

# VENTILATION SYSTEMS PRODUCT CATALOGUE

FOR COAL ,POTASH AND  
ORE MINING,

FOR RAILWAY TUNNELS,  
METRO AND ROAD TUNNELS

FOR HYDROPOWER PLANTS,  
SPECIAL BUILDINGS, CAVERN SYSTEMS



*Körfmann*

WHERE QUALITY  
MEETS TRADITION

# INTRODUCTION ABOUT US

## KORFMANN LUFTECHNIK GmbH

Engineering firm, producer and supplier of leading technology for economical use in mining and tunnelling.

Korfmann Maschinenfabrik was established in 1880 in Witten – the birthplace of Ruhr mining. Besides ventilation, the company was initially also involved in dismantling, loading and salvage. In 2001, the company began operating under the name Korfmann Lufttechnik GmbH and has since specialised in the design, construction, manufacture and installation of fans and ventilation systems for use above and below ground.

But that's not all: Korfmann Lufttechnik GmbH develops individual, special ventilation systems, for example for fire brigades, wind tunnels or numerous tunnelling machines. The company also offers outstanding solutions for the increasingly important topics of energy and sound insulation, which are available on request.

The company's many years of experience and high level of expertise are sought after and put to the test in a wide variety of applications: Whether mechanical jacking in tunnelling, drilling

and blasting in mining or renovating tunnel systems by means of push ventilation – the services and solutions from Korfmann Lufttechnik GmbH offer a breeze of fresh air and guarantee that the project goes off without a hitch.

Our engineering services can assist you with the planning and conceptualisation of ventilation for your project, with the complete construction of ventilation systems including peripheral systems and, of course, with on-site commissioning.

But plant engineering and construction is not all: Maintenance and servicing by specially trained technicians is just as much a part of our range of services as training and education on numerous topics, through which we are happy to pass on our knowledge to your employees.



# ABOUT THE CATALOGUE

## How to use the catalogue/info about content

What is included in the catalogue?

Standard versions of the axial series. Many other fan variants and services are available on request.

What families of characteristics are used in the catalogue?

We use 50 Hz networks for a better overview. Other network types change the type designation and characteristic curves (not included in catalogue — on request only).

What families of characteristics are listed?

Only individual representations are provided in the catalogue. Please enquire about parallel or series connections.

What are the possible drive types?

Electric, hydraulic and pneumatic drive types are possible.

Are low pressure fans available?

Available for every type of fan. Significantly reduces motor power.

What about reversible fans?

Full reversibility of the air flow possible, but not included in the catalogue.

To what extent can the fan types be modified?

Each fan type can be individually adapted to customer requirements (terminal box position, mounting arrangement, etc.).

Can the fans and accessories be freely combined?

The systems are modular in design and can be flexibly combined. Advantages: interchangeable, easier transport, re-usability, simple assembly, good parts overview.

## Technical note

- Each fan is subjected to a final test run according to DIN EN ISO 5801/2017, which is documented in test reports as per ISO 9001/2015
- The exact useful efficiency can be provided in the individual datasheet on request. The specified efficiency is explained here.
- The motor energy efficiency class is at least IE2. A different class can be offered on request.
- Our fans are energy efficient according to directive 2009/125/EC

Further product offerings by Korfmann and our direct partners in technical coordination:

- Dedusting
- Cooling
- Heating
- Controlling
- Radial fans
- Jet fans
- Air jets



Explosion protection according to: 2014/34/ (ATEX), TRZU 012/2011, NEC 500/505 and others on request





## APPLICATIONS



Mining



Tunnelling



Push ventilation



Drilling/blast



TBM/Roadheader



Main fans



Duct fans/special ventilation fans



Deduster/filter



Heating/cooling units



Special machinery

Full usability



Limited usability



Explosion protection

## TYPES AND PRODUCT SERIES



AL / dAL



ES / ESN / dESN



GAL / dGAL



KORAX / AGE / DV  
SL













Accessories

# CONTENTS

Page		Diameter [mm]	Power (kw)	max. power (kw)	$\dot{V}$ min. (m <sup>3</sup> /s)	$\dot{V}$ max. (m <sup>3</sup> /s)	P max. (Pa)	Drive type
10	AL7/dAL7	700	3	3	4.2	6	370	E
10	AL8/dAL8	800	5.5	15	6	15.8	1140	E
10	AL10/dAL10	1000	30	30	15	26	1300	E
12	AL12/dAL12	1200	45	75	20	43.5	1800	E
12	AL14/dAL14	1400	90	110	30	53	2400	E
12	AL16/dAL16	1600	90	160	35	74	2750	E
12	AL17/dAL17	1700	160	250	40	106	3250	E
12	AL18/dAL18	1800	250	630	50	150	5200	E
14	AL20/dAL20 to AL42/dAL42	2000 - 4200	110	4000	80	700	~6000	E
22 - 25	ES3/ESN3/dESN3	300	0.8	0.8	0.5	0.8	400	E, Hy
22 - 25	ES4/ESN4/dESN4	400	1.5	3	1.2	3.1	730	E, Hy
22 - 25	ES5/ESN5/dESN5	500	4	7.5	2.3	4.0	1210	E, Hy
22 - 25	ES6/ESN6/dESN6	600	7.5	15	3.8	7.6	2340	E, Hy
22 - 25	ES7/ESN7/dESN7	700	22	30	5.9	11.3	2780	E
22 - 25	ES8/ESN8/dESN8	800	30	45	9	16.7	3050	E
22 - 25	ES9/ESN9/dESN9	900	30	75	6	22.2	3700	E
26	EST4	400	1.5	1.5	1.2	2.2	700	E & P
26	EST5	500	4.5	4.5	2.3	4.2	1250	E & P
26	EST6	600	15	15	4.2	7.6	2340	E & P
26	EST7	700	35	35	6.7	11.3	2780	E & P
26	EST9	900	50	50	10	18.8	3050	E & P
32	GAL3/dGAL3	300	2 x 1.5	2 x 1.5	1.0	1.4	1200	E, Hy
32	GAL4/dGAL4	400	2 x 3.0	2 x 3.0	1.5	2.7	2250	E, Hy
32	GAL5/dGAL5	500	2 x 5.5	2 x 7.5	2.0	4.5	4200	E, Hy
32	GAL6/dGAL6	600	2 x 11	2 x 15	3.3	6.8	5500	E, Hy
32	GAL7/dGAL7	700	2 x 22	2 x 30	5.5	11	5800	E
32	GAL9/dGAL9	900	2 x 55	2x 55	11	21	6600	E
34	GAL12/dGAL12	1200	2 x 45	2 x 55	18	37.5	4200	E
34	GAL14/dGAL14	1400	2 x 90	2 x 110	27	50	5500	E
40	Korax7	700	11	11	0.4	4.1	2600	E
40	Korax8	800	18.5	18.5	0.6	5.8	3050	E
40	Korax9	900	18.5	30	0.85	7.0	4550	E
42	AGE4	400	1	1	0.5	1.6	540	E
42	AGE5	500	2.2	4.5	0.6	4.8	780	E
42	AGE6	600	4.5	6	2.7	6.7	910	E
42	AGE7	700	3	3	4.5	6.8	450	E
42	AGE8	800	5.5	5.5	6.7	10.8	620	E
44	DV3	300	-	-	0.75	1.6	1250	P
44	DV4	400	-	-	1.05	2.8	1270	P
44	DV5	500	-	-	1.92	4.73	970	P
44	DV6	600	-	-	2.4	6.0	1060	P
44	DV9	900	-	-	6.9	13.3	1670	P
46	SL3	300	-	-	0.17	1.0	400	P
46	SL4	400	-	-	0.42	1.7	340	P
50-51	Fan options							
52	Accessories from page							

E = electrical  
Hy = hydraulic  
P = pneumatic



	 Mining	 Tunnelling	 Jet-ventilation	 Drill/Blast	 TBM/Roadheal	 Main fans	 Duct fans/special ventilation fans	 Deduster/filter	 Heating/cooling units	 Special machinery	
X	X	X	X	X	X		(X)		X	X	AL7/dAL7
X	X	X	X	X	X		(X)		X	X	AL8/dAL8
X	X	X	X	X	X		(X)		X	X	AL10/dAL10
X	X	X	X	X	X		X	(X)	X	X	AL12/dAL12
X	X	X	X	X	(X)	X	X	(X)	X	X	AL14/dAL14
X	X	X	X	X	X	X	X	(X)	X	X	AL16/dAL16
X	X	X	X	X	X	X	X	(X)	X	X	AL17/dAL17
X	X	X	X	X	X	X	X	(X)	X	X	AL18/dAL18
X	X	(X)	(X)		X	(X)		X		(X)	AL20/dAL20 to AL42/dAL42
X	X		X	X		(X)	X	X	X	X	ES3/ESN3/dESN3
X	X		X	X		(X)	X	X	X	X	ES4/ESN4/dESN4
X	X		X	X		X	X	X	X	X	ES5/ESN5/dESN5
X	X		X	X		X	X	X	X	X	ES6/ESN6/dESN6
X	X	X	X	X		X	X	X	X	X	ES7/ESN7/dESN7
X	X	X	X	X		X	X	X	X	X	ES8/ESN8/dESN8
X	X	X	X	X		X	X	X	X	X	ES9/ESN9/dESN9
X			X	X		X	X	X	X	X	EST4
X			X	X		X	X	X	X	X	EST5
X			X	X		X	X	X	X	X	EST6
X			X	X		X	X	X	X	X	EST7
X			X	X		X	X	X	X	X	EST9
X	X		X	X		X	X	X	X	X	GAL3/dGAL3
X	X		X	X		X	X	X	X	X	GAL4/dGAL4
X	X		X	X		X	X	X	X	X	GAL5/dGAL5
X	X		X	X		X	X	X	X	X	GAL6/dGAL6
X	X		X	X		X	X	X	X	X	GAL7/dGAL7
X	X		X	X		X	X	X	X	X	GAL9/dGAL9
X	X		X	X		X	X	X	X	X	GAL12/dGAL12
X	X		X	X		X	X	X	X	X	GAL14/dGAL14
X	X		(X)	X		X	X	X	X	X	Korax7
X	X		(X)	X		X	X	X	X	X	Korax8
X	X		(X)	X		X	X	X	X	X	Korax9
		X				(X)			X		AGE4
		X				(X)			X		AGE5
		X				(X)			X		AGE6
		X				(X)			X		AGE7
		X				(X)			X		AGE8
X	(X)		(X)	X		(X)		X	X		DV3
X	(X)		(X)	X		(X)		X	X		DV4
X	(X)		(X)	X		(X)		X	X		DV5
X	(X)		(X)	X		(X)		X	X		DV6
											DV9
X				X					X		SL3
X				X					X		SL4

