrasive or corrosive composites and for inlet temperatures exceeding >300°C.

Please also inquire for further **special designs that are not covered by this program**, like

- watertight design
- pressure shock proof design
- fans for handling solid matter (also in combination with wear protection)
- gastight fans
- explosion-proof fans (ATEX)

Since the inlet temperature restricts the structural designs selection on the grounds of constructional conditions, select in advance an appropriate list in dependence on the inlet temperature:

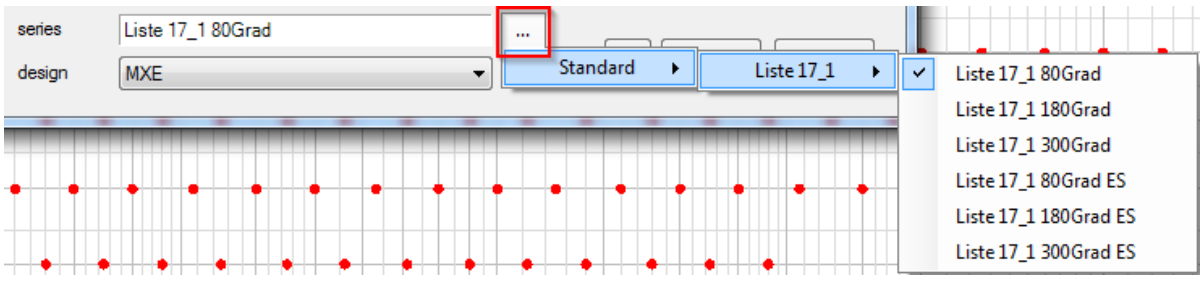


fig. 12: selection of the inlet temperature range

Structural designs MAE, MXE, KXE and RGE can be chosen for the temperature range of up to 80°C. From 81°C onwards, only the structural designs MXE, KXE and RGE are available.

Apart from the already named criteria, you may further select the mains frequency:

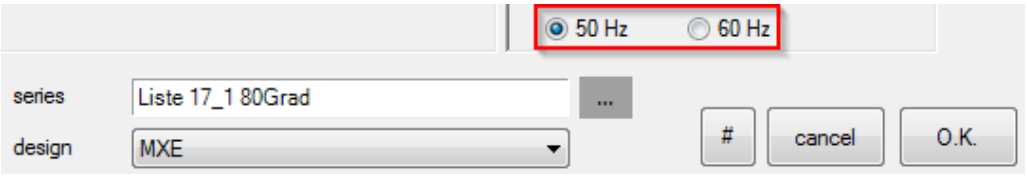


fig. 13: selection of mains frequency

On the whole, fans of 60Hz are of smaller design and can also be used with a 50Hz mains when variable speed controlled.

Please observe that the quantity of available fans varies within the structural design, temperature class and chosen mains frequency.

Once the temperature class is chosen select the structural design:

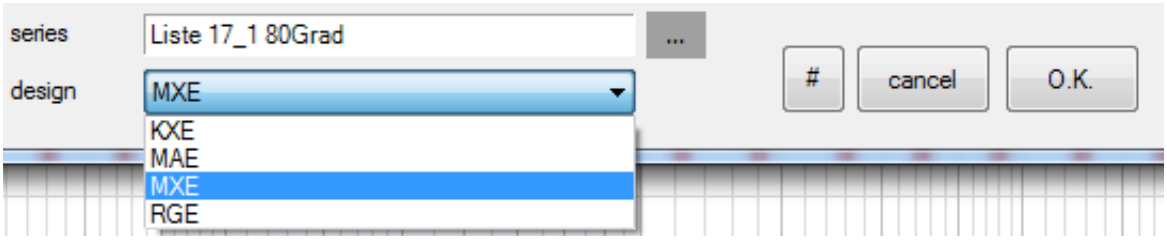


fig. 14: selection of structural design

6.1 Definition of the handled gas

The default setting of the program refers to dry **air**
(gas constant R: 287 J/(kg*K) ; isentropic exponent Kappa: 1.4)

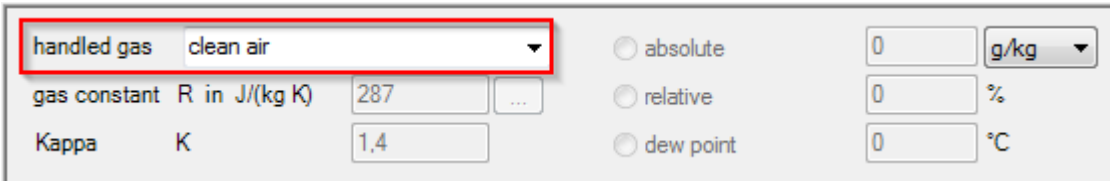


fig. 15: handled gas: clean air

When **humid air** is chosen further input fields will open to specify the quantity of the humid air. When one field is filled the program calculates the remaining two values. If the entry for absolute or dew point exceeds an air humidity of 100%, the values are reduced to 100%. The gas constant will be re-determined in the background.

fig. 16: handled gas: humid air

When the option **special gas** is selected, the gas composition must be entered and the gas constant will be determined. Kappa can be freely selected, then.

fig. 17: handled gas: special gas

With a pre-defined selection list for gases, the mass and volume shares (part of …) of individual gas components can be correspondingly selected:

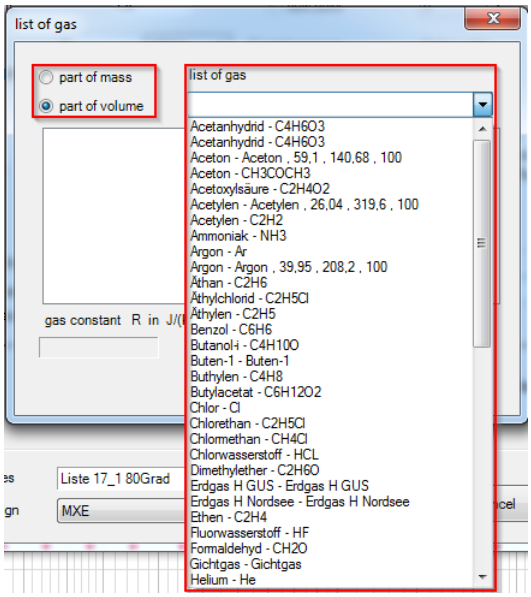


fig. 18: combination of a gas composition

The following example shows the calculation of gas constant dry air:

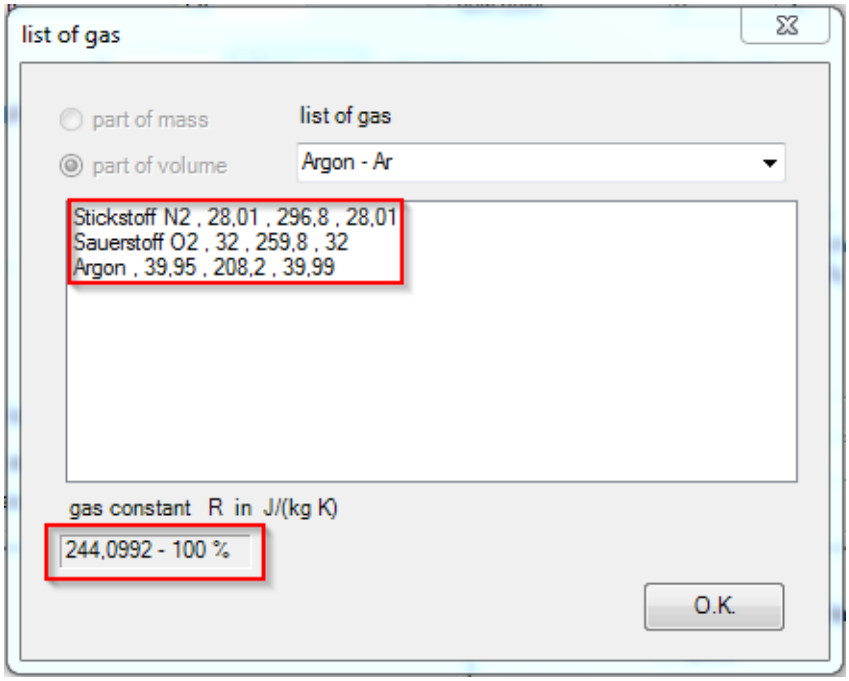


fig. 19: gas composition of dry air

6.2 Definition of the operating parameter

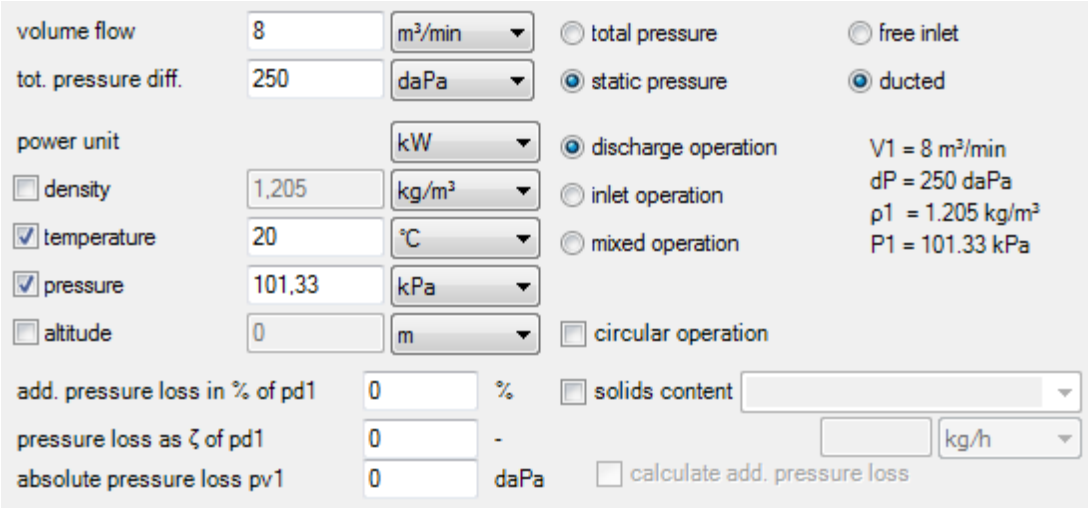


fig. 20: entry of operating parameter

Entries for pressure difference and volume- or mass flow can be made with the most varied units. The program converts the pressure to the unit [daPa] and the volume flow to the unit [m³/min] (see fig. 24 blue box).

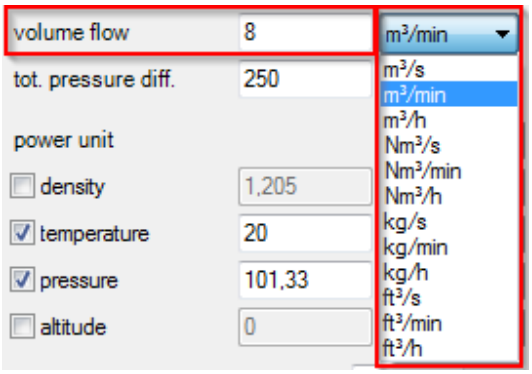


fig. 21: input volume or mass flow

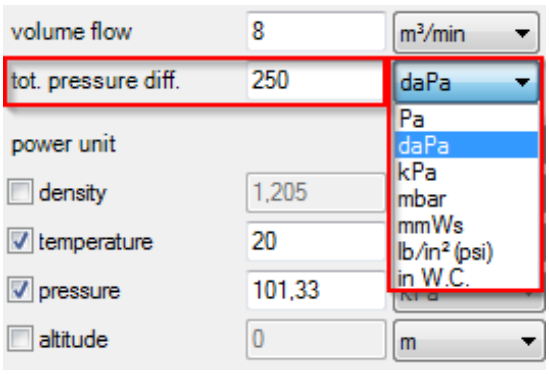


fig. 22: input pressure difference

The desired pressure difference can be specified as total pressure or as static pressure. Always select the button “ducted” instead of „free inlet“, if a component is chosen for the inlet of the fan.

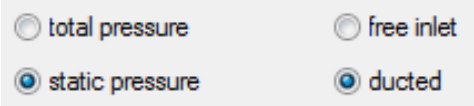


fig. 23: selection between total pressure – static pressure

The units of operation parameter like density, inlet temperature, pressure and altitude can either be indicated in metric or Anglo-American measuring system. Only two fields are active simultaneously depending on each other. The most common method is the definition with inlet temperature and altitude. The program does not accept altitudes below 0m. Should the altitude be below 0 m, the pressure must be individually determined and inserted in the selection field pressure.

Specify in the next field the operational mode of the fan: pressure operation (discharge operation), vacuum operation (inlet operation) or mixed operation:

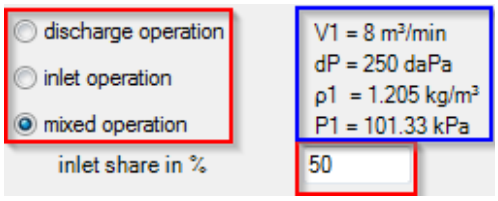


fig. 24: determination of the fan operation mode

The required pressure difference is therefore generated in full at discharge or at inlet or it is divided between the two operation modes. Select mixed operation to determine the share of the different operations. It is determined with the vaccuum operation‘s share (inlet share) in percent of the total required pressure increase.

The option for solids content calculates in dependence of the solids load (solid matter contained in the volume flow) the additionally required shaft power and – if necessary – also the higher pressure difference of the fan. Since the present program version offers fan for clean gas handling only, we’d like to ask you to inquire about the special design with your contact at Reitz. This program option, however, may offer a first overview and serve as reference point.

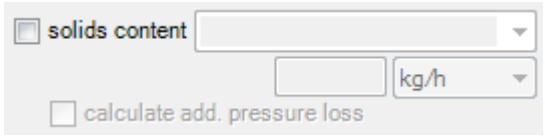


fig. 25: option solids content

Use the following 3 input fields to specify the pressure loss of equipment parts at the fan inlet. It is also possible to specify these losses with the mixed operation mode.

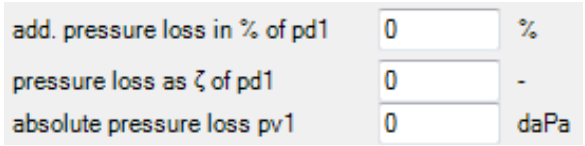


fig. 26: entry of additional pressure losses at the fan inlet

With the use of a diffusor any gain of pressure at fan discharge can be recovered. Enter the diffusor dimensions in this input field:

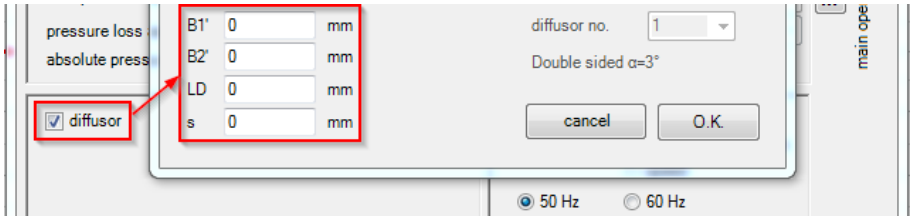


fig. 27: use of a diffusor

6.3 Generation of further operating points

Following the above described procedure you may now enter data for up to five additional operating points.

fig. 28: adding an operating point

fig. 29: delete an operating point

To add an operating point, first copy the entries of the previously selected operating point and adapt them accordingly afterwards.

By default, the operating point 1 is the main operating point. Based on the main operating point, the nominal point (design point) of the fan is calculated, which in turn is decisive for the right fan selection. There is, however, the possibility to switch the main operating point, but the operating point with the highest demands should be left at this place as OP1.

When all desired operating points have been entered, press OK to confirm your input.

