

FAN DATA

Liste 2012 SFV102 80Grad

quotation item
10140098-00 - 1.02

designation
Rauchgasventilator

date
24.01.2014 / spk

fan type
MXE020-014030-00

FK serial no.

comm. no.
Jaunolaine, Litauen / 2. Variante

your order no.
.

type of control

codeword
Herr Alexander Plank

fan type MXE020-014030-00

OP 1

units acc. to
customer's specification

type of connection
operating condition

ducted
mixed operation 75% IS

handled gas
Designated volume flow
Designated static pressure increase
humidity

special gas
149 m³/min
173 daPa
0 g/kg

8910 m³/h
1730 Pa
0 g/kg

gas constant
Coefficient of adiabatic compressibility Kappa
inlet temperature
discharge temperature

R
K
T1
t2
53 °C
56 °C

293,41 J/(kg K)
1,4 -
53 °C
56 °C

altitude

h
100 m

100 m

abs. atmos. pressure

P0
100,13 kPa

100,13 kPa

athmos. density

p0
1,045 kg/m³

1,045 kg/m³

density at inlet

p1
1,032 kg/m³

1,032 kg/m³

volume flow

V1
149 m³/min

8910 m³/h

total pressure increase

Δpt
173 daPa

1727 Pa

dynamic pressure

pd2
20 daPa

197 Pa

dynamic pressure

pd1
20 daPa

200 Pa

static pressure increase

Δpst
173 daPa

1730 Pa

shaft power

PW
5,8 kW

5,8 kW

impeller speed

nI
2972 RPM

2972 RPM

rec. motor power

PM
7,5 kW

7,5 kW

motor synchronous speed

nM
2950 RPM

2950 RPM

tip speed

u2
72 m/s

72 m/s

C-weighted meas.surf.sound pressure level at 1m distance with

both sides ducted LpCm 73 dB(C)
free inlet LpC5 93 dB(C)
free discharge LpC6 94 dB(C)

A-weighted total sound power level

inlet LwAi1 97 dB(A)
discharge LwAi2 97 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 66 dB(A)
free inlet LpA5 87 dB(A)
free discharge LpA6 87 dB(A)

superficial dimension

Ls-k 15 dB

suction box

AN/BN - mm

inlet size

A ø 400 mm

discharge size

B1/B2 400/315 mm

diffusor

B1'/B2' - mm

Gehäusewanddicke

sGv/sSp 3/3 mm

blade thickness

sSch 4 mm

shroud thickness

sD 3 mm

backplate thickness

sTs 4 mm

impeller diameter

D2 478 mm

blade effective diameter

D2s 463 mm

shaft diameter

Dw 0 mm

no. of blades

z 9

massmoment of inertia

I 0,539 kgm²

characteristic curve type

6/6 -

weight without motor

MXE 114 kg

Gew. mit Motor

MXE 157 kg

DN1 SFV1.02 EV1.0 RE1.0 AKZ1.0 AKZ2.0 AKZ1.1

2.2.0.57

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.KI.) see product specification.
At any rate, please pay attention to the techn. indications made in our catalogue.