X = unlimited  
(x) = limited



*Körfmann*

FRESH AIR  
FOR YOU





PRODUCT LINE  
AL/dAL

# AXIAL FANS OVERVIEW AL/dAL

Type: Standard designation/explosion protection

			Diameter	Power	$\dot{V}$ min.	$P$ max. @ $\dot{V}$ min.	$\dot{V}$ max.	$P$ min. @ $\dot{V}$ max.
			[mm]	(kw)	(m <sup>3</sup> /s)	(Pa)	(m <sup>3</sup> /s)	(Pa)
STANDARD	AL7-30	dAL7-30	700	3	4.2	370	6	150
	AL8-55	dAL8-55	800	5.5	6	620	10.8	300
	AL8-75	dAL8-75		7.5	7.2	780	12	350
	AL8-110	dAL8-110		11	8.5	940	13.4	450
	AL8-150	dAL8-150		15	10	1140	15.8	600
	AL10-300	dAL10-300	1000	30	15	1300	26	660
	AL12-450	dAL12-450	1200	45	20	1540	33	520
	AL12-550	dAL12-550		55	25	1700	38	700
	AL12-750	dAL12-750		75	30	1800	43.5	900
	AL14-900	dAL14-900	1400	90	30	2200	50	600
	AL14-1100	dAL14-1100		110	32	2400	53	700
	AL16-900	dAL16-900	1600	90	35	2150	59	550
	AL16-1100	dAL16-1100		110	39	2350	63	600
	AL16-1320	dAL16-1320		132	41	2450	67	650
	AL16-1600	dAL16-1600		160	46	2750	74	820
	AL17-1600	dAL17-1600	1700	160	40	2500	77	700
	AL17-2000	dAL17-2000		200	55	2750	88	900
	AL17-2500	dAL17-2500		250	64	3000	97	1100
	AL17-3150	dAL17-3150		315	72	3250	106	1300
	AL18-3150	dAL18-3150	1800	315	50	4200	100	600
AL18-4500	dAL18-4500	450		62	4500	116	800	
AL18-5000	dAL18-5000	500		73	4750	133	1100	
AL18-6300	dAL18-6300	630		90	5200	150	1350	
AL20 - AL42 / large fan	dAL20-dAL42							

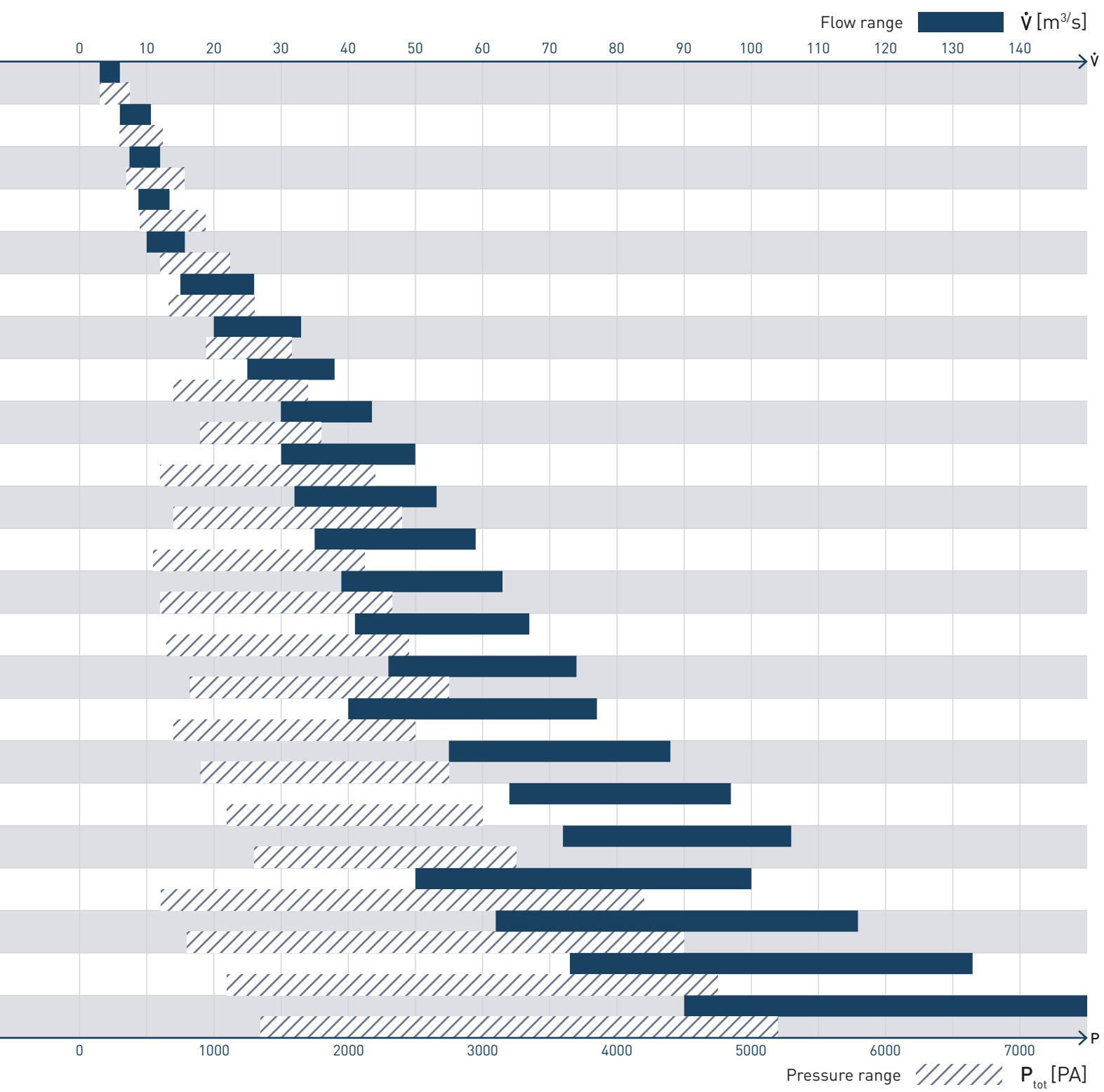
Overview page 16 up to approx. 700 m<sup>3</sup>/s to 6000 PA



FIRE DAMP PROTECTION



EXPLOSION PROTECTION



# AXIAL FANS

## AL/dAL

### AL7-30 to AL10-300

#### TYPE

AL7-30 to AL10-300  
Diameter: 700 to 1000 mm

#### PERFORMANCE RANGE

Volumetric flow up to 26 m<sup>3</sup>/s (1560 m<sup>3</sup>/min)  
Total pressure increase up to 1300 Pascal  
Motor shaft output from 3.0 to 30.0 kW

#### DESIGN

Axial-flow impeller as cast part from EN AB 43000, with guide device, profiled impeller blades with no edges in the flow surface, sturdy steel housing, foot mounting.

#### CONTROL

Direct or star-delta starting  
Optional: pole-changeable, speed-regulated (FU)

#### DRIVE

- Voltage ranges 230 - 1000 Volt  
Three-phase AC squirrel-cage motors S1  
in special design
- Protection class  $\geq$  IP 55; insulation class F, tropicalised,  
permanently lubricated
- Energy efficiency class  $\geq$  IE2
- Terminal box position: top
- PTC thermistor



#### COATING

Primer with top coat, alkyd resin Silac,  
total layer thickness min. 180  $\mu$ m  
Standard colour: Pure white (RAL9010)

#### OPTIONS

Sealed motor, dust disks, hard coated impeller, special coating, vibration dampers, stall point monitoring, impact protection, VFD compatibility, cold environment, motor monitoring, incr. efficiency class, vibration sensors, volume flow, pressure difference, adjustable blades

#### TECHNICAL EXECUTION ACCORDING TO

Machinery Directive: EU Directive 2006/42/EC  
ErP ecodesign: Directive 2009/125/EC  
Test bench run according to DIN EN ISO 5801/2017