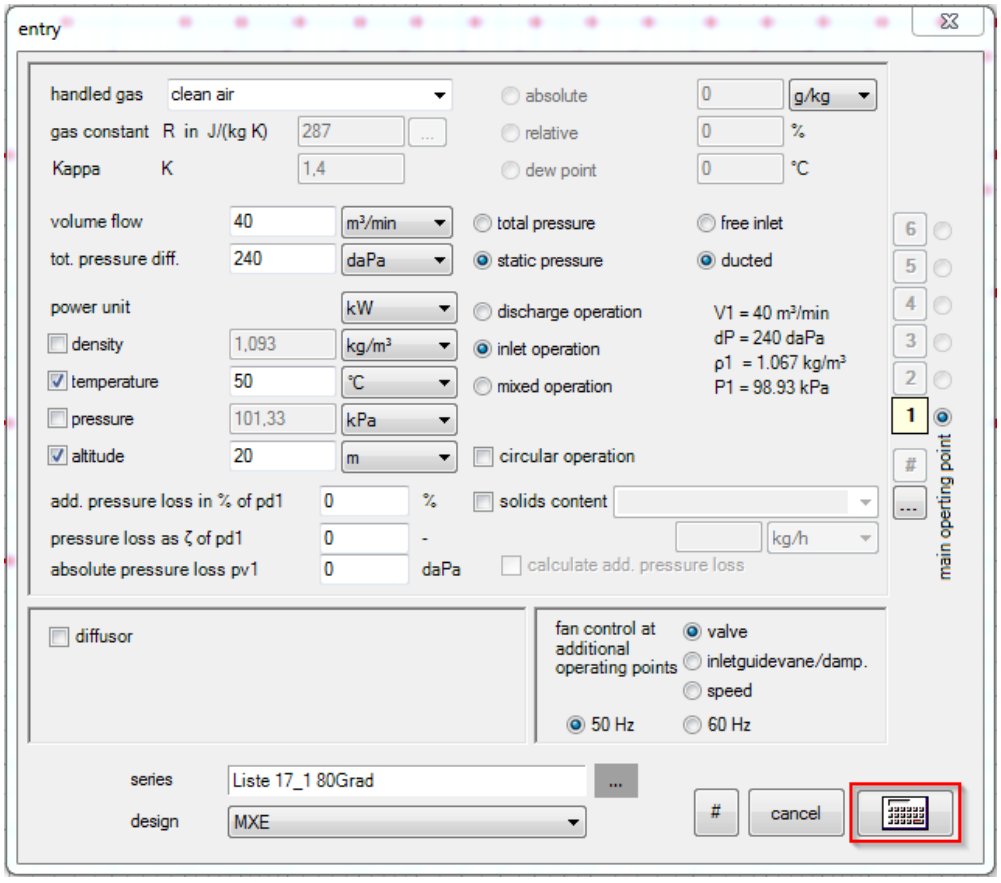


fig. 30: representative layout design

7. Selection of fan

The operating parameter will be shown in green within the cloud of red points as nominal point (NP) and operating point (OP1). The green representation of the nominal point is used for guidance with the fan selection within the point cloud.

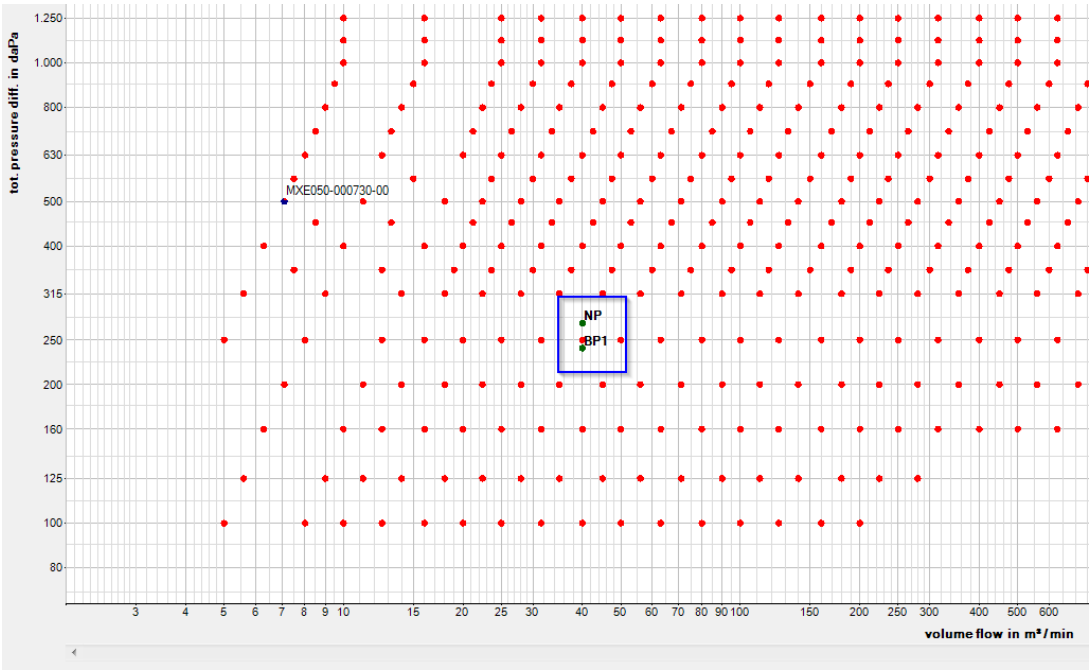


fig. 31: representative design of fan selection

If a fan is selected with click on a point, the performance curve graph appears and a further **window for details** opens, showing the technical fan data. Information therein contains for example the pressure increase achieved, shaft power and fan speed. If there are other operating points, simply shift the display to the corresponding number to see the technical data. Undo the fan selection with double click on a free space in the program window.

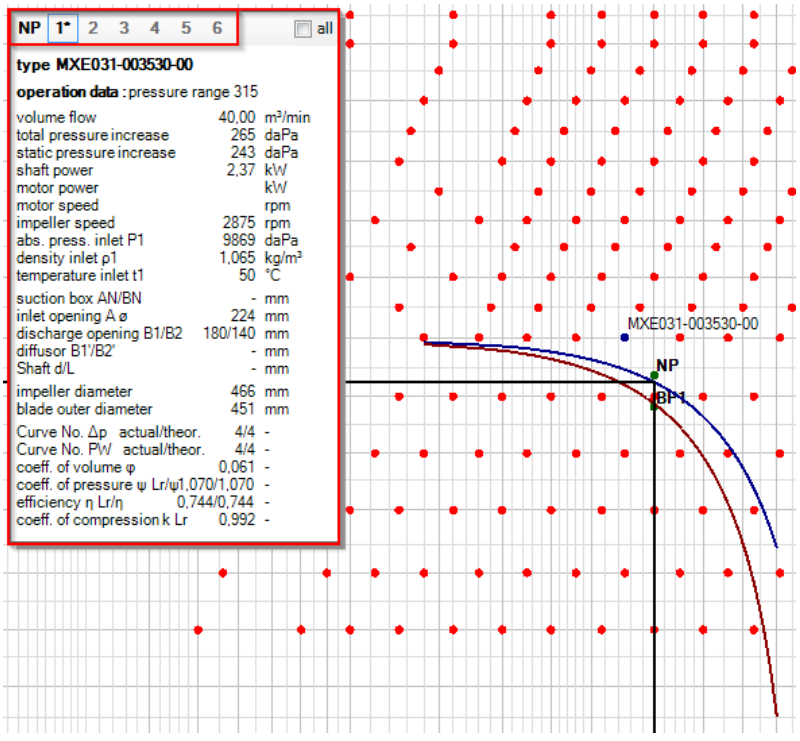


fig. 32: details of technical fan data

Depending on the structural fan design, there is further the possibility to switch between two calculated speeds. Besides the MXE100-040030-00 (2-pole drive motor) for example, there is also an MXE100-040015-00 (4-pole drive motor). Move the mouse pointer to the desired point and click on the right mouse button to switch between the points.

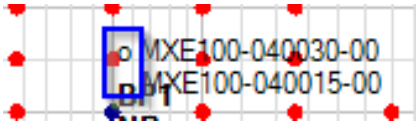


fig. 33: change between calculated speeds

In the above example the characteristic curves are shown for static as well as total pressure flow. Switch the display with the corresponding tool bar buttons:

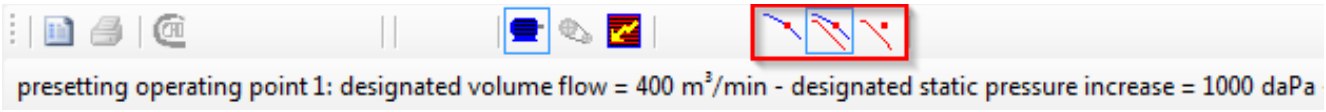


fig. 34: change of characteristic curve representation in the point cloud

Possible representations are: total pressure, total and static pressure, static pressure

8. Possible fan control option in the point cloud

You have the choice between different types of fan control which will have an effect on the fan selection.
If there is only one operating point, the type on control is chosen from the toolbar of the program window:

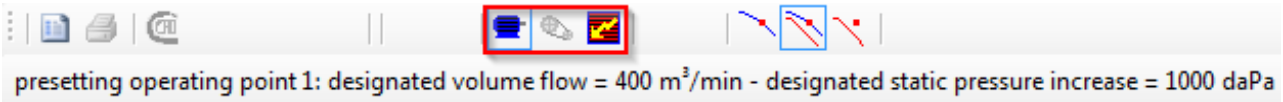


fig. 35: control of the first operating point

8.1 Direct operation at mains (fixed)

fig. 36: direct operation at mains (fixed)

In this case the fan runs with constant speed. The chosen MXE031-003530 minimally exceeds the requirements by 3daPa.

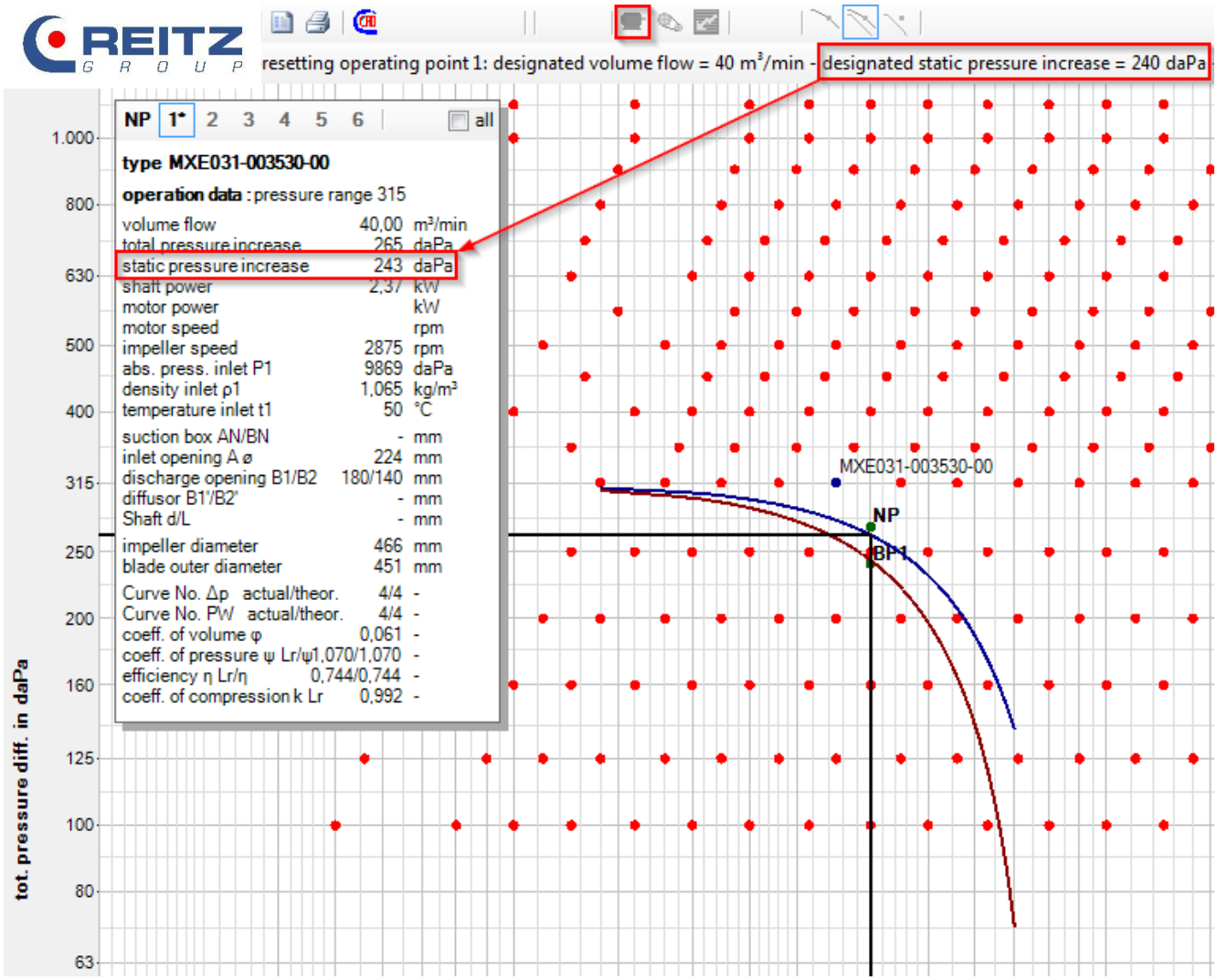


fig. 37: example for a design with direct mains operation

8.2 V-belt driven fan

fig. 38: V-belt driven fan

This option only makes sense when the structural design RGE has been selected.

If the fan fulfils the requirements, the selected type of control does not affect the fan selection. When the fan does not meet the requirements (i.e. chosen too small) (RGE025-004030-00), this type of control will result in a speed increase by changing the gear transmission ratio with a fixed factor of 6%. The program does not support increases of more than 6%.

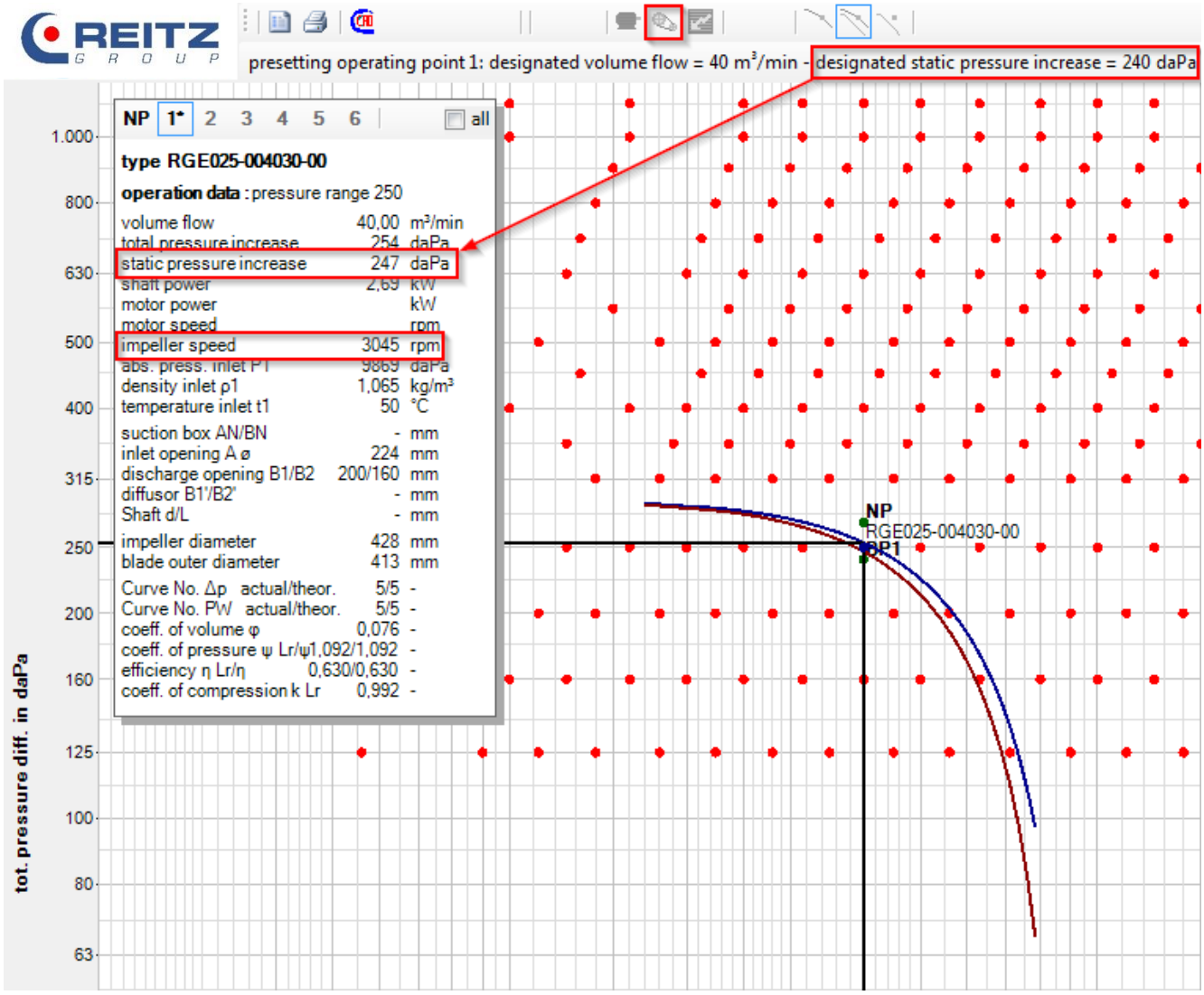


fig. 39: example of V-belt drive design

Thanks to the altered gear ratio the fan now exceeds the requirements by 7daPa.