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

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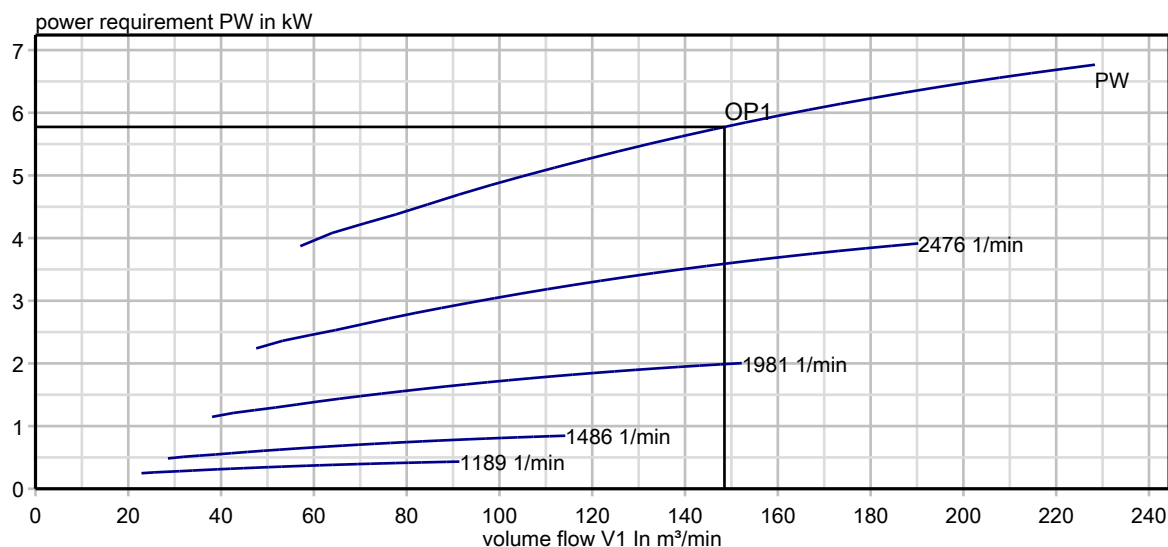
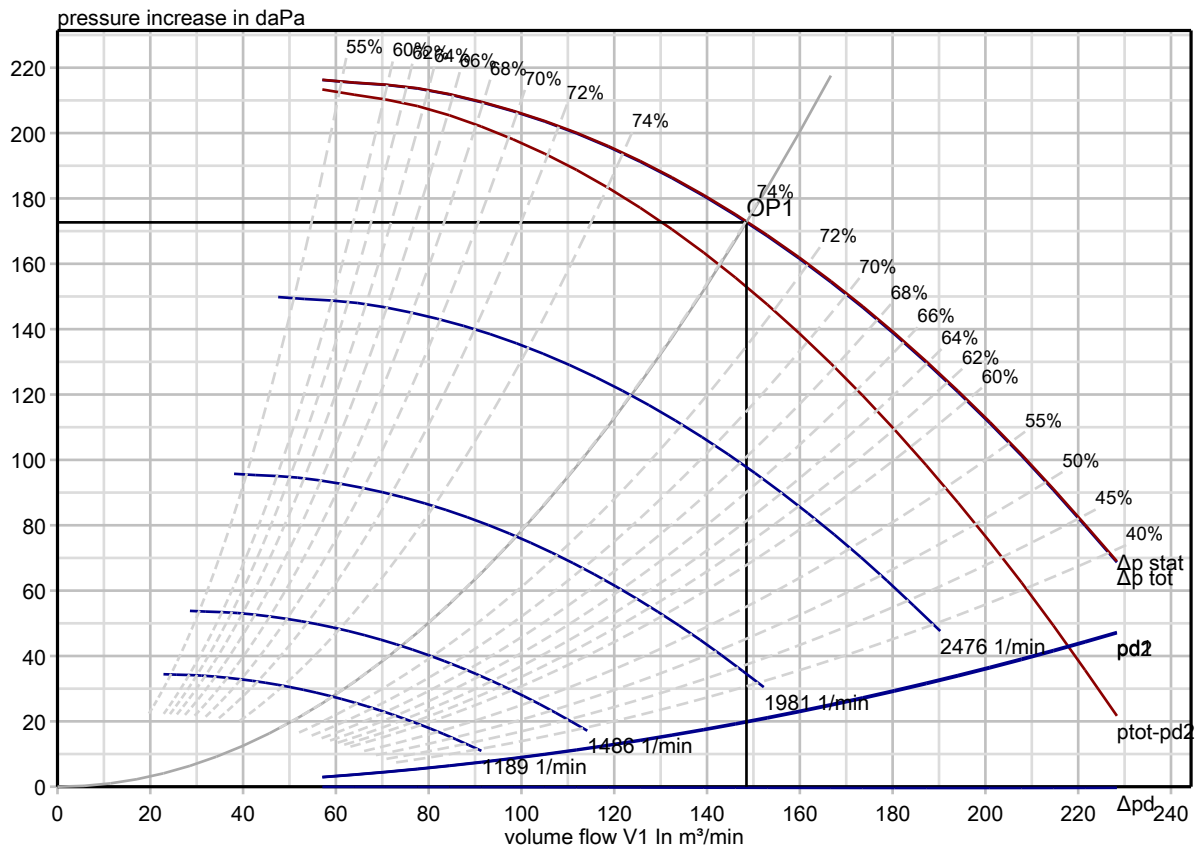
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		NP	OP 1	OP 2	OP 3	OP 4	OP 5	OP 6
volume flow V1	m³/min		148,5					
total pressure increase Δp_t	daPa		173					
density at inlet ρ_1	kg/m³		1,032					
impeller speed nI	RPM		2972					
inletguidevane/damp.								