#### VERSION WITH EXPLOSION PROTECTION



Protection class: Fire-damp proof\*, explosion-proof\*

TYPE: dAL7-30 to dAL10-300

Optional: Bifurcated axial fans

Spark protection

ACCORDING TO: Directive 2014/34/EU

\*also available according to international explosion protection regulations





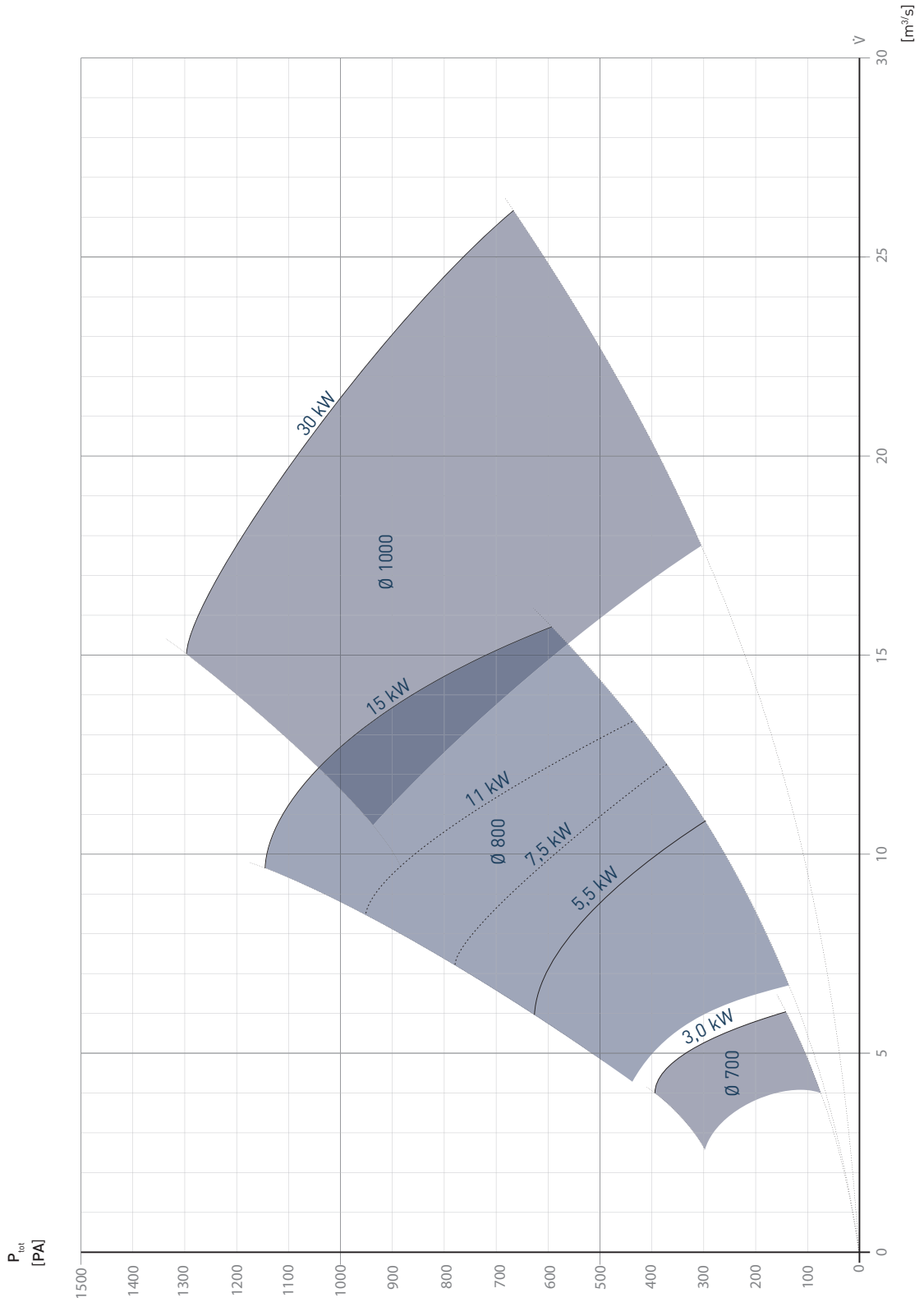
## AL7-30 to AL10-300

Rotational speed: 1500 upm

Shaded area represents dia. performance range

Characteristics valid for air density 1.2 kg/m<sup>3</sup>

AL7-30	Ø 700	3.0 kW
AL8-55	Ø 800	5.5 kW
AL8-75	Ø 800	7.5 kW
AL8-110	Ø 800	11 kW
AL8-150	Ø 800	15 kW
AL10-300	Ø 1000	30 kW



# AXIAL FANS

## AL/dAL

### AL12-450 to AL18-6300

#### TYPE

AL12-450 to AL18-6300  
Diameter: 1200 to 1800 mm

#### PERFORMANCE RANGE

Volumetric flow up to 150 m<sup>3</sup>/s [9000 m<sup>3</sup>/min]  
Total pressure increase up to 5200 Pascal  
Motor shaft output from 45 to 630 kW

#### DESIGN

Axial-flow impeller as cast part from EN AB 43000, with guide vanes, profiled impeller blades with edges in the flow surface, sturdy steel housing, foot mounting.

#### CONTROL

Direct or star-delta starting  
Optional: pole-changeable, variable speed (FU), soft start

#### DRIVE

- Voltage ranges 400 - 6600 Volt  
Three-phase AC squirrel-cage motors S1  
in special design
- Protection class  $\geq$  IP 55; insulation class F, tropicalised
- Energy efficiency class  $\geq$  IE2
- Terminal box position: lateral 45° or on top
- PTC thermistor



#### COATING

Primer with top coat, alkyd resin Silac,  
total layer thickness min. 180  $\mu$ m  
Standard colour: Pure white (RAL9010)

#### OPTIONS

Sealed motor, dust disks, hard coated impeller, special coating, vibration dampers, stall-point monitoring, impact protection, VFD compatibility, cold environment, motor monitoring, incr. efficiency class, vibration sensors, volume flow, pressure difference, adjustable blades

#### TECHNICAL EXECUTION ACCORDING TO

Machinery Directive: EU Directive 2006/42/EC  
ErP ecodesign: Directive 2009/125/EC  
Test bench run according to DIN EN ISO 5801/2017

#### VERSION WITH EXPLOSION PROTECTION



Protection class: Fire-damp proof\*, explosion-proof\*

TYPE: dAL12-450 to dAL18-6300  
Optional: Bifurcated axial fan  
Spark protection

ACCORDING TO: Directive 2014/34/EU

\*also available according to international explosion protection regulations





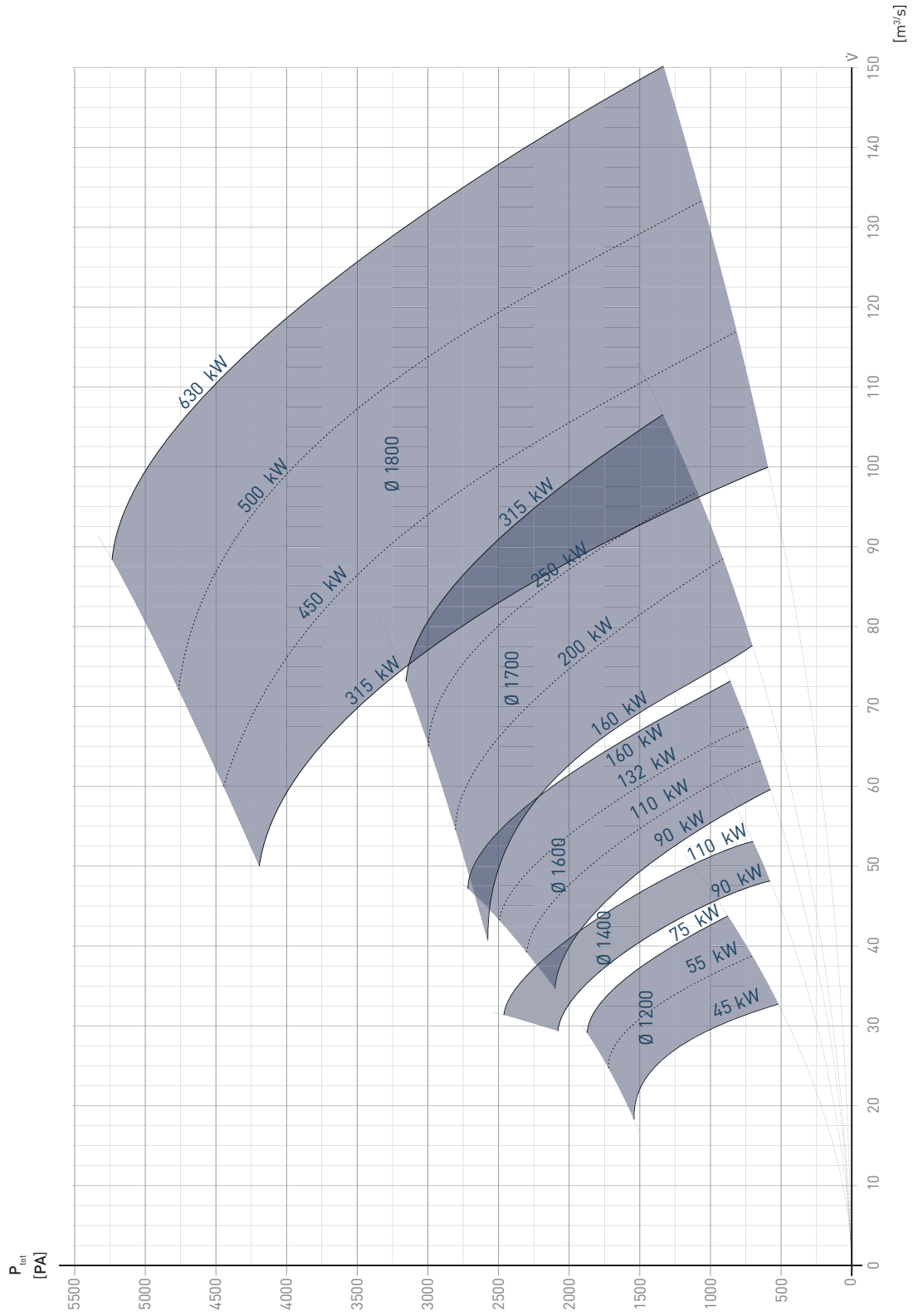
## AL12-450 to AL18-6300

Rotational speed: 1500 upm

Shaded area represents dia. performance range

Characteristics valid for air density 1.2 kg/m<sup>3</sup>

AL12-450	Ø 1200	45 kW	AL16-900	Ø 1600	90 kW	AL17-1600	Ø 1700	160 kW	AL18-3150	Ø 1800	315 kW
AL12-500	Ø 1200	55 kW	AL16-1100	Ø 1600	110 kW	AL17-2000	Ø 1700	200 kW	AL18-4500	Ø 1800	450 kW
AL12-750	Ø 1200	75 kW	AL16-1320	Ø 1600	132 kW	AL17-2500	Ø 1700	250 kW	AL18-5000	Ø 1800	500 kW
AL14-900	Ø 1400	90 kW	AL16-1600	Ø 1600	160 kW	AL17-3150	Ø 1700	315 kW	AL18-6300	Ø 1800	630 kW
AL14-1110	Ø 1400	110 kW									



# AXIAL FANS

## AL/dAL



### LARGE FAN – AL20 to AL42

#### TYPE

AL20 to AL42; axial fan  
Diameter: 2000 to 4200 mm

#### PERFORMANCE RANGE

Volumetric flow up to approx. 700 m<sup>3</sup>/s [42,000 m<sup>3</sup>/min]  
Total pressure increase up to approx. 8000 Pascal (multi-stage)  
Motor shaft output up to approx. 4000 kW