8.3 Variable speed control with frequency inverter

Abb. 40: variable speed control with frequency inverter

Control with frequency inverter allows to exactly set the fan to the system operating parameter and hence to use energy optimally.

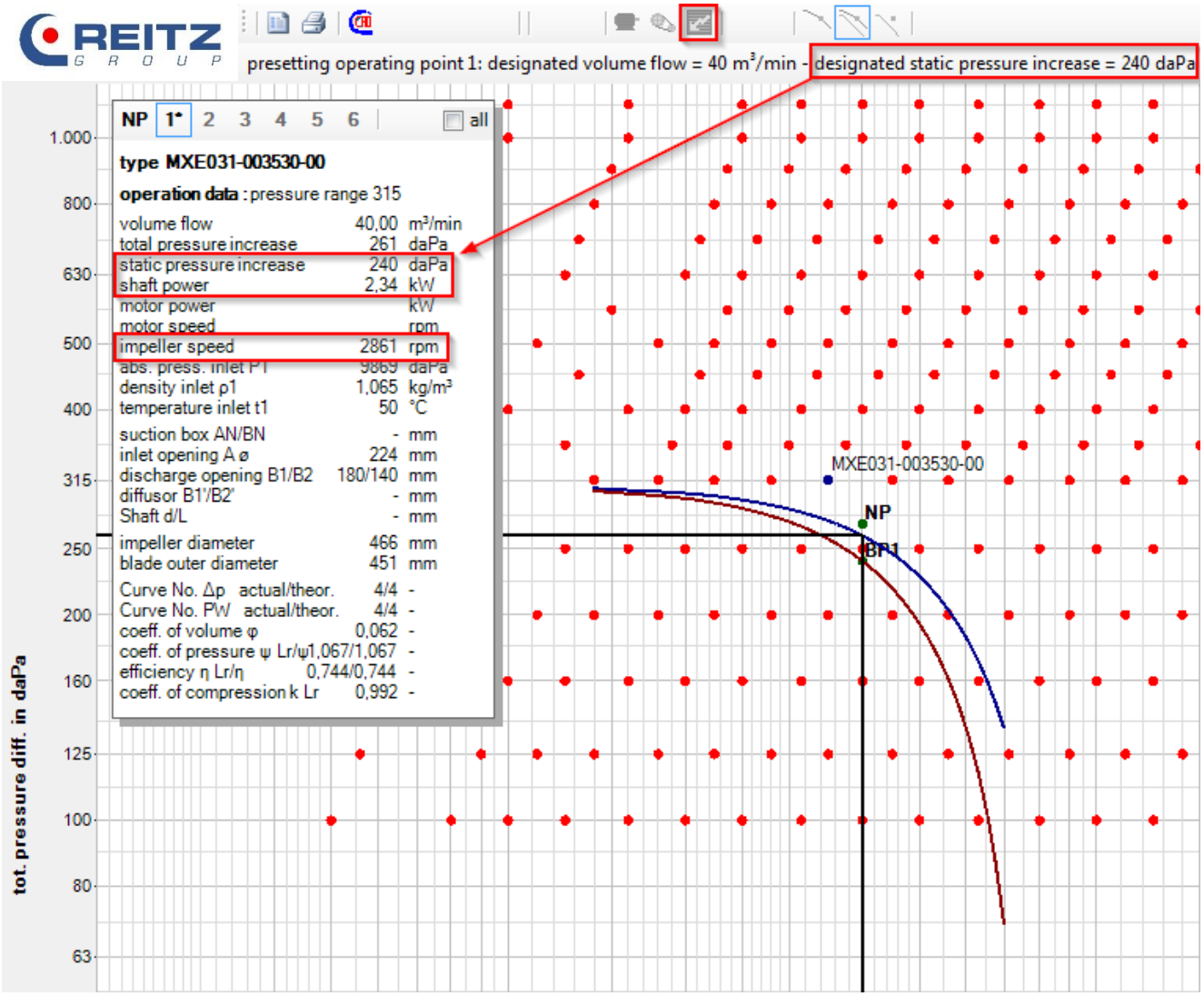


fig. 41: example for frequency inverter operation A

The fan speed is adapted precisely to the required operating parameter. This will reduce the needed shaft power and the noise emissions.

Within the frame of the 6% boundary, speed increase can be used to adapt the fan performance to the desired operating point.

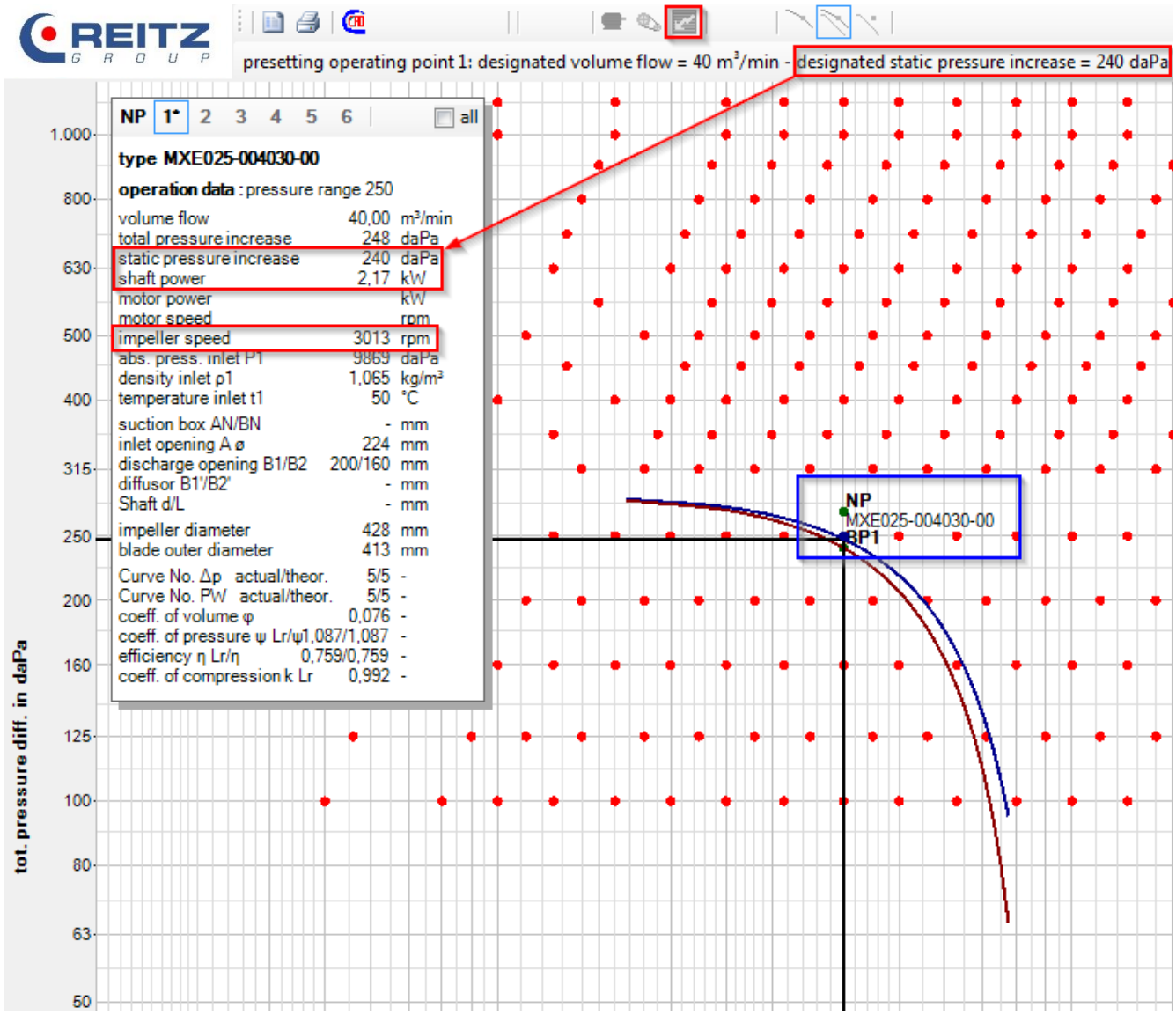


fig. 42: example for frequency inverter operation B

8.4 Selection of the type of control for further operating points

Choose the type of control for other than the first operating point (OP1) in the input mask.

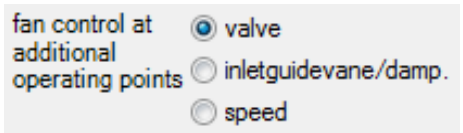


fig. 43: selection of the type of control for the additional operating points

It is, however, not possible to choose different control types for 6 operating points (e.g. 2 OPs with inlet guide vane.

Within the program the choice “valve” (i.e. damper) has not got any direct influence on the technical fan data and is the default setting. In the detail window the values for pressure increase, shaft power and speed exactly corresponds to the pertaining fan characteristics.

The selection inlet guide vane/damper simulates a pre-whirl towards the fan’s sense of rotation and thereby changes the fan characteristics. This change is used for fan control.

Based on the interaction of fan selection and operating parameter, the program shows the expected setting angle of the guiding blades of the inlet guide vane. To have the damping setting shown when there is one operating point only this operating point must be copied and entered as operating point 2. Operating point 1 will then be shown without damping, operating point 2 with damping.

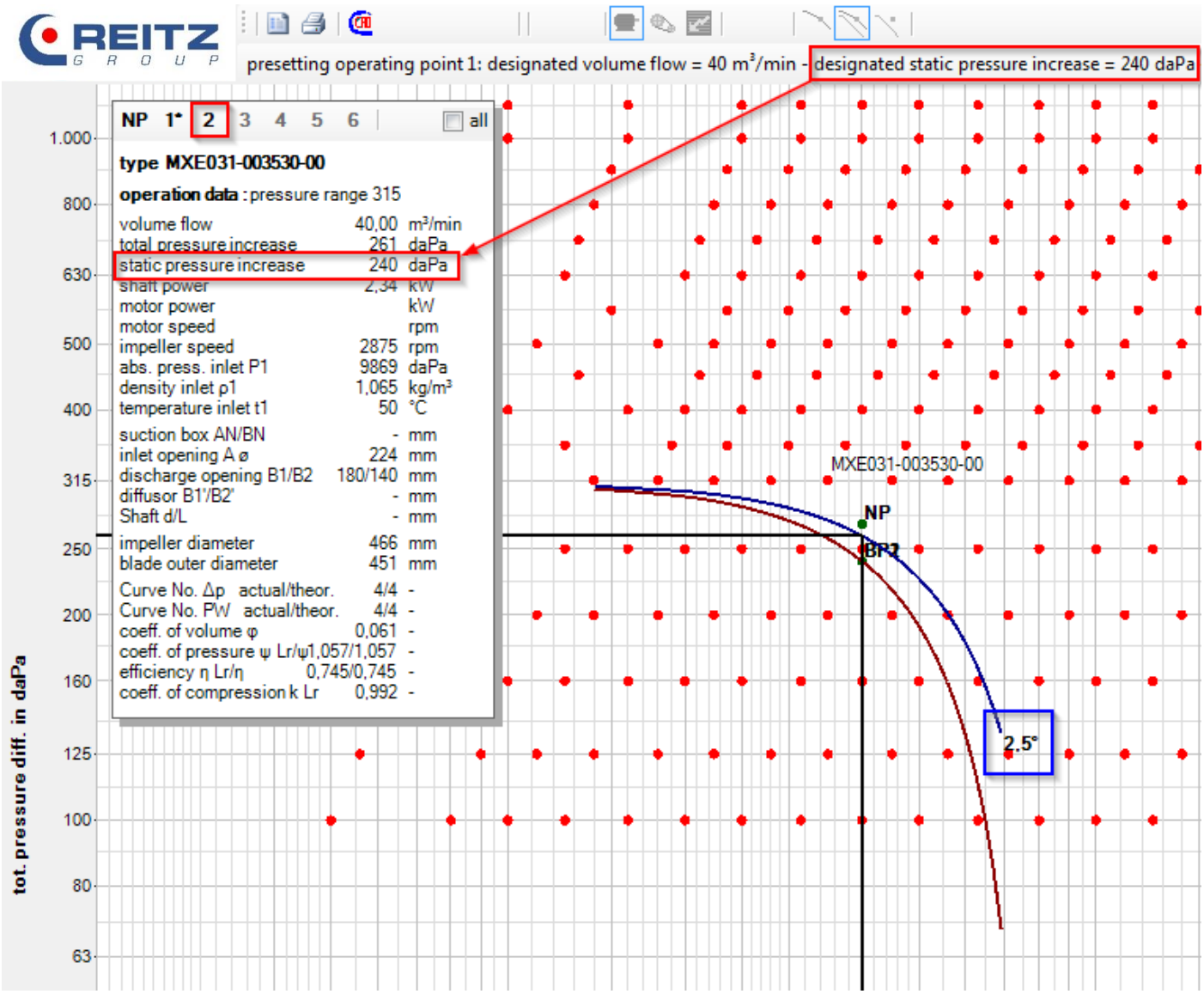


fig. 44: example for inlet guide vane control

The above example shows that the excess pressure of 3daPa is compensated for by setting the guiding blade of the inlet guide vane to 2.5°. Avoid at all costs damping the volume flow with inlet guide vane settings of more than 60°.

When speed is selected all further operating points are variable speed controlled as described before.

9. Compilation and print-out of the technical data of the selected fan

When lay-out and design of the fan is done, prepare the data sheets containing technical details and characteristics for print-out or filing.

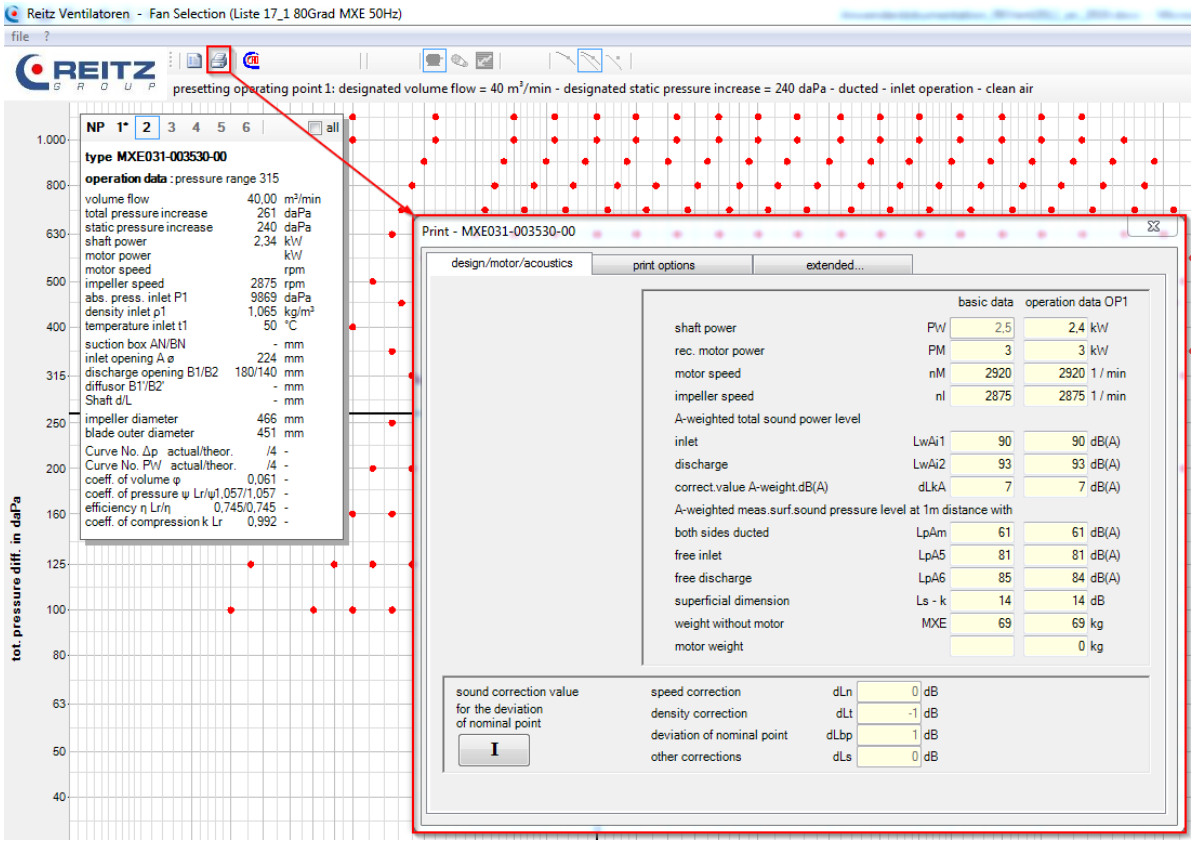


fig. 45: print-out mask

The first tab of the print-out mask “design/motor/acoustics” contains a brief abstract on information about drive motor and sound data of the fan. The fields marked in yellow are of informative nature, only and cannot be filled in.