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SOUND DATA

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technical data of fan at $p_1 = 1,032 \text{ kg/m}^3$ (OP 1) :

total pressure increase	Δp_t	173 daPa	volume flow	V1	148,50 m ³ /min
impeller speed	n1	2972 RPM	shaft power	PW	5,8 kW
no. of blades	z	9 -	main residual frequency	f	446 Hz
drive motor	PM	7,5 kW	motor speed	nM	2950 RPM

sound data:

superficial dimension	Ls-k	14,9dB	corr. value A-weighting	dLkA	7,3dB(A)
A-weighted total sound power level at inlet:	LwAi1	96,7dB(A)	at discharge	LwAi2	96,9dB(A)
A-weighted free inlet resp. free discharge sound pressure level at 1m distance from hemisphere radius					
at inlet:	LpA5	87,2dB(A)	at discharge	LpA6	87,3dB(A)
A-weighted external sound power level			structural design M:	LwAa	81,3dB(A)
			structural design K:	LwAa	dB(A)
			structural design R:	LwAa	dB(A)
A-weighted meas. surf. sound pressure level fan ducted			structural design M:	LpA	66,4dB(A)
			structural design K:	LpA	dB(A)
			structural design R:	LpA	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	0dB	deviation of nominal point	dLbp	0dB
density correction	dLt	-1dB	other corrections	dLs	0dB

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	1,9	0,4	0,1	0,0	0,0	dB
relative octave spectrum	dLw-okt	-4,7	-5,4	-7,1	-9,7	-13,2	-17,6	-22,9	-29,1	dB
A-weighting	dLA	-26,2	-16,1	-8,6	-3,3	0,0	1,2	1,0	-1,1	dB
total sound power	Lwi2-okt	99,2	98,5	96,8	96,1	91,2	86,4	81,1	74,9	dB
	Lwi1-okt	99,1	98,4	96,7	96,0	91,0	86,3	80,9	74,7	dB
	LwAi2-okt	73,0	82,4	88,2	92,8	91,2	87,6	82,1	73,8	dB(A)
	LwAi1-okt	72,9	82,3	88,1	92,7	91,0	87,5	81,9	73,6	dB(A)
A-weighted external sound power level										
structural design M	LwAa-okt	57,5	66,8	72,7	77,3	75,6	72,1	66,5	58,2	dB(A)
design K(with bearings)	LwAa-okt									dB(A)
design R(with bearings)	LwAa-okt									dB(A)
A-weighted meas. surf. sound pressure level										
structural design M	LpA-okt	42,6	52,0	57,8	62,4	60,7	57,2	51,6	43,3	dB(A)
design K(with bearings)	LpA-okt									dB(A)
design R(with bearings)	LpA-okt									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)
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2.2.0.57

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

TORQUE DIAGRAM

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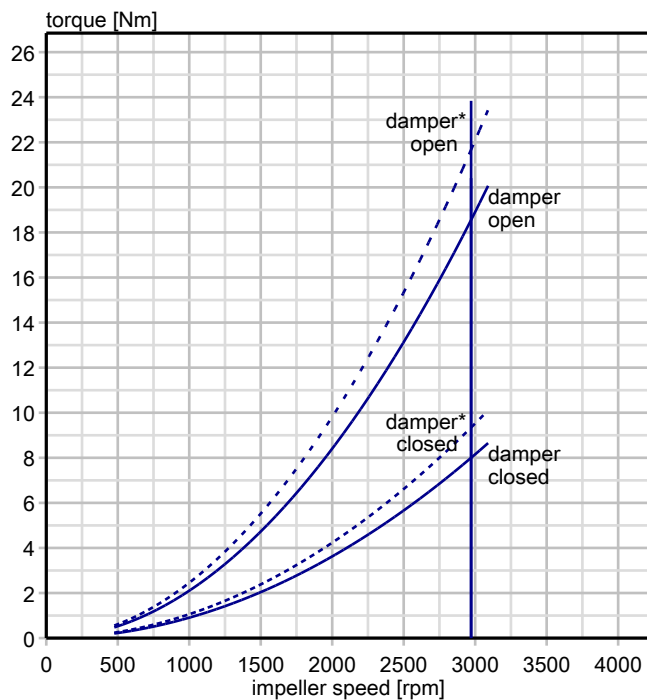
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design point : OP1 ———

V1 = 149 m³/min
 Δp_t = 173 daPa
 PW = 5,77 kW
 n1 = 2972 RPM
 ρ_1 = 1,032 kg/m³
 J (imp.) = 0,539 kgm²