#### DESIGN

Axial-flow impeller as cast part from EN AB 43000, with individually adjustable profiled impeller blades with no edges in the flow surface, with guide vanes, sturdy steel housing, foot mounting

#### CONTROL

Direct start, variable speed (FU) with softstarter or frequency converter

#### DRIVE

Voltage ranges 400-10,000 Volt

#### COATING

Primer with top coat, alkyd resin Silac,  
total layer thickness min. 180 µm  
Standard colour: Pure white (RAL9010)



#### OPTIONS

Sealed motor, dust disks, hard coated impeller, special coating, vibration dampers, stall-point monitoring, VFD compatibility, cold environment, motor monitoring, incr. efficiency class, vibration sensors, volume flow, pressure difference and gas monitoring, adjustable blades

#### TECHNICAL EXECUTION ACCORDING TO

Machinery Directive: EU Directive 2006/42/EC  
ErP ecodesign: Directive 2009/125/EC  
Test bench run according to DIN EN ISO 5801/2017

#### VERSION WITH EXPLOSION PROTECTION



Protection class: Fire-damp proof\*, explosion-proof\*

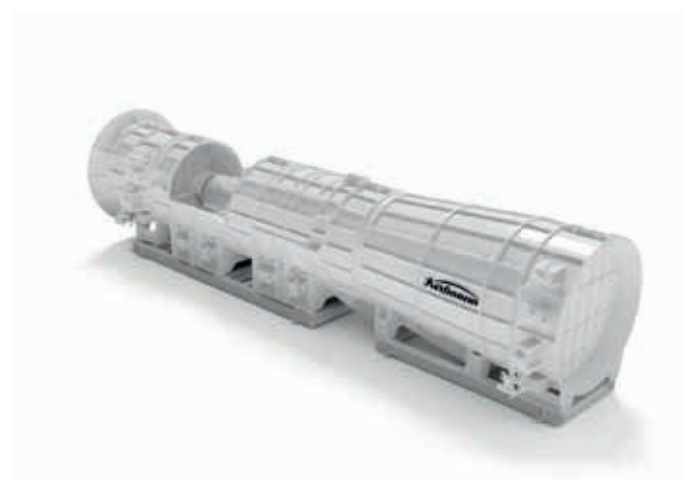
TYPE: dAL20 to dAL42

Optional: Motor outside the airflow

Spark-protection, thrust collar made of silumin or brass

ACCORDING TO: Directive 2014/34/EU

\*also available according to international explosion protection regulations





## MAIN MINE FAN SYSTEMS



Our customised engineering services cover a wide range of services:

- Establishing the specifications
- Design of the systems
- Overall project planning
- Commissioning
- Aerodynamic performance test
- Vibration analysis
- Noise testing
- Fine balancing on site
- Maintenance/maintenance support

We offer turnkey services for all devices.

We plan according to your specifications and requirements:

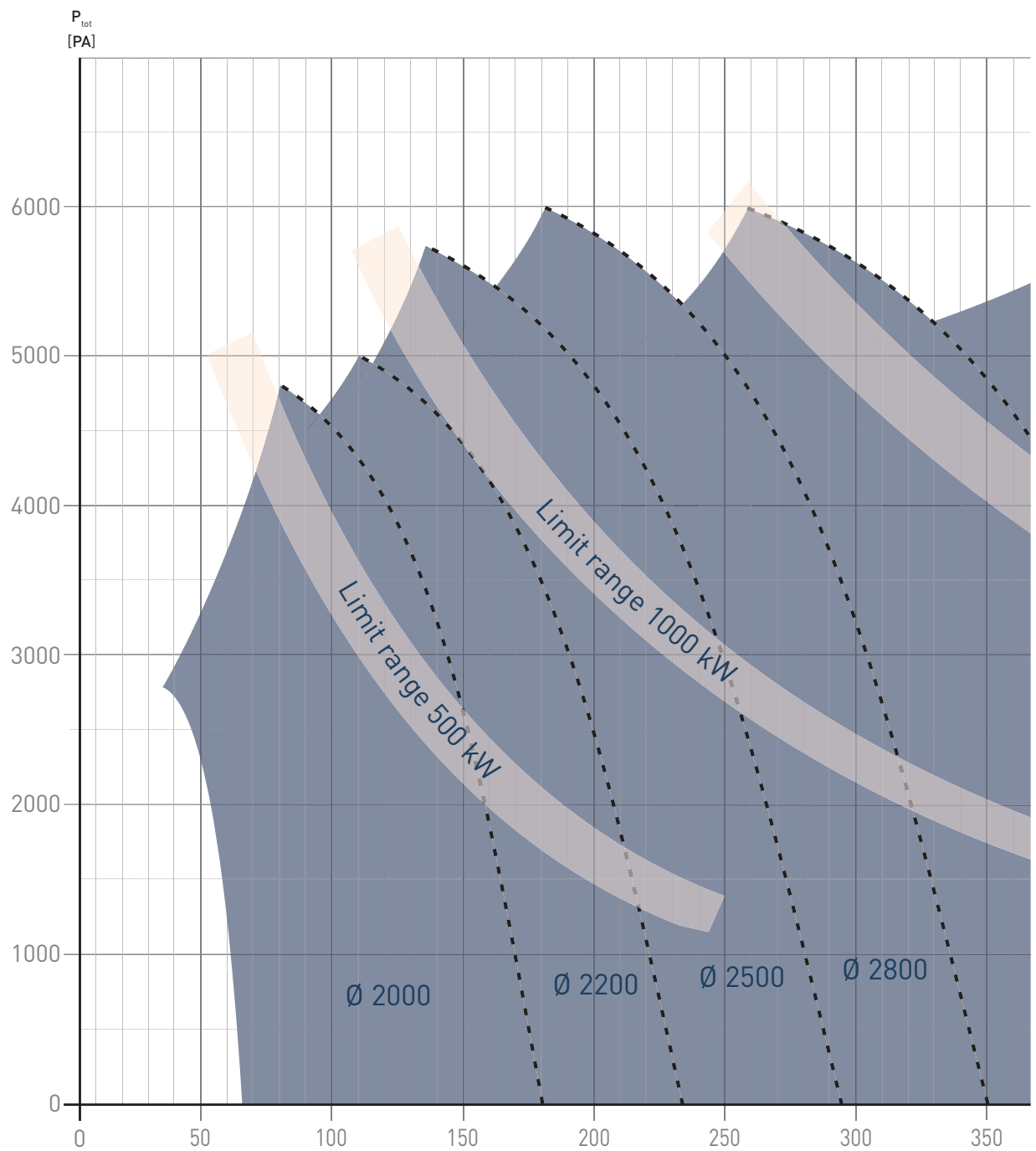
- Production
- System design
- Drives and power supply
- Trace heating and cooling
- Control and visualisation
- Comprehensive instrumentation and monitoring