The tab “print options” contains the settings for optical adaptation of characteristics, the extent to which the technical data should be printed and the selection of the printer. Find a detailed description in point 9.1.

The tab “extended” offers the option to have the document header filled with project details and briefly describe the generated operating points. This description will be shown on the individual pages. Further information in point 10.6.

REITZ GROUP	technical data page 1 Liste 17_1 80Grad	quotation item: 20181234 - 1.02 designation: date: 06.11.2018
fan type: MXE031-003530-00	FK serial no.	comm. no.: Example fan
your order no.: 123456	type of control: valve (inletguidevane/damp.)	codeword: Example layout

fig. 46: header data

9.1 The print options

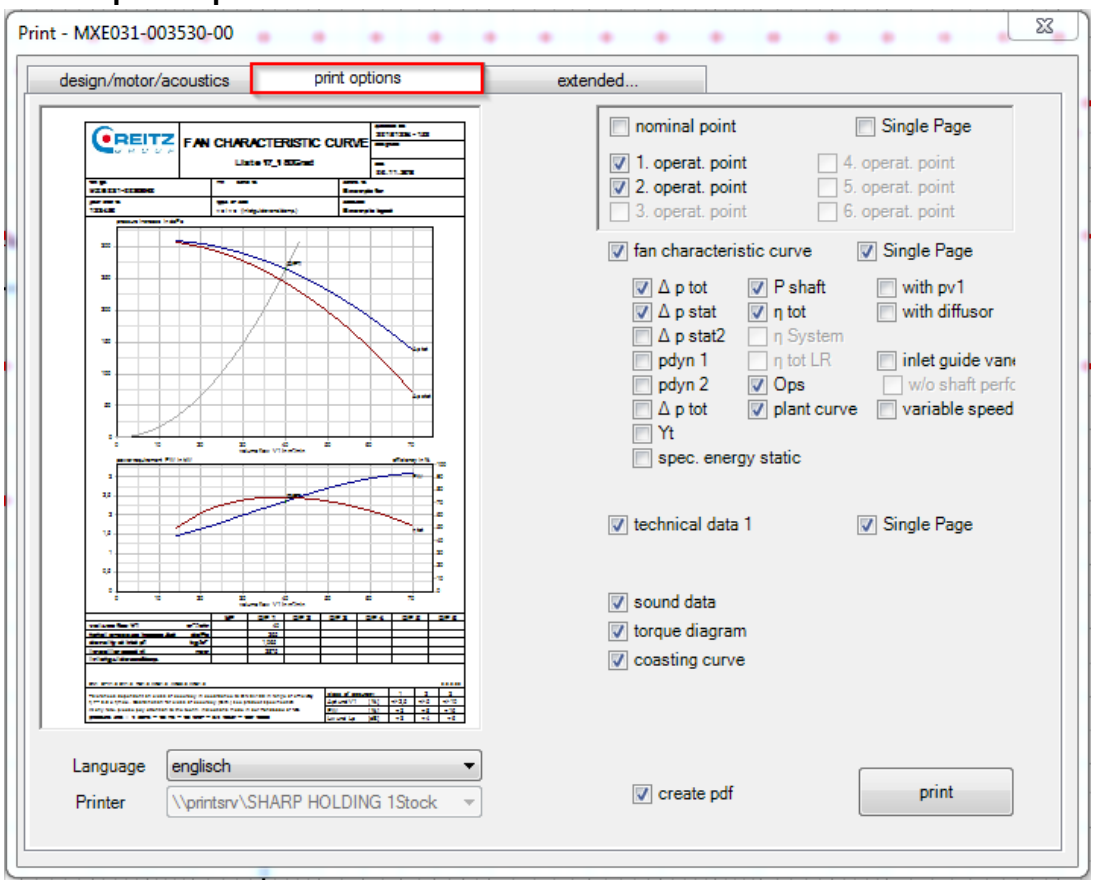


fig. 47: print options

See a preview of the characteristic curve for operating point 1 on the left hand side. In its upper part the run of the fan characteristic curve is shown; on demand, in various forms or expressions.

You can have the total pressure, the static pressure and the dynamic pressure displayed as characteristics. The point of intersection of the system characteristic (AKs) and the fan characteristics represents your requested operating point (OPs).

The lower part of the preview window shows the efficiency (left Y-axis) and the shaft power (right X-axis) are plotted against the volume flow.

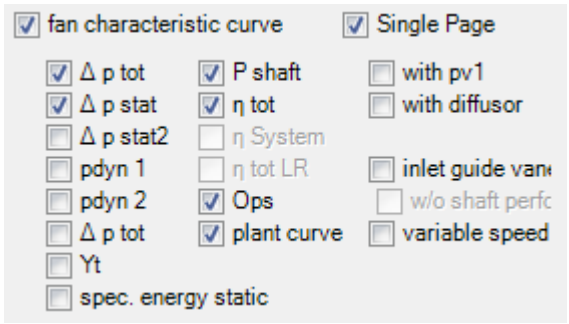


fig. 48: options for characteristic curve representation

To get more detailed information on the interaction of fan characteristic and control type you can make corresponding settings for the control with inlet guide vane or variable speed control. Inlet guide vane control will alter the fan characteristic. Depending on the setting angle of the

guide blades (the program offers 15°-steps) new fan characteristics are generated which show a new operating point in the combination with the constant plant characteristic.

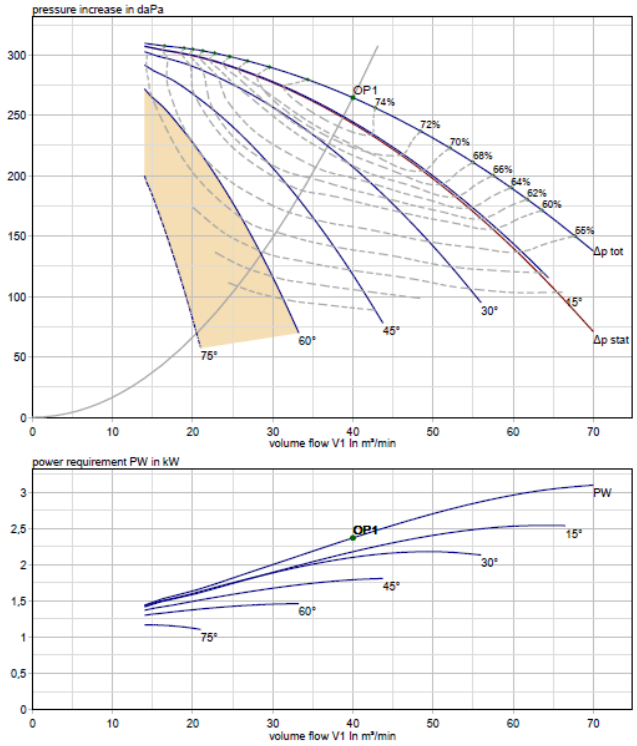


fig. 49: representation of characteristic for inlet guide vane control with isoefficiency lines

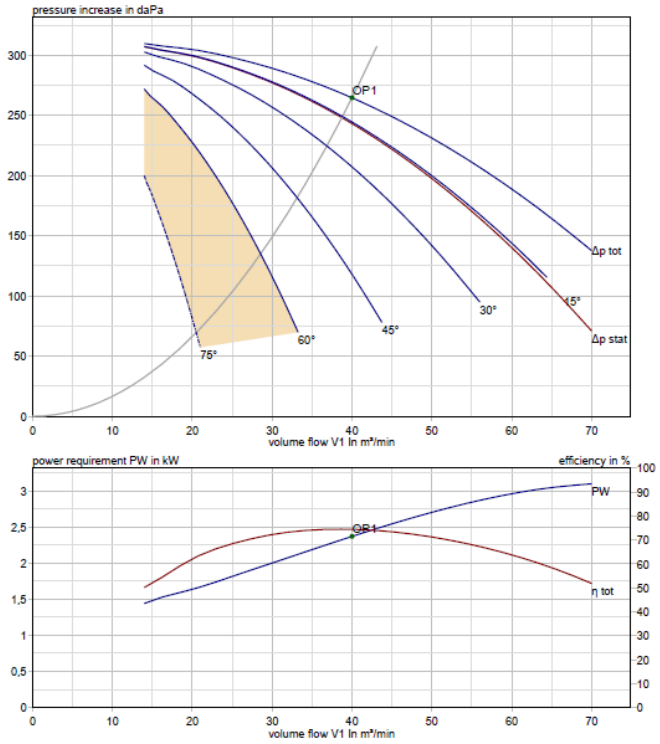


fig. 50: representation of characteristic for inlet guide vane control without isoefficiency lines

The inlet guide vane default setting automatically activated the presentation with isoefficiency lines (characteristics of the same efficiency). Tick the button w/o shaft performance to deactivate the isoefficiency lines. The efficiency degree existing in the operating point which also applies to other pressure and volume flows can be directly read from the isoefficiency curves. The presentation without isoefficiency curves shows the development of this efficiency's shaft power for the first operating point (OP1) in the condition without damping.

The variable speed control option offers the possibility to have shown a variety of fan characteristics for different speeds. To this end, select the button variable speed.

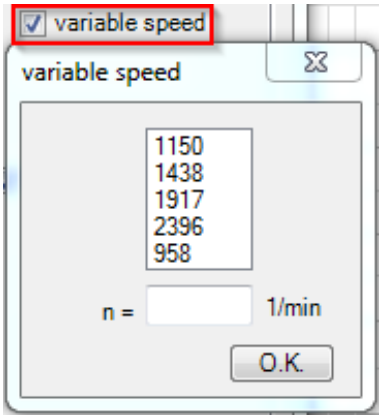


fig. 51: speed series / variable speed curve

The program offers automatic grading. This might, however, be changed as needed. The shown speeds disappear on double click on them. Insert new speeds in the entry field and confirm with enter key. The entry field closes with click on OK.

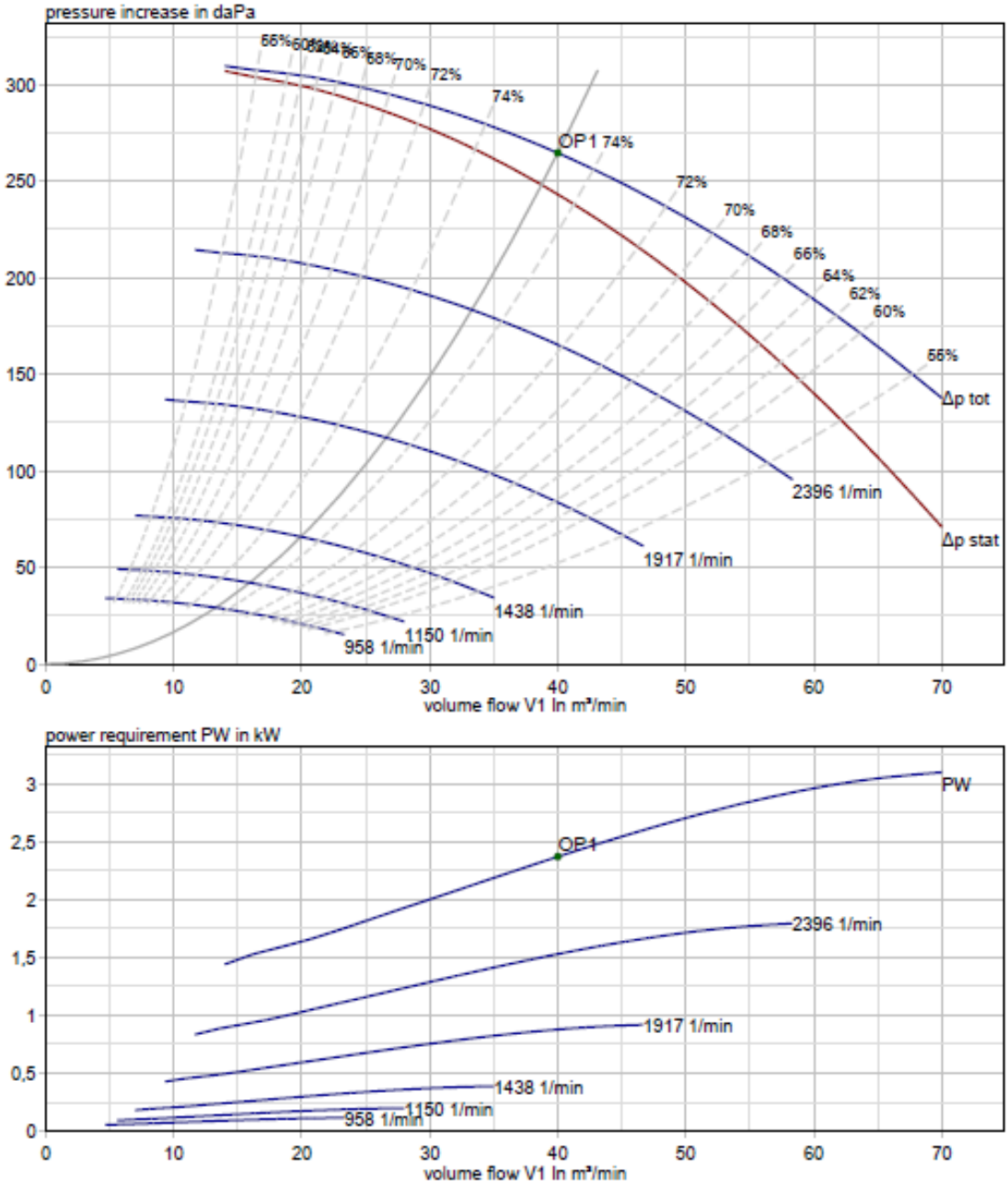


fig. 52: representation speed series / variable speed curves

The fan characteristic follows the physical laws of changes (see our catalogue) and will be shifted on the plant characteristics upward or downwards and will form in the point of intersection the new operating point (marked in red).

The detailed representation of the detailed form (extended…) for control with inlet guide vane and variable speed control can only be used for the main operating point.

Determine the operating points that should be summed up in the print-out with the following entry field.