*OP1 - - - - -

V1 = 149 m³/min
 Δp_t = 202 daPa
 PW = 6,74 kW
 n1 = 2972 RPM
 ρ_1 = 1,205 kg/m³
 J (imp.) = 0,539 kgm²

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

COASTING CURVE

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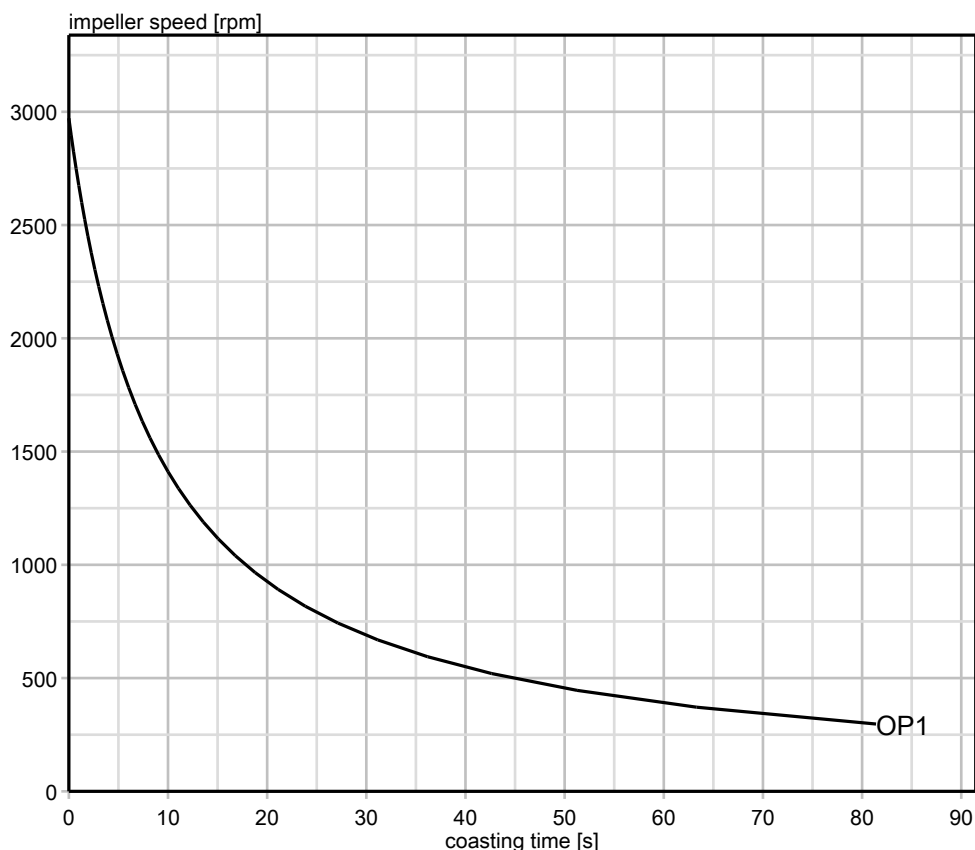
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The coasting time depends on the mass moment of inertia and on the present ventilation load moment on disconnecting the motor
The coasting time refers to coasting of the fan that is disconnect from the electric supply.

shaft power	PW	OP1	
impeller speed	nl	5,8	kW
fan torque	fan torque	2972	RPM
massmoment of inertia	J (imp.)	18,556	Nm
massmoment of inertia		0,539	kgm ²
referred to motor shaft	J fan mot	0,539	kgm ²

speed	OP1
100%	2972 RPM after 0,0 s
75%	2229 RPM after 3,0 s
50%	1486 RPM after 9,0 s
25%	743 RPM after 27,1 s
10%	297 RPM after 81,4 s

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

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



MOTOR DATA / START-UP

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The following data apply to the fan design point.

Start-up data

Rated output torque of motor	24,0	Nm
torque Y	14,3	Nm
torque Δ	52,8	Nm
Load torque in NP	20,5	Nm
Load torque is based on closed gv	10,3	Nm
moment of inertia relative to nM	0,6	kgm ²
Start-up time in NP Y	28,2	s
Start-up time based on closed gv Y	16,8	s
Start-up time in NP Δ	3,8	s
Start-up time based on closed gv Δ	3,5	s
theoretical starting time	4,2	s
mass inertia ratio Iv/Im	41,2	-

Δ-start-up possible

YΔ-start-up possible

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