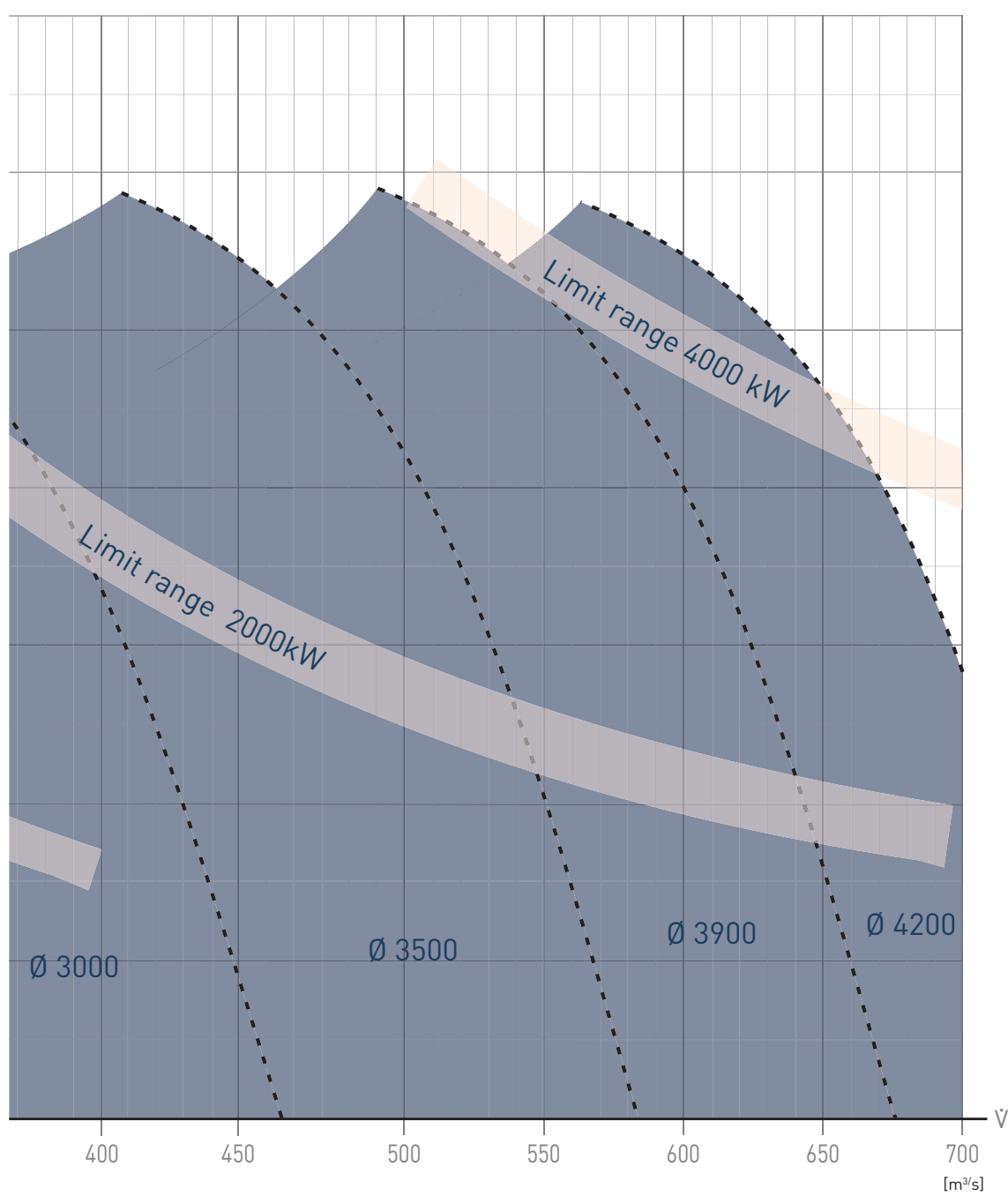
# AXIAL FANS AL/dAL

AL20-AL42 LARGE FANS

## OVERVIEW OF EFFICIENCY RATIOS – DIAMETER VS PERFORMANCE



Characteristics valid for air density 1.2 kg/m<sup>3</sup>



ESN/dESN/ES/EST

*Köfmann*

A BREEZE OF FRESH AIR  
FOR YOUR PROJECT

*Köfmann*



PRODUCT LINE  
ESN/dESN/ES/EST


*Wolfmann*

ESN/dESN/ES/EST

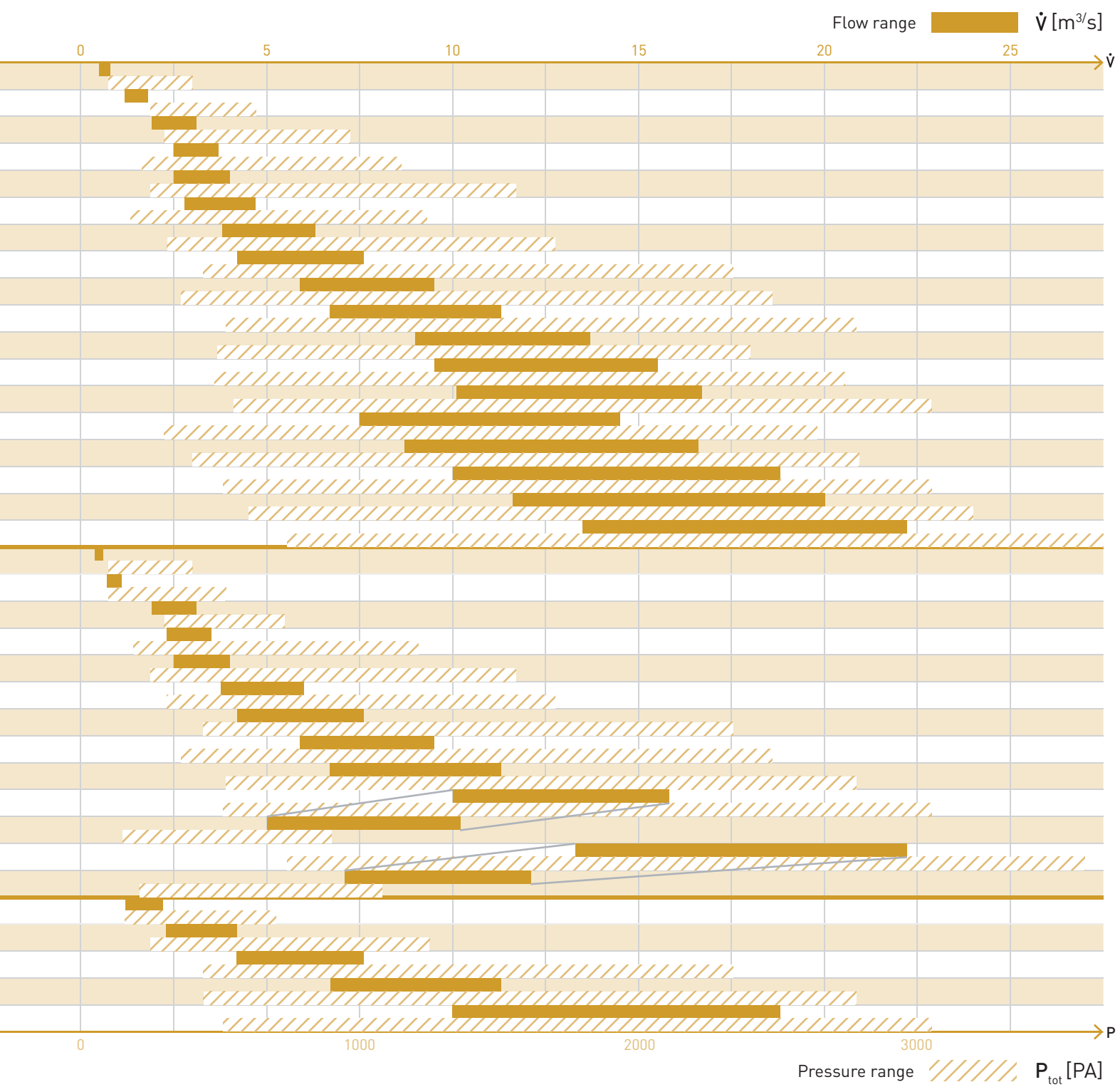
# AXIAL FANS OVERVIEW ESN/dESN/ES/EST

ESN/dESN/ES/EST

Type: Standard designation/explosion protection

			Diameter	Power	$\dot{V}$ min.	$P$ max. @ $\dot{V}$ min.	$\dot{V}$ max.	$P$ min. @ $\dot{V}$ max.
			[mm]	(kw)	(m <sup>3</sup> /s)	(Pa)	(m <sup>3</sup> /s)	(Pa)
STANDARD	ESN3-8	dESN3-8	300	0.75	0.5	400	0.8	100
	ESN4-15	dESN4-15	400	1.5	1.2	630	1.8	250
	ESN4-30	dESN4-30		3.0	1.9	750	3.1	300
	ESN5-55	dESN5-55	500	5.5	2.5	1150	3.7	220
	ESN5-75	dESN5-75		7.5	2.5	1560	4	250
	ESN6-75	dESN6-75	600	7.5	2.8	1240	4.7	180
	ESN6-110	dESN6-110		11	3.8	1700	6.3	310
	ESN6-150	dESN6-150		15	4.2	2340	7.6	440
	ESN7-220	dESN7-220	700	22	5.9	2480	9.5	360
	ESN7-300	dESN7-300		30	6.7	2780	11.3	520
	ESN8-300	dESN8-300	800	30	9	2400	13.7	490
	ESN8-370	dESN8-370		37	9.5	2740	15.5	480
	ESN8-450	dESN8-450		45	10.1	3050	16.7	550
	ESN9-300	dESN9-300	900	30	7.5	2640	14.5	300
	ESN9-370	dESN9-370		37	8.7	2790	16.6	400
	ESN9-450	dESN9-450		45	10	3050	18.8	510
	ESN9-550	dESN9-550		55	11.6	3200	20	600
ESN9-750	dESN9-750	75		13.5	3700	22.2	740	
FIREDAMP PROTECTION 	ES3-8		300	0.8	0.5	400	0.8	100
	ES3,5-11		350	1.1	0.7	520	1.1	100
	ES4-30		400	3	1.9	730	3.1	300
	ES5-40		500	4	2.3	1210	3.5	190
	ES5-75			7.5	2.5	1560	4	250
	ES6-110		600	11	3.8	1700	6.3	310
	ES6-150			15	4.2	2340	7.6	440
	ES7-220		700	22	5.9	2480	9.5	360
	ES7-300			30	6.7	2780	11.3	520
	ES9-500		900	50	10	3050	16.8	510
	ES9-500/80 PU STAGE			8	5	900	10.2	150
	ES9-700			70	13.3	3600	22.2	740
	ES9-700/110 PU STAGE			11	7.1	1080	12.1	210
	EST4-15		400	1.5	1.2	700	2.2	160
	EST5-45		500	4.5	2.3	1250	4.2	250
	EST6-150		600	15	4.2	2340	7.6	440
	EST7-350		700	35	6.7	2780	11.3	520
EST9-500		900	50	10	3050	18.8	510	





# AXIAL FANS ESN/dESN/ES/EST

Körfm

ESN/dESN/ES/EST



## ESN3-8 to ESN9-750

### TYPE

ESN3-8 to ESN9-750; axial fan  
Diameter: 300 to 900 mm

### PERFORMANCE RANGE

Volumetric flow up to 22 m<sup>3</sup>/s [1320/min]  
Total pressure increase up to 3700 Pascal  
Motor shaft output from 0.8 to 75.0 kW

### DESIGN

Axial-flow impeller as cast part from EN AB 43000 with guide vanes, profiled impeller blades with no edges in the flow surface, sturdy steel housing, foot mounting

### CONTROL

Direct or star-delta starting  
Optional: pole-changeable, speed-regulated (FU)

### DRIVE

- Voltage ranges 400 - 1000 Volt  
Three-phase AC -squirrel-cage motors S1  
in special design
- Protection class  $\geq$  IP 55; insulation class F, tropicalised
- Energy efficiency class  $\geq$  IE2
- Terminal box position: top
- PTC thermistor
- Optional: Hydraulic drive sizes from  
 $\varnothing$  300 mm to  $\varnothing$  600 mm

### COATING

Primer with top coat, alkyd resin Silac,  
total layer thickness min. 180  $\mu$ m  
Standard colour: Pure white (RAL9010)

### OPTIONS

Sealed motor, dust disks, hard coated impeller, special coating, vibration dampers, stall-point monitoring, impact protection, VFD compatibility, cold environment, motor monitoring, incr. efficiency class, vibration sensors, volume flow, pressure difference, adjustable blades

### TECHNICAL EXECUTION ACCORDING TO

Machinery Directive: EU Directive 2006/42/EC  
ErP ecodesign: Directive 2009/125/EC  
Test bench run according to DIN EN ISO 5801/2017