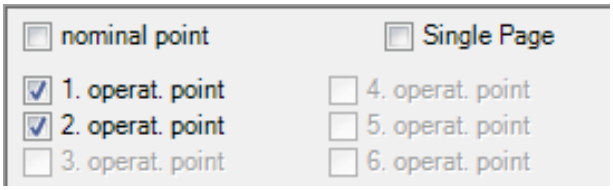


fig. 53: selection of the operating points to be printed

Tick the relevant boxes include the following information in the technical data sheet:

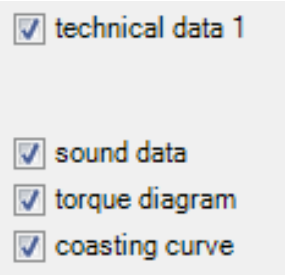


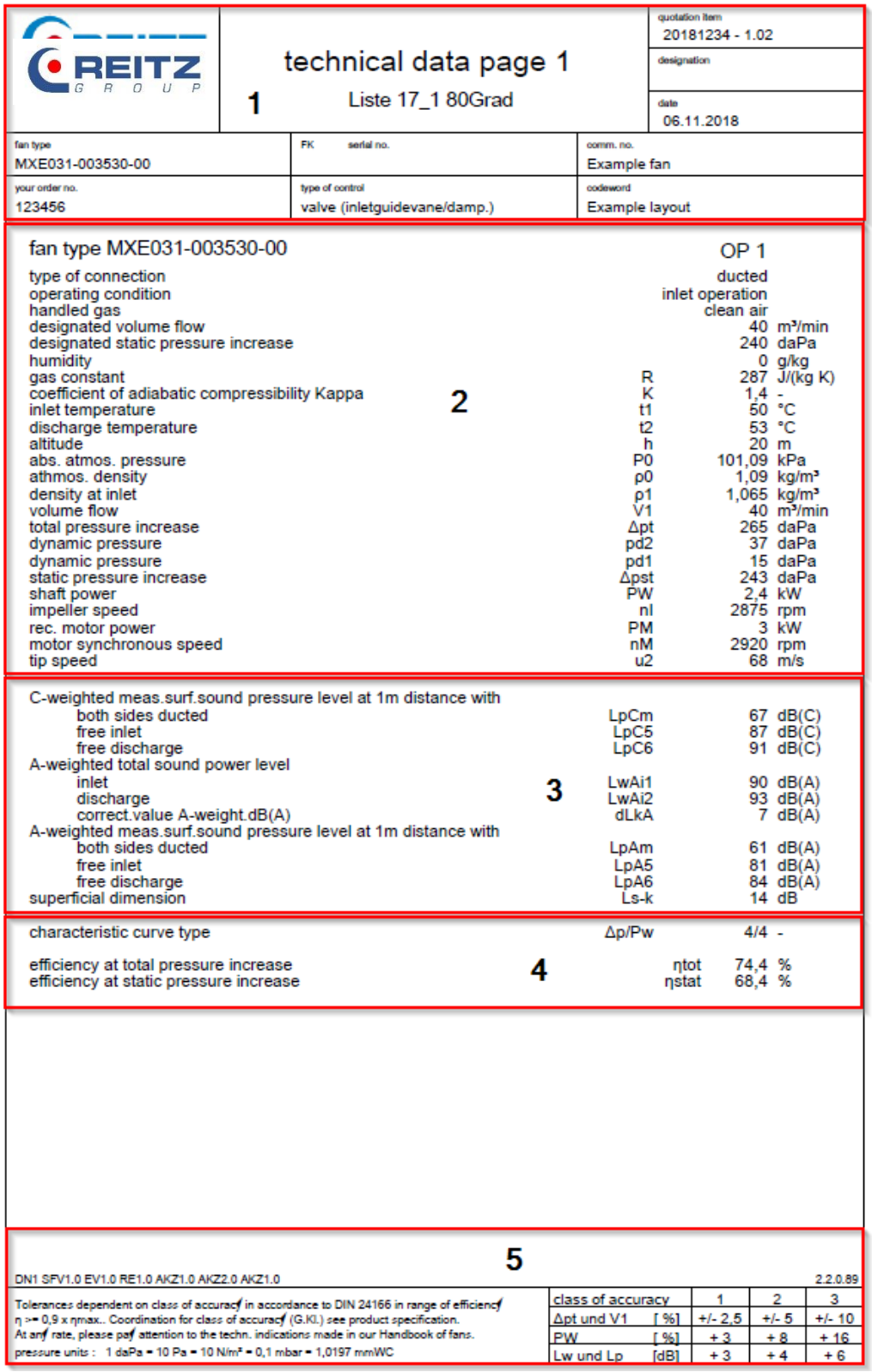
fig. 54: coverage of the technical data sheet

10. Structure of the print-out

The technical data sub-divide in five different fields of information.

1. Header data
2. Presentation of the fan flow data
3. Summary of acoustic data
4. Characteristic curve type and efficiency
5. Tolerances dependent on class of accuracy

10.1 Technical data



technical data page 1

1

Liste 17_1 80Grad

quotation item: 20181234 - 1.02

designation:

date: 06.11.2018

fan type	FK serial no.	comm. no.
MXE031-003530-00		Example fan
your order no.	type of control	codeword
123456	valve (inletguidevane/damp.)	Example layout

fan type MXE031-003530-00 — OP 1

type of connection		ducted	
operating condition		inlet operation	
handled gas		clean air	
designated volume flow		40	m³/min
designated static pressure increase		240	daPa
humidity		0	g/kg
gas constant	R	287	J/(kg K)
coefficient of adiabatic compressibility Kappa	K	1,4	-
inlet temperature	t1	50	°C
discharge temperature	t2	53	°C
altitude	h	20	m
abs. atmos. pressure	P0	101,09	kPa
athmos. density	ρ0	1,09	kg/m³
density at inlet	ρ1	1,065	kg/m³
volume flow	V1	40	m³/min
total pressure increase	Δpt	265	daPa
dynamic pressure	pd2	37	daPa
dynamic pressure	pd1	15	daPa
static pressure increase	Δpst	243	daPa
shaft power	PW	2,4	kW
impeller speed	nl	2875	rpm
rec. motor power	PM	3	kW
motor synchronous speed	nM	2920	rpm
tip speed	u2	68	m/s

2

C-weighted meas.surf.sound pressure level at 1m distance with			
both sides ducted	LpCm	67	dB(C)
free inlet	LpC5	87	dB(C)
free discharge	LpC6	91	dB(C)
A-weighted total sound power level			
inlet	LwAi1	90	dB(A)
discharge	LwAi2	93	dB(A)
correct.value A-weight.dB(A)	dLkA	7	dB(A)
A-weighted meas.surf.sound pressure level at 1m distance with			
both sides ducted	LpAm	61	dB(A)
free inlet	LpA5	81	dB(A)
free discharge	LpA6	84	dB(A)
superficial dimension	Ls-k	14	dB

3

characteristic curve type	Δp/Pw	4/4	-
efficiency at total pressure increase	ηtot	74,4	%
efficiency at static pressure increase	ηstat	68,4	%

4

5

DN1 SFV1.0 EV1.0 RE1.0 AKZ1.0 AKZ2.0 AKZ1.0 — 2.2.0.89

Tolerances dependent on class of accuracy in accordance to DIN 24166 in range of efficiency η >= 0,9 x ηmax.. Coordination for class of accuracy (G.Kl.) see product specification.
At any rate, please pay attention to the techn. indications made in our Handbook of fans.
pressure units : 1 daPa = 10 Pa = 10 N/m² = 0,1 mbar = 1,0197 mmWC

class of accuracy		1	2	3
Δpt und V1	[%]	+/- 2,5	+/- 5	+/- 10
PW	[%]	+ 3	+ 8	+ 16
Lw und Lp	[dB]	+ 3	+ 4	+ 6

fig. 55: technical data sheet

If other units for pressure and volume flow than [daPa] and [m³/min] are entered as operating parameter, the inputs will be converted to these units. Find your individual entry as “units per customer’s specification”.

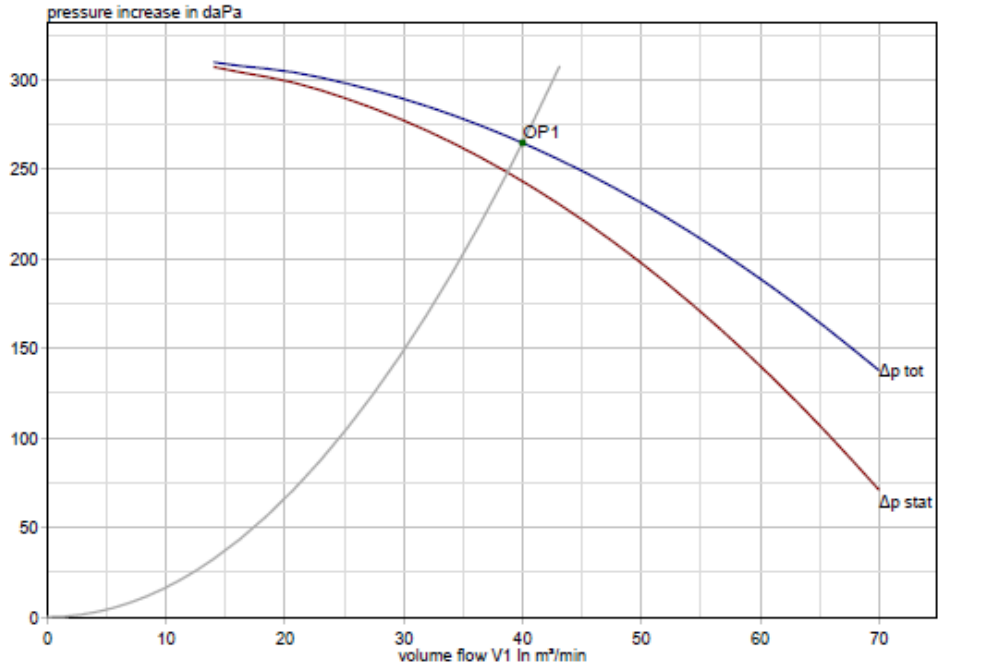
10.2 Characteristics representation

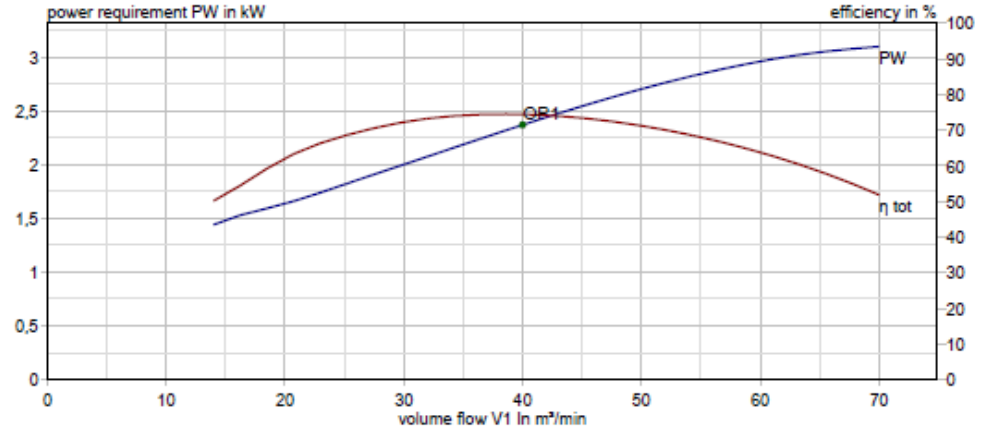
REITZ GROUP

FAN CHARACTERISTIC CURVE

Liste 17_1 80Grad

quotation item: 20181234 - 1.02		
designation:		
date: 06.11.2018		
fan type: MXE031-003530-00	FK serial no.:	comm. no.: Example fan
your order no.: 123456	type of control: valve (inletguidevane/damp.)	codeword: Example layout





		NP	OP 1	OP 2	OP 3	OP 4	OP 5	OP 6
volume flow V1	m³/min		40					
total pressure increase Δpt	daPa		265					
density at inlet ρ1	kg/m³		1,065					
impeller speed nl	rpm		2875					
inletguidevane/damp.								

DN1 SFV1.0 EV1.0 RE1.0 AKZ1.0 AKZ2.0 AKZ1.0 2.2.0.89

Tolerances dependent on class of accuracy in accordance to DIN 24166 in range of efficiency η >= 0,9 x ηmax.. Coordination for class of accuracy (G.Kl.) see product specification. At any rate, please pay attention to the techn. indications made in our Handbook of fans.
pressure units : 1 daPa = 10 Pa = 10 N/m² = 0,1 mbar = 1,0197 mmWC

class of accuracy		1	2	3
Δpt und V1	[%]	+/- 2,5	+/- 5	+/- 10
PW	[%]	+ 3	+ 8	+ 16
Lw und Lp	[dB]	+ 3	+ 4	+ 6

fig. 56: characteristics representation

The most important parameter of the operating point is also shown in the table below the characteristics.

10.3 Comprehensive overview on sound data

REITZ GROUP	**SOUND DATA** Liste 17_1 80Grad	quotation item: 20181234 - 1.02 designation: date: 06.11.2018

fan type	FK serial no.	comm. no.
MXE031-003530-00		Example fan
your order no.	**type of control**	**codeword**
123456	valve (inletguidevane/damp.)	Example layout

technical data of fan at ρ-1 =1,065 kg/m³ (OP 1) :

total pressure increase	Δpt	265 daPa	volume flow	V1	40,00 m³/min
impeller speed	nl	2875 rpm	shaft power	PW	2,4 kW
no. of blades	z	9 -	main residual frequency	f	431 Hz
drive motor	PM	3,0 kW	motor speed	nM	2920 rpm

sound data:

superficial dimension	Ls-k	14,1 dB	corr. value A-weighting	dlkA	7,4 dB(A)
A-weighted total sound power level at inlet:	LwAi1	89,8 dB(A)	at discharge	LwAi2	93,4 dB(A)
A-weighted free inlet resp. free discharge sound pressure level at 1m distance from hemisphere radius at inlet:	LpA5	80,9 dB(A)	at discharge	LpA6	84,5 dB(A)
A-weighted external sound power level				LwAa	75,1 dB(A)
A-weighted meas. surf. sound pressure level				LpA	61,0 dB(A)
A-weight. meas.surface sound pressure level of drive			LpAMo		dB(A)
A-weight. meas. surface sound press.level fan and drive			LpAMo+LpA		dB(A)

sound correction value

speed correction	dLn	0 dB	deviation of nominal point	dLbp	+1 dB
density correction	dLt	-1 dB	other corrections	dLs	0 dB

octave spectrum

frequency	fm in Hz	63	125	250	500	1000	2000	4000	8000	Dim
main residual frequ.	dLD-okt	0,0	0,0	0,0	1,7	0,4	0,1	0,0	0,0	dB
relative octave spectrum	dLw-okt	-4,6	-5,4	-7,1	-9,8	-13,3	-17,7	-23,1	-29,3	dB
A-weighting	dLA	-26,2	-16,1	-8,6	-3,2	0,0	1,2	1,0	-1,1	dB
total sound power	Lwi2-okt	96,0	95,2	93,5	92,5	87,7	82,9	77,5	71,3	dB
	Lwi1-okt	92,4	91,6	89,9	89,0	84,1	79,4	74,0	67,7	dB
	LwAi2-okt	69,8	79,1	84,9	89,3	87,7	84,1	78,5	70,2	dB(A)
	LwAi1-okt	66,2	75,5	81,3	85,8	84,1	80,6	75,0	66,6	dB(A)
A-weighted external sound power level	LwAa-okt	51,5	60,8	66,6	71,1	69,4	65,9	60,3	51,9	dB(A)
A-weighted meas. surf. sound pressure level	LpA-okt	37,4	46,7	52,5	57,0	55,3	51,8	46,2	37,8	dB(A)

Remark : The rounding of the values to whole figures results necessarily in differences of further calculations.
At calculation of the sound pressure level a reduction of 3 dB for self shielding of the fan housing is to be taken into account.
LpA = LwAa - Ls - 3 dB(A)
DN1 SFV1.0 EV1.0 RE1.0 AKZ1.0 AKZ2.0 AKZ1.0 2.2.0.89

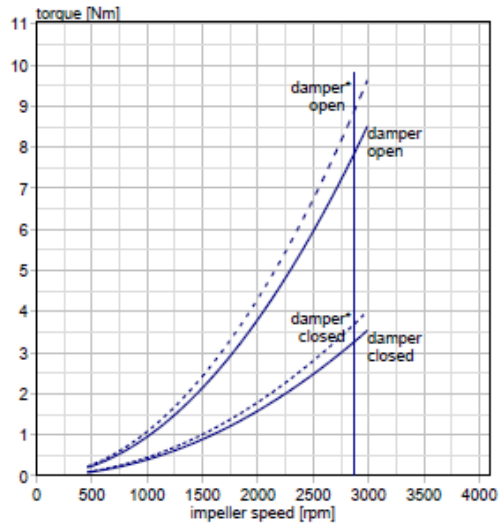
Tolerances dependent on class of accuracy in accordance to DIN 24166 in range of efficiency η >= 0,9 x ηmax.. Coordination for class of accuracy (G.Kl.) see product specification.
At any rate, please pay attention to the techn. indications made in our Handbook of fans.
pressure units : 1 daPa = 10 Pa = 10 N/m² = 0,1 mbar = 1,0197 mmWC

class of accuracy		1	2	3
Δpt und V1	[%]	+/- 2,5	+/- 5	+/- 10
PW	[%]	+ 3	+ 8	+ 16
Lw und Lp	[dB]	+ 3	+ 4	+ 6

fig. 57: general survey about sound data

10.4 Torque diagram

REITZ GROUP	**TORQUE DIAGRAM** Liste 17_1 80Grad	quotation item: 20181234 - 1.02 designation: date: 06.11.2018
fan type: MXE031-003530-00	FK serial no.	comm. no.: Example fan
your order no.: 123456	type of control: valve (inletguidevane/damp.)	codeword: Example layout



design point : OP1 ——

V1	=	40 m³/min
Δpt	=	265 daPa
PW	=	2,37 kW
nl	=	2875 rpm
ρ1	=	1,065 kg/m³
J (imp.)	=	0,345 kgm²

*OP1 - - - - - -

V1	=	40 m³/min
Δpt	=	300 daPa
PW	=	2,68 kW
nl	=	2875 rpm
ρ1	=	1,205 kg/m³
J (imp.)	=	0,345 kgm²

DN1 SFV1.0 EV1.0 RE1.0 AKZ1.0 AKZ2.0 AKZ1.0 2.2.0.89

Tolerances dependent on class of accuracy in accordance to DIN 24166 in range of efficiency η >= 0,9 x ηmax.. Coordination for class of accuracy (G.Kl.) see product specification.
At any rate, please pay attention to the techn. indications made in our Handbook of fans.
pressure units : 1 daPa = 10 Pa = 10 N/m² = 0,1 mbar = 1,0197 mmWC

class of accuracy		1	2	3
Δpt und V1	[%]	+/- 2,5	+/- 5	+/- 10
PW	[%]	+ 3	+ 8	+ 16
Lw und Lp	[dB]	+ 3	+ 4	+ 6

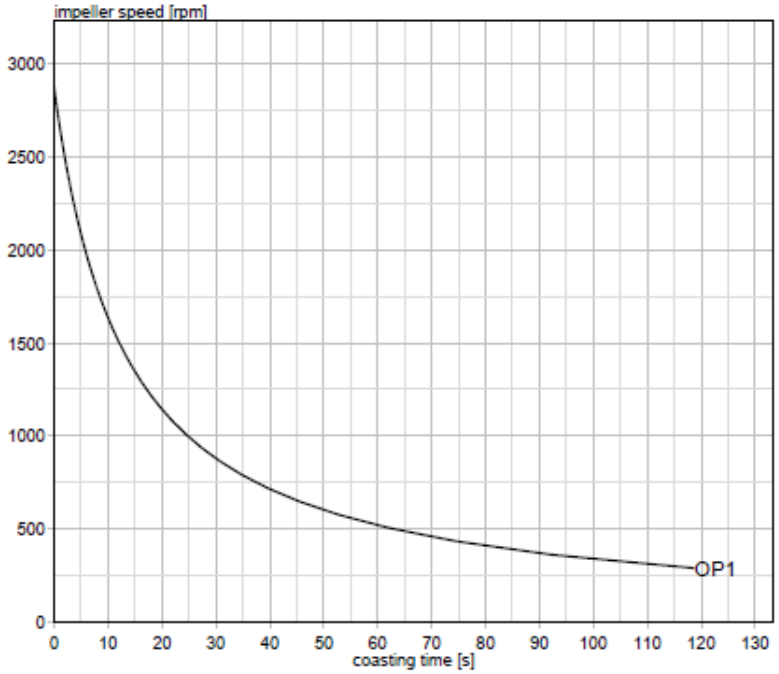
fig. 58: load torque curve

For the first operating point, the torque diagram is shown both for the condition with open and with closed damping element. The continuous line describes the curve under operating conditions (influence of temperature), the broken line bases on the conditions present at an inlet temperature of 20°C.

10.5 Coasting curve

REITZ GROUP	**COASTING CURVE** Liste 17_1 80Grad	quotation item: 20181234 - 1.02 designation: date: 06.11.2018

fan type: MXE031-003530-00	FK serial no.	comm. no.: Example fan
your order no.: 123456	type of control: valve (inletguidevane/damp.)	codeword: Example layout



The coasting time depends on the mass moment of inertia and on the present ventilation load moment on disconnecting the motor
The coasting time refers to coasting of the fan when it is disconnected from electric supply.

		OP1	
shaft power	PW	2,4	kW
impeller speed	nl	2875	rpm
fan torque	fan torque	7,873	Nm
massmoment of inertia	J (imp.)	0,345	kgm²
massmoment of inertia referred to motor shaft	J fan mot	0,345	kgm²

		OP1
speed	100%	2875 rpm after 0,0 s
	75%	2156 rpm after 4,4 s
	50%	1438 rpm after 13,2 s
	25%	719 rpm after 39,6 s
	10%	288 rpm after 118,7 s

For drive belt only. The JVM figure changes quadratically to the speed alteration.

DN1 SFV1.0 EV1.0 RE1.0 AKZ1.0 AKZ2.0 AKZ1.0 2.2.0.89

Tolerances dependent on class of accuracy in accordance to DIN 24166 in range of efficiency $\eta \geq 0{,}9 \times \eta_{max}$.. Coordination for class of accuracy (G.Kl.) see product specification.
At any rate, please pay attention to the techn. indications made in our Handbook of fans.
pressure units : 1 daPa = 10 Pa = 10 N/m² = 0,1 mbar = 1,0197 mmWC

class of accuracy		1	2	3
Δpt und V1	[%]	+/- 2,5	+/- 5	+/- 10
PW	[%]	+ 3	+ 8	+ 16
Lw und Lp	[dB]	+ 3	+ 4	+ 6

fig. 59: coasting curve

10.6 Input of header data

The tab “extended…” offers the possibility to enter header data and texts and individually describe operating points.

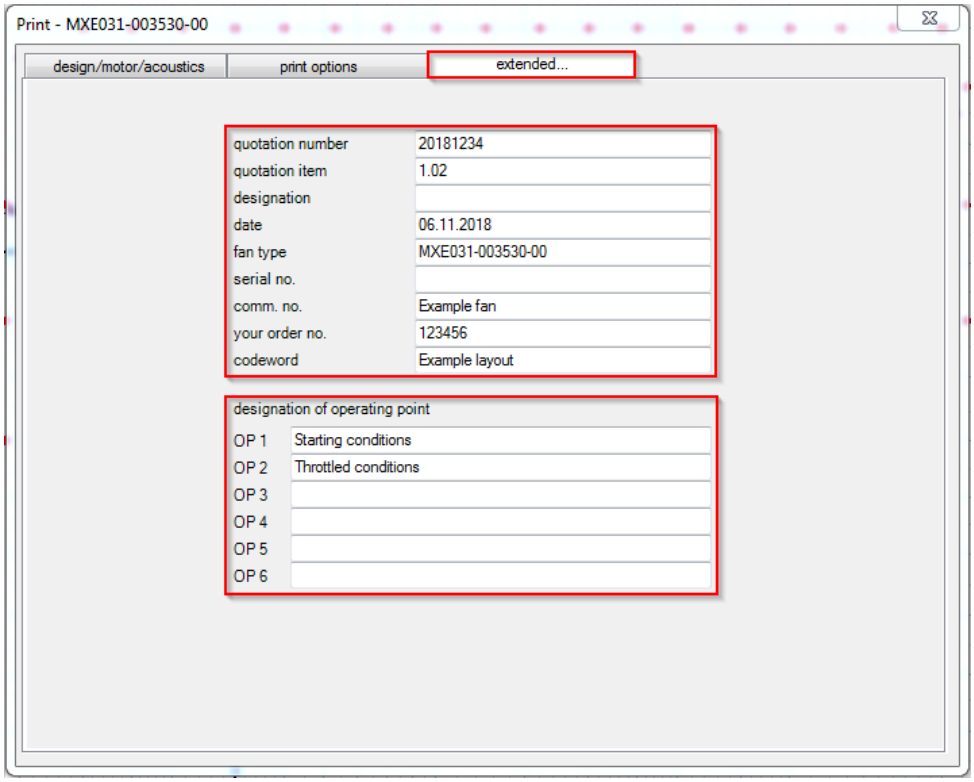


fig. 60: tab extended…

Find the operating points names on the technical fan data sheet:

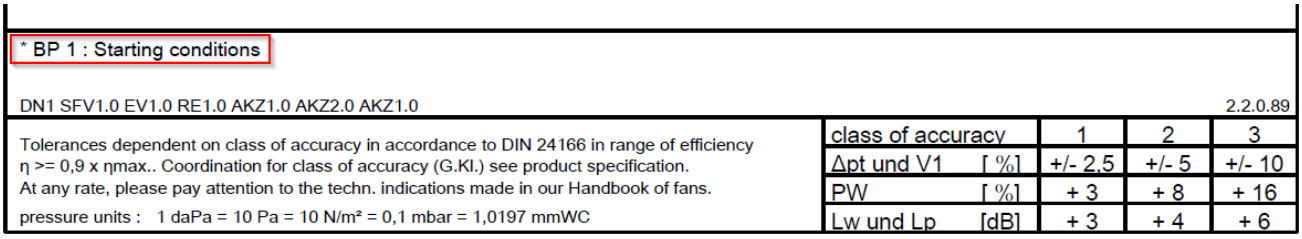


fig. 61: operating point denomination

While you choose the print-out options you may find a pdf preview file helpful. Tick the box of **create pdf** and click the **print** button.

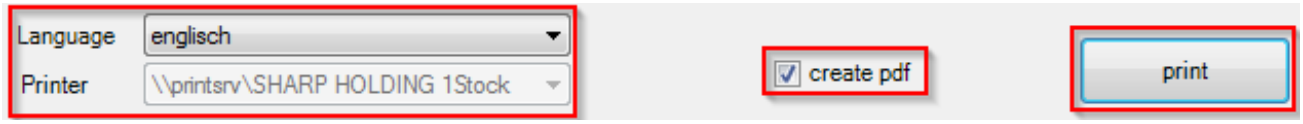


fig. 62: print technical documents

Deactivate the option **create pdf** for the final print-out, choose the desired printer and confirm with print. Use any other language for the print- out from the pull down menu next to language.

11. Generation of fan dimension sheet

Immediately after the completion of fan lay-out and design, you can generate a dimension sheet. Please use the CAD button of the toolbar.

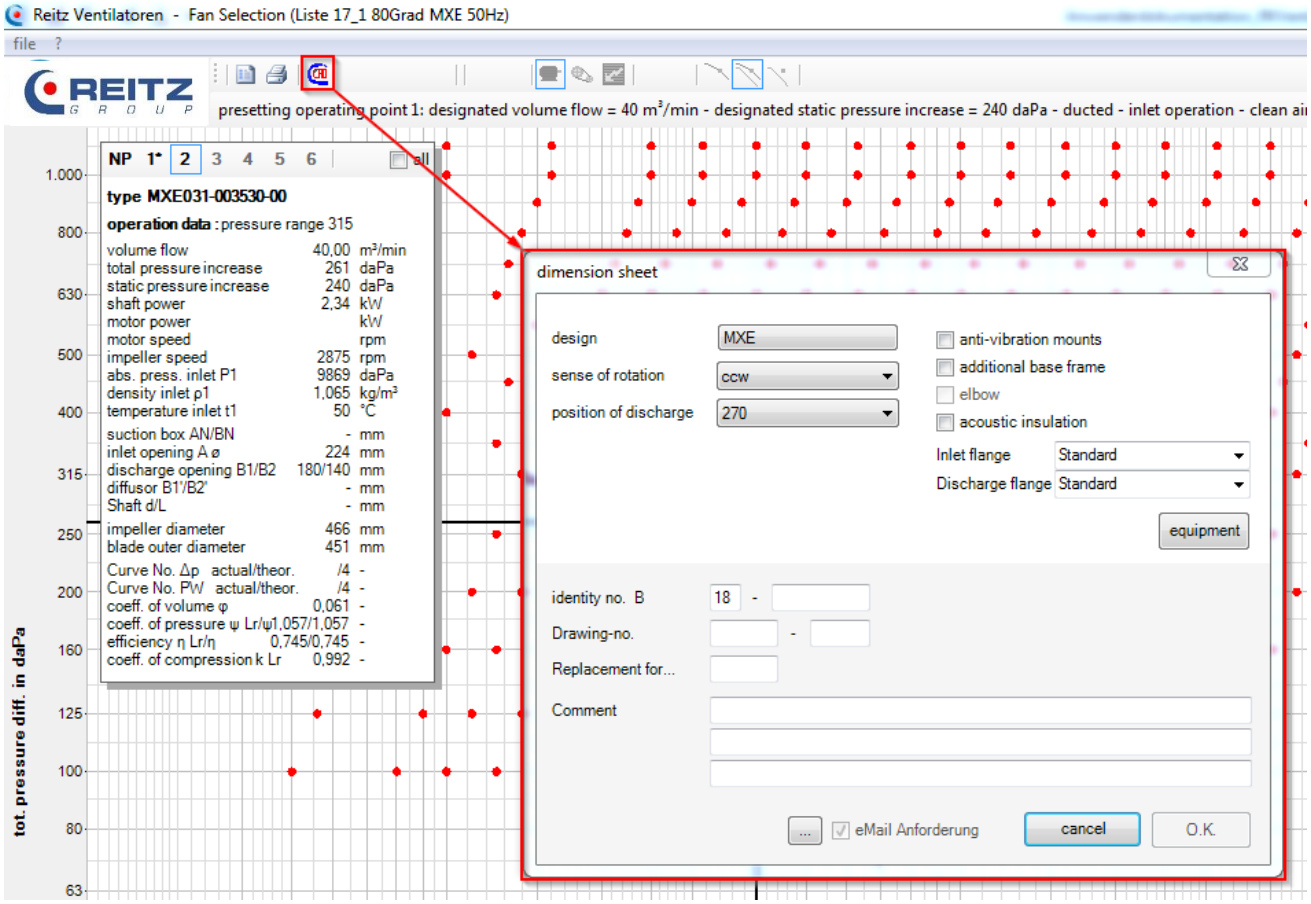


fig. 63: request for dimension sheet

11.1 Determination of sense of rotation and position of discharge

You have already chosen the structural design. Determine now the **sense of rotation** and the **position of discharge**. The sense of rotation (i.e. the sense of impeller rotations) is always indicated as viewed from the driven end.