### VERSION WITH EXPLOSION PROTECTION

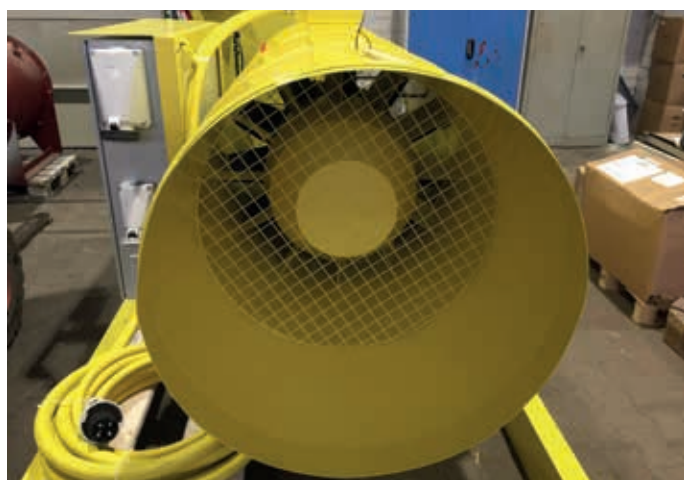


Protection class: explosion-proof\*

TYPE: dESN3-8 to dESN9-750  
Optional: Design as pocket fan  
Spark-protected design

ACCORDING TO: Directive 2014/34/EU

\*also available according to international explosion protection regulations







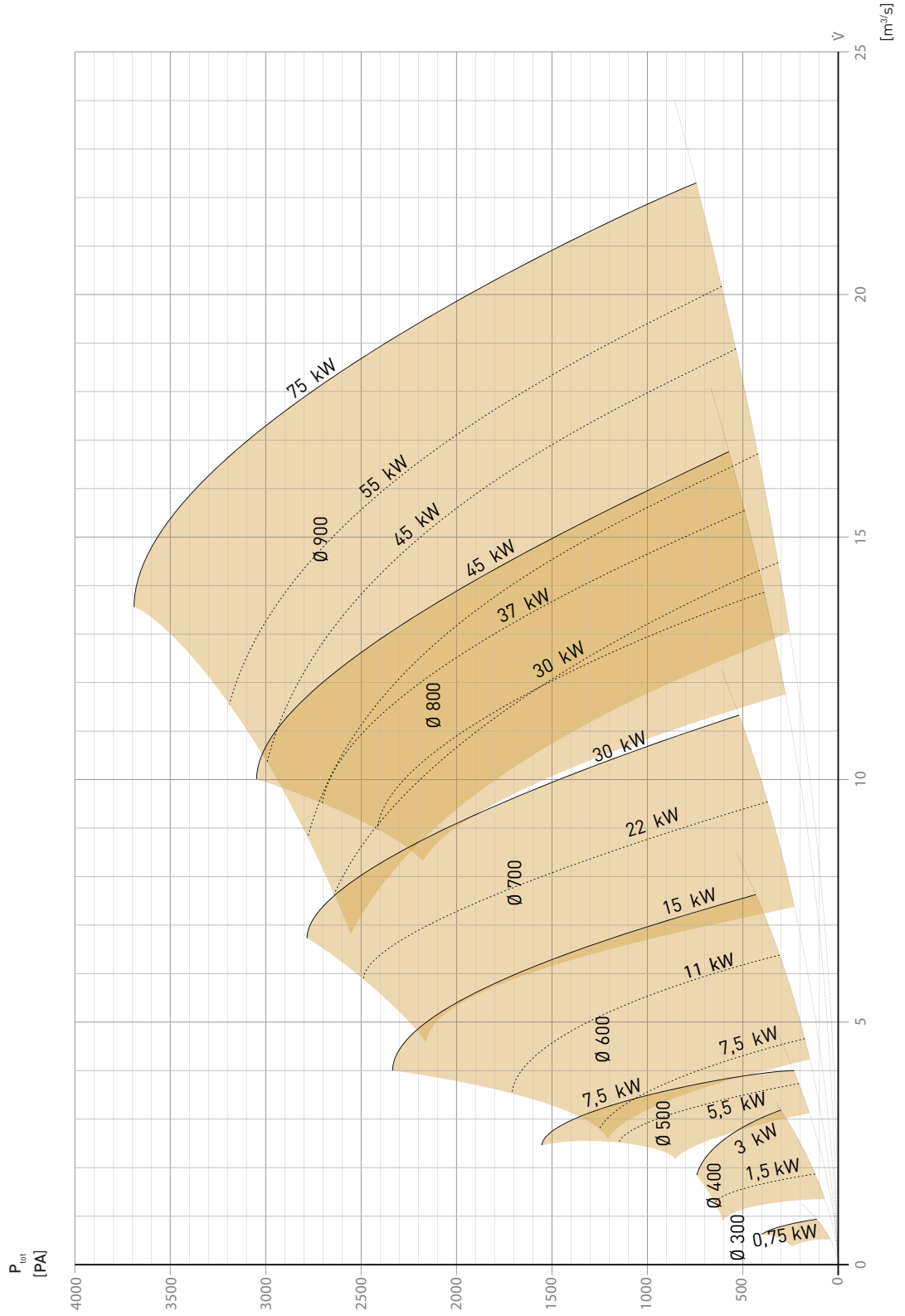
## ESN3-8 to ESN9-750

Rotational speed: 3000 RPM

Shaded area represents dia. performance range

Characteristics valid for air density 1.2 kg/m<sup>3</sup>

ESN3-8	Ø 300	0.75 kW	ESN6-75	Ø 600	7.5 kW	ESN8-300	Ø 800	30 kW	ESN9-370	Ø 900	37 kW
ESN4-15	Ø 400	1.50 kW	ESN6-110	Ø 600	11 kW	ESN8-370	Ø 800	37 kW	ESN9-450	Ø 900	45 kW
ESN4-30	Ø 400	3.00 kW	ESN6-150	Ø 600	15 kW	ESN8-450	Ø 800	45 kW	ESN9-550	Ø 900	55 kW
ESN5-55	Ø 500	5.50 kW	ESN7-220	Ø 700	22 kW	ESN9-300	Ø 900	30 kW	ESN9-750	Ø 900	75 kW
ESN5-75	Ø 500	7.50 kW	ESN7-300	Ø 700	30 kW						



# AXIAL FANS ESN/dESN/ES/EST

**Koifma**

ESN/dESN/ES/EST



ES3-8 to ES9-700



## TYPE

ES3-8 to ES9-700  
Flame-proof axial fan  
Diameter: 300 to 900 mm

## PERFORMANCE RANGE

Volumetric flow up to 22 m<sup>3</sup>/s (1320 m<sup>3</sup>/min)  
Total pressure increase up to 3700 Pascal  
Motor shaft output from 0.8 to 70.0 kW

## DESIGN

Axial-flow impeller as cast part from EN AB 43000, spark protected. Thrust collar made of EN AB 43000 or brass, with guide vanes, profiled blades with no edges in the flow surface, sturdy steel housing, foot mounting.  
Including: Sealed motor

## CONTROL

Direct starting  
Optional: star-delta, pole-changeable, variable speed

## DRIVE

- Voltage ranges 400 - 1140 Volt  
Three-phase AC - squirrel-cage motors S1 in special design
- Flame-proof enclosure protection  
"d" or "de" according to DIN EN 60079-1
- Protection class  $\geq$  IP 55; insulation class F, tropicalised
- Energy efficiency class  $\geq$  IE2
- Terminal box position: top
- PTC thermistor
- Optional: Hydraulic drive sizes from  $\varnothing$  300 mm to  $\varnothing$  600 mm

## COATING

Primer with top coat, alkyd resin Silac, total layer thickness min. 180  $\mu$ m  
Standard colour: Pure white (RAL9010)

## OPTIONS

Sealed motor, dust disks, hard coated wheel, special coating, vibration dampers, stall-point monitoring, impact protection, VFD compatibility compatible, cold environment, motor monitoring, incr. efficiency class, vibrations sensors, volume flow, pressure difference and gas monitoring, adjustable blades, bifurcated fan, voltage switchable or solderable  
Variant as bifurcated fan  
Hint: PU version with two motor power stages.  
Example: ES9-700/110 means first stage 11 kW, main stage 70 kW (characteristic curves for both stages included in scope of delivery)

## TECHNICAL EXECUTION ACCORDING TO

Machinery Directive: Directive 2006/42/EC  
ErP ecodesign Directive 2009/125/EC  
Explosion protection according to guideline 2014/34/EU  
Test bench run according to DIN EN ISO 5801/2017



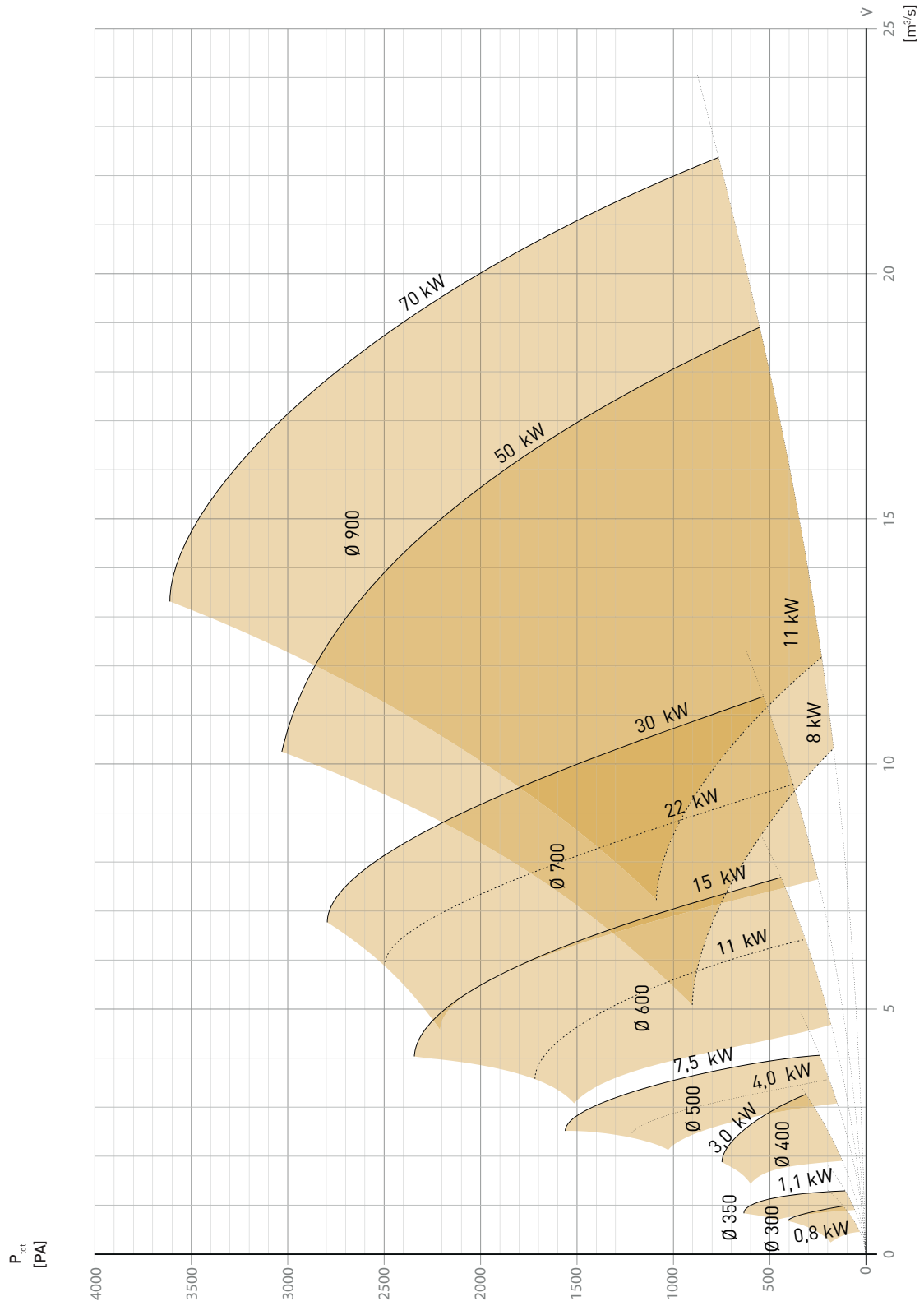


## TYPE SERIES ES

Rotational speed: 3000 rpm

Shaded area represents dia. performance range  
Characteristics valid for air density 1.2 kg/m<sup>3</sup>

ES3-8	Ø 300	0.75 kW	ES6-110	Ø 600	11 kW	ES9-500	Ø 900	50 kW
ES3.5-11	Ø 350	1.1 kW	ES6-150	Ø 600	15 kW	ES9-500/80	Ø 900	50/8 kW
ES4-30	Ø 400	3.0 kW	ES7-220	Ø 700	22 kW	ES9-700	Ø 900	70 kW
ES5-40	Ø 500	4.0 kW	ES7-300	Ø 700	30 kW	ES9-700/110	Ø 900	70/11 kW
ES5-75	Ø 500	7.5 kW						



# AXIAL FANS ESN/dESN/ES/EST

Köfma

ESN/dESN/ES/EST



EST 4-15 to EST 9-500



## TYPE

EST4-15 to EST9-500  
Axial fan flame-proof, with turbine  
Drive switchable between electric and compressed air  
(combination fan).  
Diameter: 400 to 900 mm

## PERFORMANCE RANGE

Volumetric flow up to 19 m<sup>3</sup>/s (1140 m<sup>3</sup>/min)  
Total pressure increase up to 3000 Pascal  
Motor shaft output from 1.5 to 50.0 kW

## DESIGN

Axial-flow impeller as cast part made of EN AB 43000  
with smallest blades on the outer ring, turbine nozzle for  
compressed air drive. Thrust collar made of EN AB 43000 spark  
protected. With guide vanes, profiled rotor blades with no edges  
in the flow surface, sturdy steel housing, foot mounting.  
Including: Sealed motor, impact protection

## CONTROL

Direct, star-delta or stepless via compressed air

## DRIVE

- Voltage ranges 400 - 1140 Volt  
Three-phase AC - squirrel-cage motors S1  
in special design
- Flame-proof enclosure protection  
"d" or "de" according to DIN EN 60079-1
- Protection class  $\geq$  IP 55; insulation class F, tropicalised,  
permanently lubricated
- Energy efficiency class  $\geq$  IE2  
Terminal box position: top  
- Operating pressure with compressed air drive: 4 – 6 bar

## COATING

Primer with top coat, alkyd resin Silac,  
total layer thickness min. 180  $\mu$ m  
Standard colour: Pure white (RAL9010)

## OPTIONS

Dust disks, hard-coated impeller, special coating, vibration  
dampers, VFD compatibility, cold environment, motor  
monitoring, vibration sensors, volume flow, pressure difference,  
adjustable blades, bifurcated fan

## TECHNICAL EXECUTION ACCORDING TO

Machinery Directive: Directive 2006/42/EC  
ErP codesign Directive 2009/125/EC  
Explosion protection according to guideline 2014/34/EU  
Test bench run according to DIN EN ISO 5801/2017





### TYPE SERIES EST 4-15 to EST 9-500

EST4-15  
EST5-45  
EST6-150

Ø 400  
Ø 500  
Ø 600

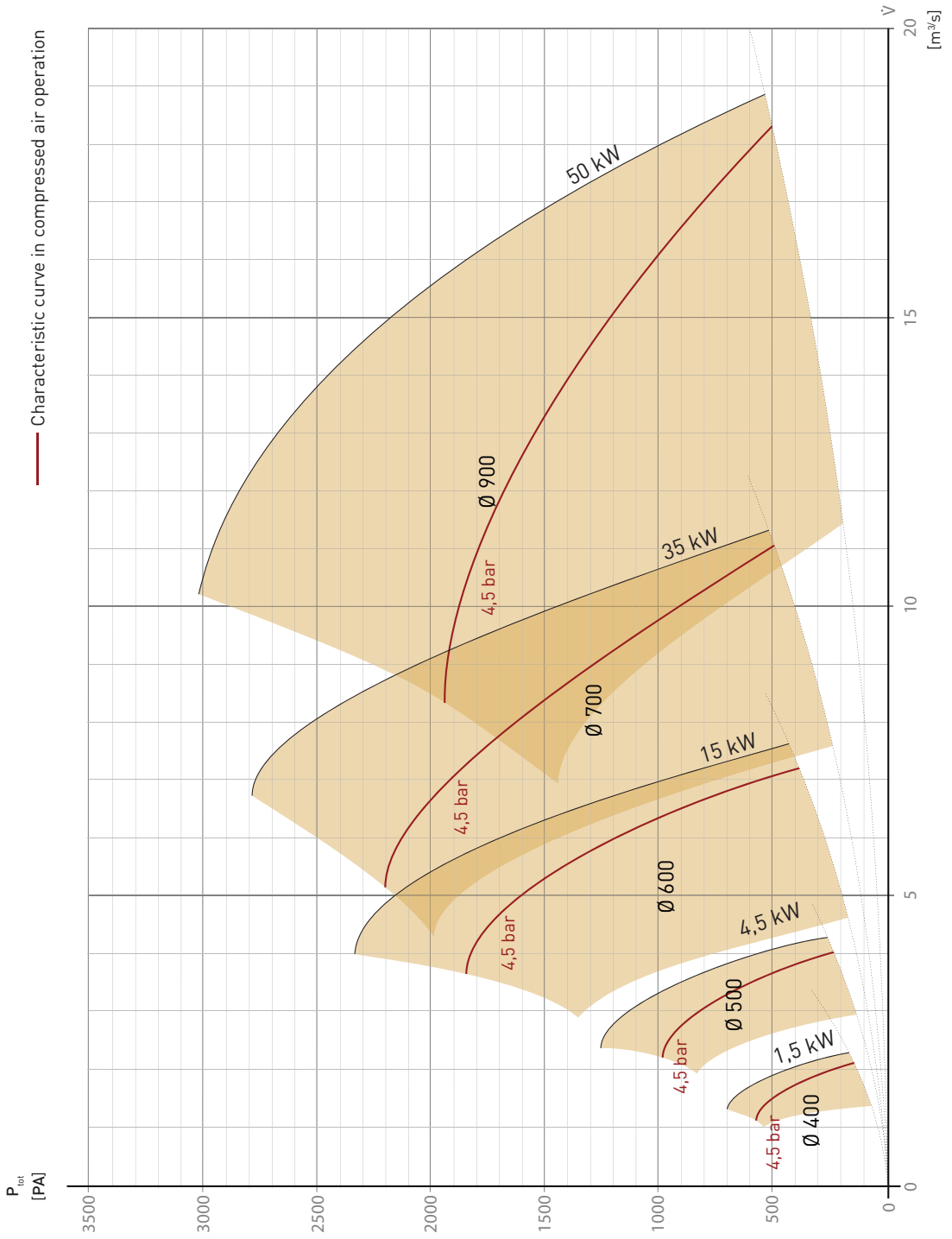
EST7-350  
EST9-500

Ø 700  
Ø 900

35.0 kW  
50.0 kW

Rotational speed: 3000 rpm  
incl. additional pneumatic drive  
Output curve for 4,5 bar

Shaded area represents dia. performance range  
Characteristics valid for air density 1.2 kg/m<sup>3</sup>



GAL/dGAL

*Körfermann*

WORK HARD  
BREATHE EASY





PRODUCT LINE  
GAL/dGAL

GAL/dGAL

# AXIAL FANS OVERVIEW GAL/dGAL

Type: Standard designation/explosion protection

			Diameter	Power	$\dot{V}$ min.	$P$ max. @ $\dot{V}$ min.	$\dot{V}$ max.	$P$ min. @ $\dot{V}$ max.
			[mm]	(kw)	(m <sup>3</sup> /s)	(Pa)	(m <sup>3</sup> /s)	(Pa)
STANDARD	GAL3-15/15		300	2 x 1.5	1.0	1200	1.4	250
	GAL4-30/30		400	2 x 3.0	1.5	2250	2.7	300
	GAL5-55/55		500	2 x 5.5	2.0	3200	3.1	150
	GAL5-75/75			2 x 7.5	2.7	4200	4.5	350
	GAL6-110/110		600	2 x 11	3.3	4400	5.5	200
	GAL6-150/150			2 x 15	3.8	5500	6.8	400
	GAL7-220/220		700	2 x 22	5.5	5600	9.0	350
	GAL7-300/300			2 x 30	6.4	5800	11	500
	GAL9-550/550		900	2 x 55	11	6600	21	700
	GAL12-450/450		1200	2 x 45	18	3900	31.5	450
	GAL12-550/500			2 x 55	21	4200	37.5	700
	GAL14-900/900		1400	2 x 90	27	5100	46	550
	GAL14-1100/1100			2 x 110	30	5500	50	700