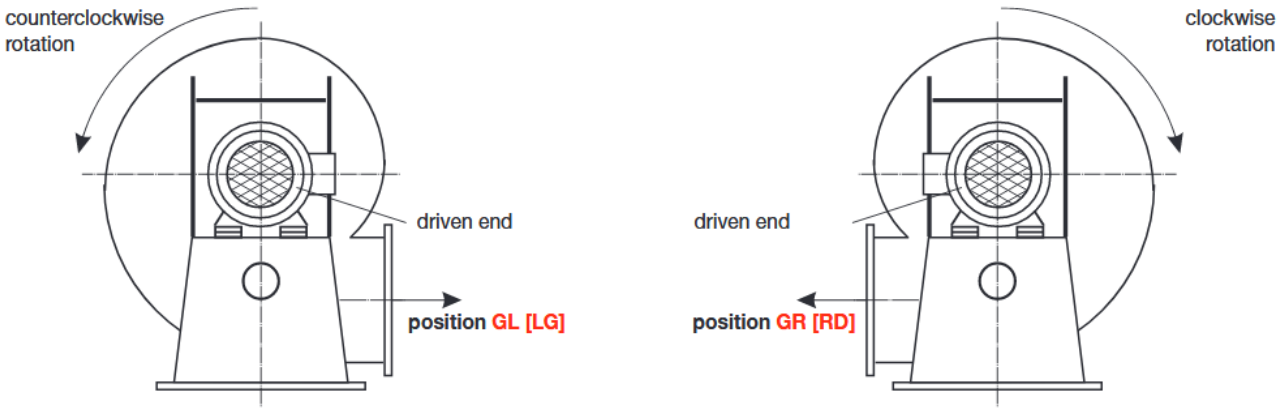


fig. 64: fan sense of rotation

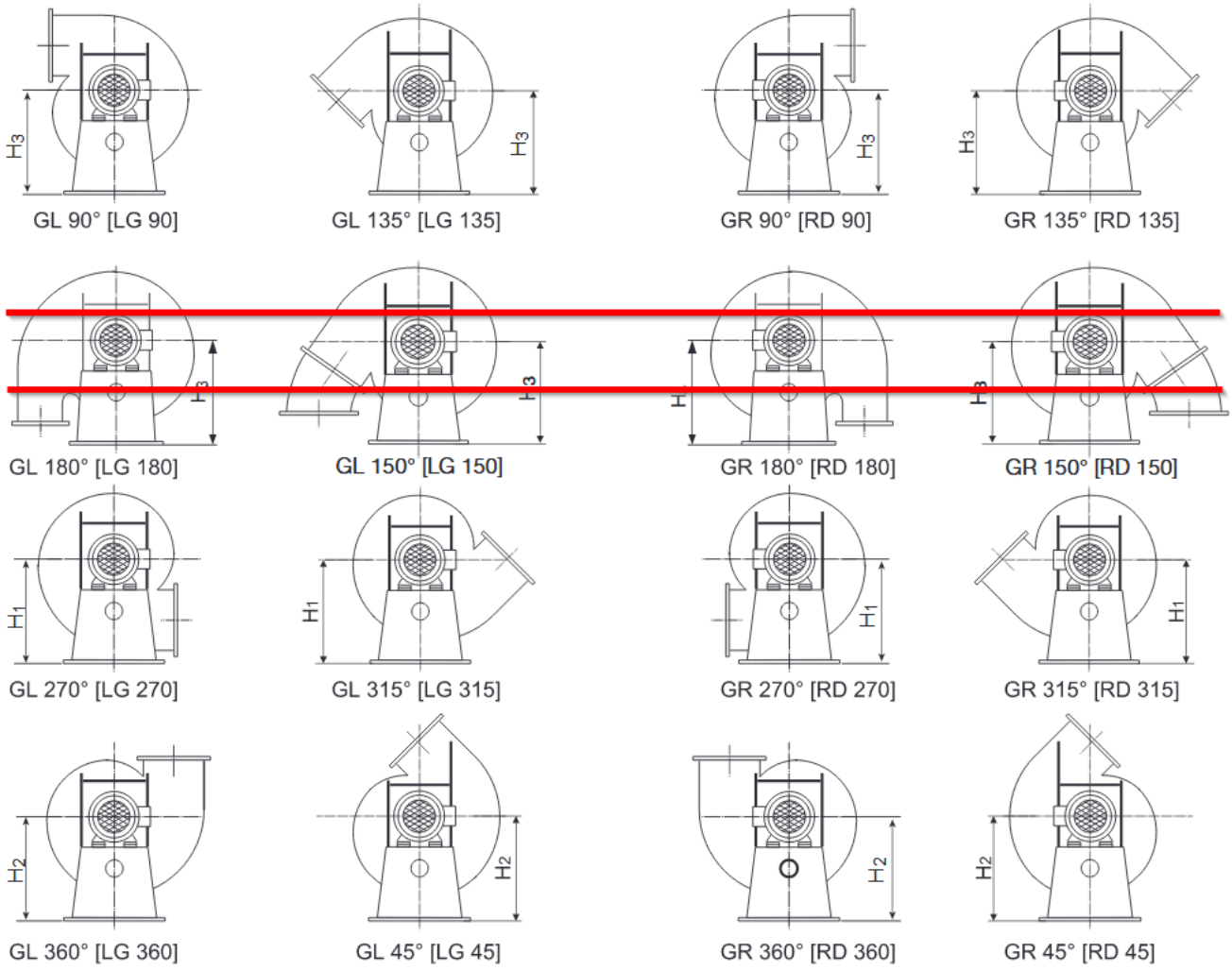


fig. 65: positions of housing

The 180° position of housing cannot be selected directly. Achieve the 180° position by choosing 150° housing position with an additional elbow of 30°.

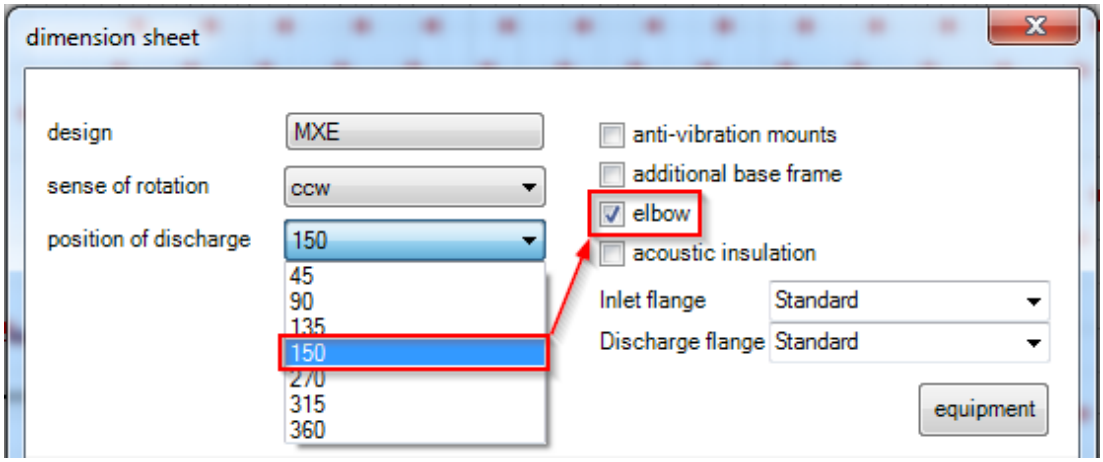


fig. 66: choosing of elbow

11.2 Selection of equipment and accessories

You can further provide **anti-vibration mounts and an additional base frame**:

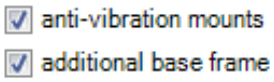


fig. 67: choosing anti-vibration mounts and additional base frame

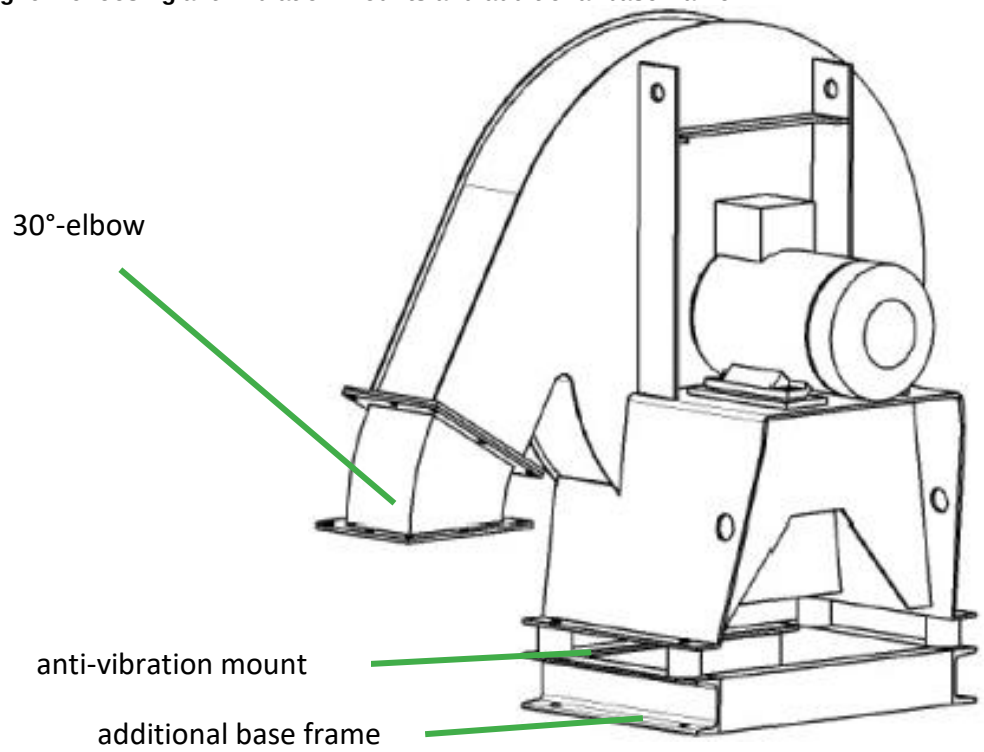


fig. 68: MXE with 30°-elbow, anti-vibration mounts and additional base frame

The three options described above apply to the structural designs MXE, KXE and RGE. They do not apply to structural design MAE, like other equipment, too, is not available for MAE.

Default settings include representation on dimension sheet of **inlet flange** as per DIN 24154 R2 and **discharge flange** as per DIN 24193 R3.

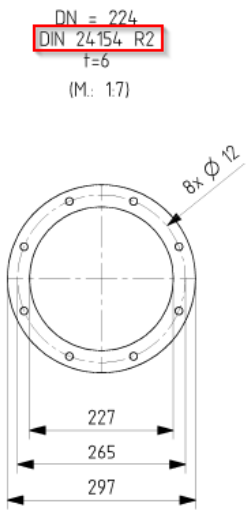


fig. 69: flange as per DIN24154 R2

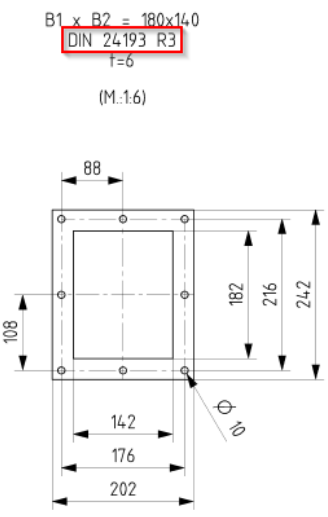


fig. 70: flange as per DIN24193 R3

Should you wish another flange design, select one from the pull down menus for inlet and discharge flange:

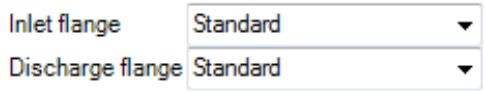


fig. 71: alteration of connection flanges

Please note that only flanges of standard as well as gastight and reinforced designs can be directly used at fan connections. Other designs apply to equipment parts only.

Click on **equipment** in the following window to design your **equipment at inlet or discharge**:

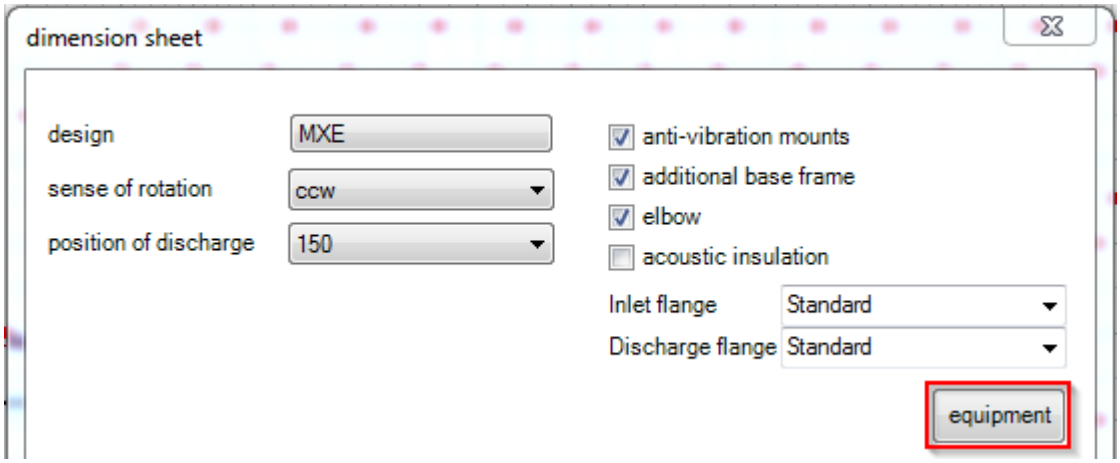


fig. 72: selection of equipment

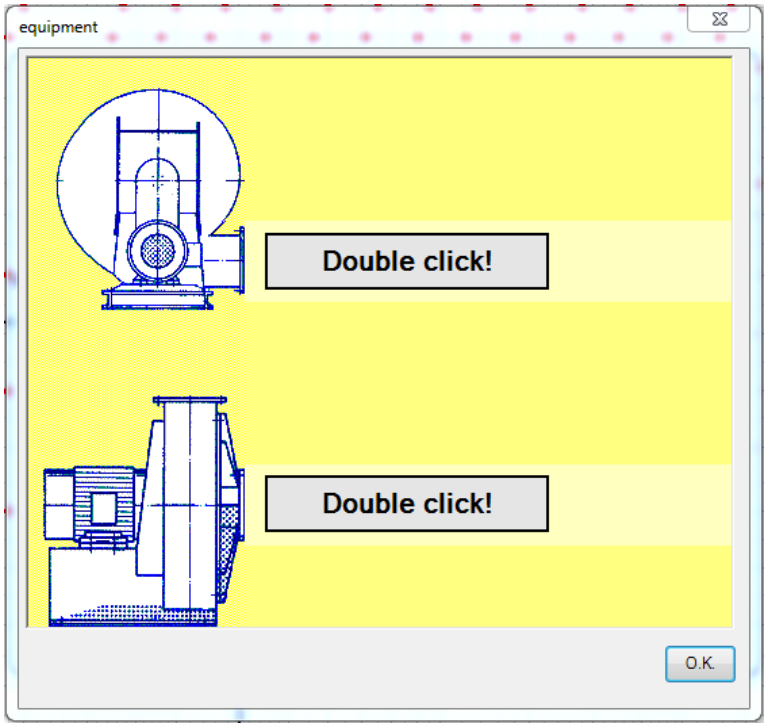


fig. 73: equipment configuration

Double click on the marked area to open the possible accessories selection window. At inlet and at discharge up to three parts can be connected in series.

Place the mouse pointer on the symbols to get the symbol designation (name of equipment part):

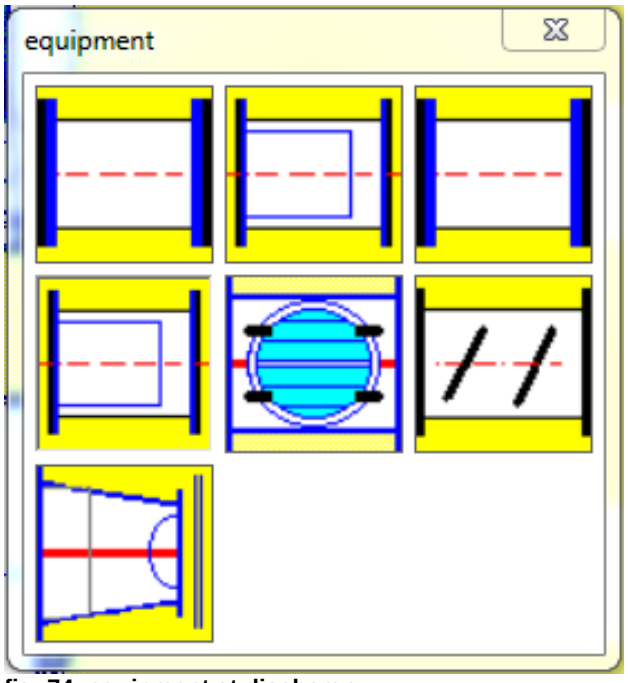


fig. 74: equipment at discharge

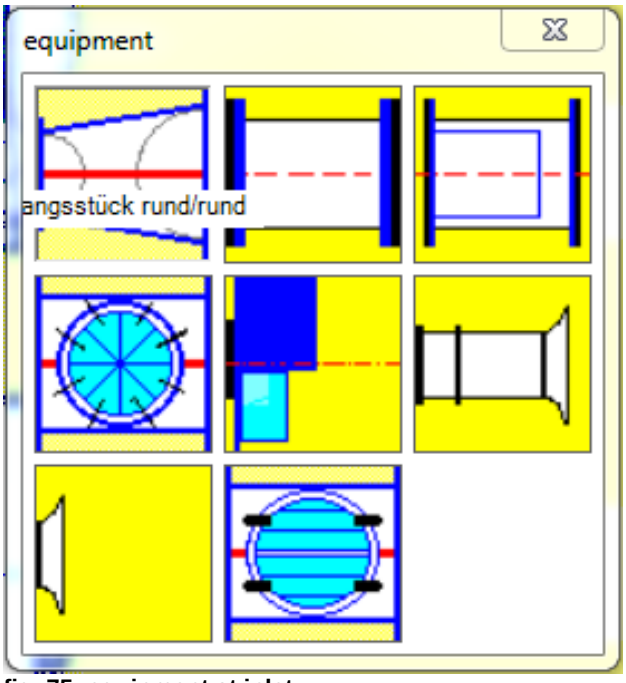


fig. 75: equipment at inlet

- Kompensator rund
  flexible connection round
- Kompensator rund mit Leitblech
  flexible connection round with chute
- Kompensator eckig
  flexible connection angular
- Kompensator eckig mit Leitblech
  flexible connection angular with chute
- Drosselklappe
  damper
- Drosseljalousie
  lourve damper
- Übergangsstück eckig/rund
  transition piece angular/round
- Übergangsstück rund/rund
  transition piece round/round
- Kompensator rund
  flexible connection round
- Kompensator rund mit Leitblech
  flexible connetcion round with chute
- Drallregler
  inlet guide vane
- Rundfilter
  round filter
- Einlaufmessdüse
  piecometric flow meter
- Ansaugdüse
  inlet nozzle
- Rückschlagklappe
  one-way valve

When a part has been selected, an entry and information window opens. Adapt nominal widths and lengths. Delete no longer needed parts with a click on the button **löschen (delete)**.

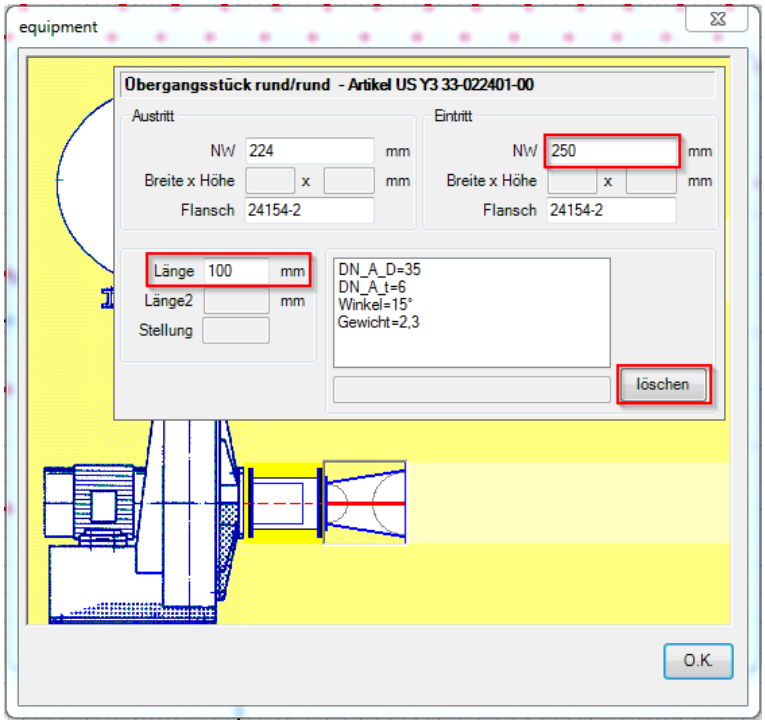


fig. 76: composition of equipment at inlet

Wrong entries or mismatched parts are tagged with exclamation mark. The following example shows the attempt to connect a round flexible connection with chute at discharge to an angular discharge end piece → !

At inlet, an inlet guide vane should be added. In principle, the inlet guide vane has to be installed directly at fan inlet. In our example, the inlet opening diameter is 224mm, the smallest inlet guide vane available, however, is 315 mm → !

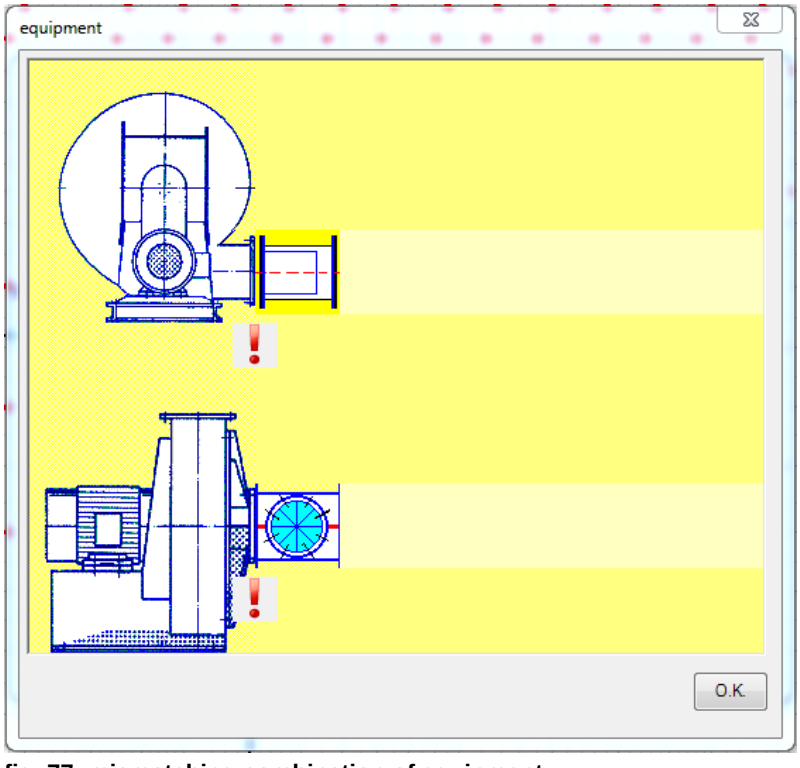


fig. 77: mismatching combination of equipment

11.3 Drawing number and comment

If the equipment selection is completed, assign a reference or drawing number of your choice in the next step. You can use, for example, the current date. If this entry is missing, the dimension sheet cannot be requested.

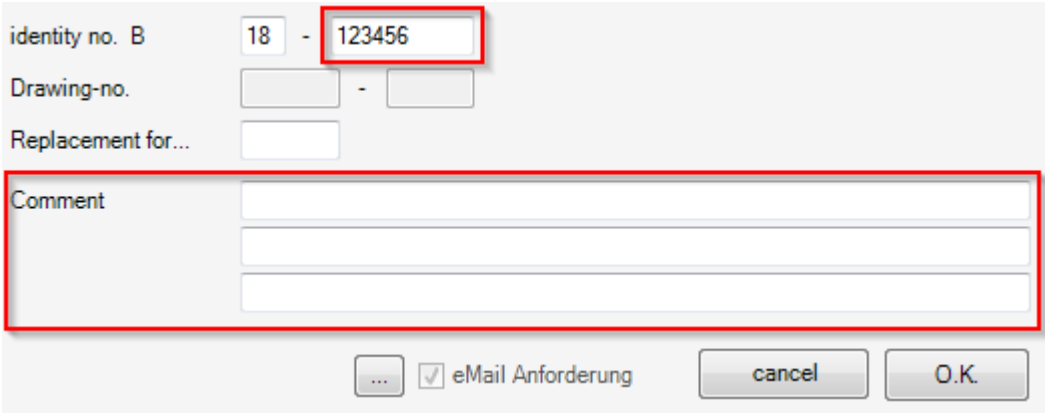


fig. 78: drawing number and comment for the dimension sheet

Add any further remarks or comments (e.g. project number, commission, etc.) in the provided lines for comments. They will be shown on the dimension sheet.

11.4 E-mail settings

Prior to sending the request for the dimension sheet, select the way on which the dimension sheet should be requested. Click on the button … (marked in green in the screenshot below) to get access to the e-mail settings:

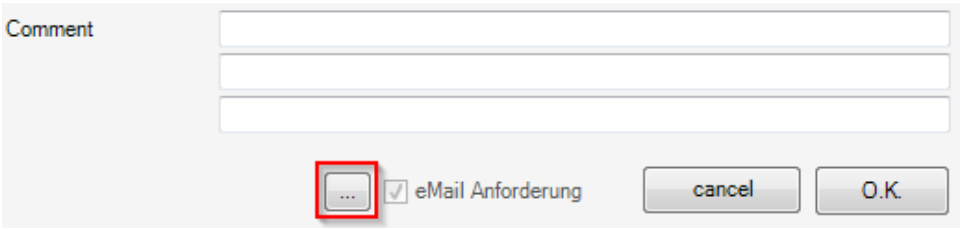


fig. 79: change e-mail settings

When the e-mail settings, which is used internally by the program, remains unchanged the dimension sheet program generally uses the e-mail program that is installed on your personal computer. Should you wish that the dimension sheet is requested by GMX or other providers please insert your access code under **SMTP-direct**.

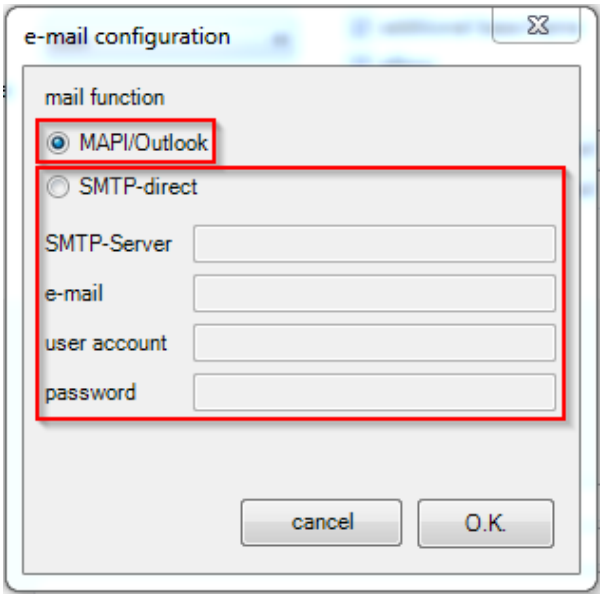


fig. 80: edit e-mail settings

11.5 Request of dimension sheet

Click OK to send the request of the dimension sheet. You will be informed about the successful request with a text field and your e-mail program opens a ready-to-use email for the sending of the request:

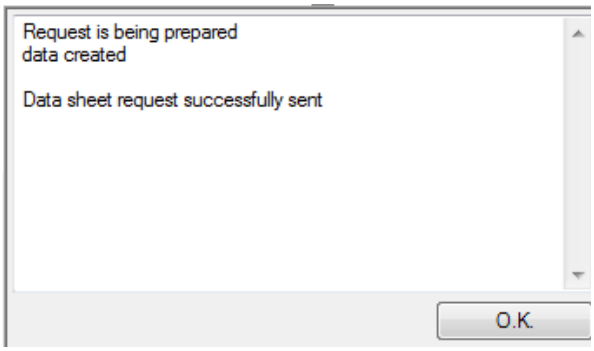


fig. 81: dimension sheet request successfully

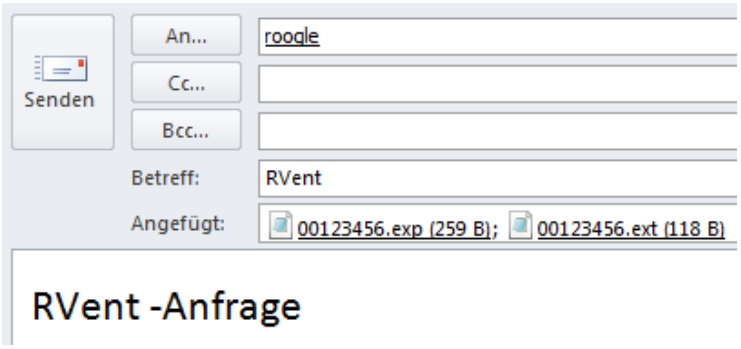
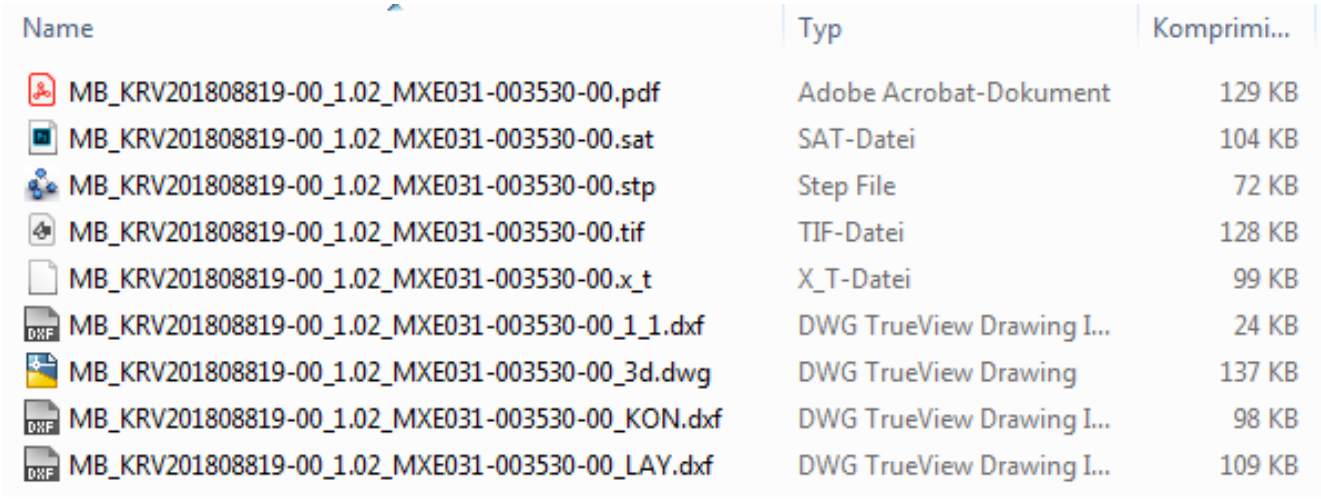


fig. 82: sending request for dimension sheet with Outlook

The e-mail has got two annexes. Send the request with click on Send without any further notes, additions or changes in the e-mail. Our dimension sheet server will process your request. Depending on the server workload, it may take some time before you get an answer per e-mail.

The attachment of the response e-mail contains a ZIP-file, which comprises your requested drawing as a document for viewing and printing as well as the CAD model of different formatting for direct planning in your overall plant and system drawing.



Name	Typ	Komprimi...
MB_KRV201808819-00_1.02_MXE031-003530-00.pdf	Adobe Acrobat-Dokument	129 KB
MB_KRV201808819-00_1.02_MXE031-003530-00.sat	SAT-Datei	104 KB
MB_KRV201808819-00_1.02_MXE031-003530-00.stp	Step File	72 KB
MB_KRV201808819-00_1.02_MXE031-003530-00.tif	TIF-Datei	128 KB
MB_KRV201808819-00_1.02_MXE031-003530-00.x_t	X_T-Datei	99 KB
MB_KRV201808819-00_1.02_MXE031-003530-00_1_1.dxf	DWG TrueView Drawing I...	24 KB
MB_KRV201808819-00_1.02_MXE031-003530-00_3d.dwg	DWG TrueView Drawing	137 KB
MB_KRV201808819-00_1.02_MXE031-003530-00_KON.dxf	DWG TrueView Drawing I...	98 KB
MB_KRV201808819-00_1.02_MXE031-003530-00_LAY.dxf	DWG TrueView Drawing I...	109 KB

fig. 83: various formats of fan dimension sheet

If you are enabled for the function, you will also find a non-binding commercial offer for the fan you have configured in the attachment to the reply e-mail. If you wish to activate this function, please contact your customer service representative

12. Note

The features and functions described in this manual are intended to provide support. For layouts and possible resulting fan designs that were drawn by you as our customer with the help of the selection program, we do not assume liability with regard to the ventilation performance.

Please contact us directly with any questions relating to fan design or general operation of the program. Our sales personnel will gladly assist you further.