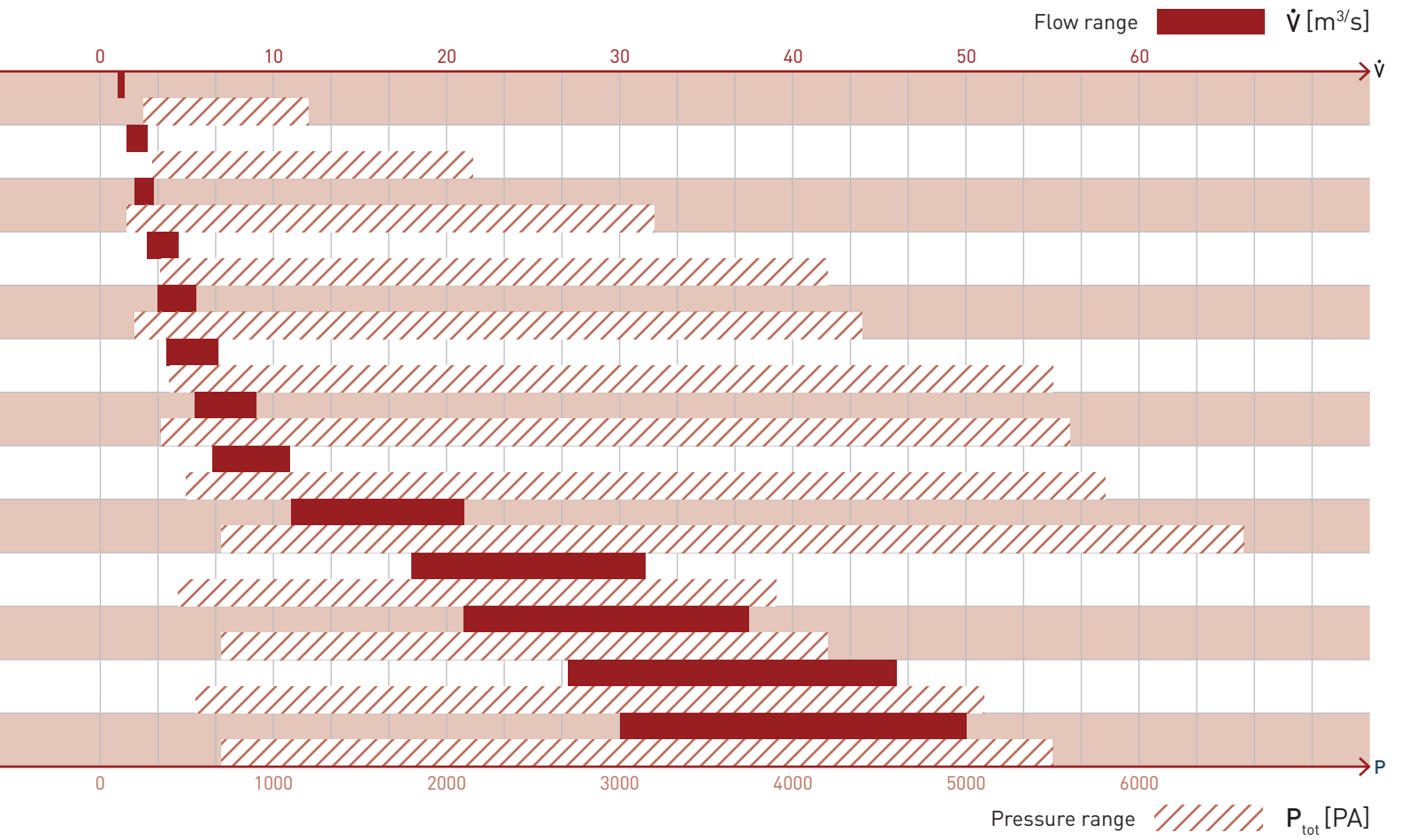
FIREDAMP PROTECTION

EXPLOSION PROTECTION

GAL/dGAL







GAL/dGAL



# AXIAL FANS GAL/dGAL



## GAL3-15/15 to GAL14-1100/1100

### TYPE

GAL3-15/15 to GAL14-1100/1100  
Two-stage counter-rotating axial fan  
Diameter: 300 to 1400 mm

### PERFORMANCE RANGE

Volumetric flow up to 50 m<sup>3</sup>/s (3000 m<sup>3</sup>/min)  
Total pressure increase up to 6500 Pascal  
Motor shaft output from 2 x 1.5 to 2 x 110 kW

### DESIGN

Double-stage axial fan in counter-rotating design, axial impellers cast from EN AB 43000, profiled blades with no edges in the flow surface, sturdy steel housing, foot mounting

### CONTROL

Direct or star-delta starting  
Optional: speed-regulated, soft start, pole-changeable

### DRIVE

- Voltage ranges 400 - 1000 Volt  
Three-phase AC - squirrel-cage motors S1 in special design
- Protection class  $\geq$  IP 55; insulation class F, tropicalised
- Energy efficiency class  $\geq$  IE2
- Terminal box position: top, side 45° or inside
- PTC thermistor
- Optional: Hydraulic drive sizes from  $\varnothing$  300 mm to  $\varnothing$  600 mm

### COATING

Priming with top coat, alkyd resin Silac, total layer thickness min. 180  $\mu$ m  
Standard colour: Pure white (RAL9010)

### OPTIONS

Sealed motor, dust disks, hard coated impeller, special coating, vibration dampers, impact protection, VFD compatibility, cold environment, motor monitoring, incr. efficiency class, vibration sensors, volume flow, pressure difference, adjustable blades, bifurcated

### TECHNICAL EXECUTION ACCORDING TO

Machinery Directive: EU Directive 2006/42/EC  
ErP ecodesign: Directive 2009/125/EC  
Test bench run according to DIN EN ISO 5801/2017

### VERSION WITH EXPLOSION PROTECTION



Protection class: Fire-damp proof\*, explosion-proof\*

TYPE: dGAL3-15/150 to dGAL14-1100/1100

Spark-protected design

ACCORDING TO: Directive 2014/34/EU

\*also available according to international explosion protection regulations





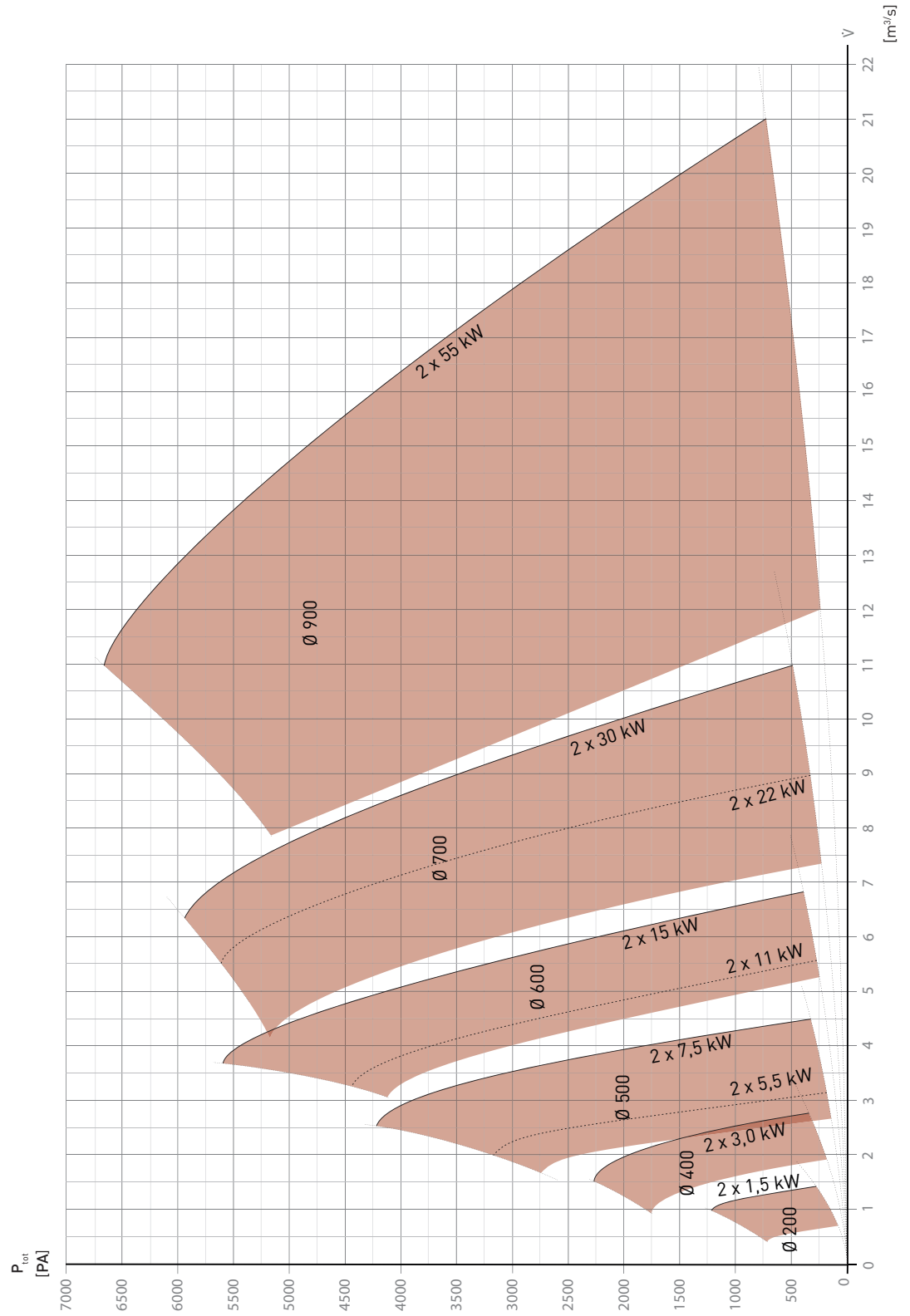
**GAL3-15/15 to GAL7-300/300**

Rotational speed: 3000 rpm

Shaded area represents dia. performance range

Characteristics valid for air density 1.2 kg/m<sup>3</sup>

GAL3-15/15	300 mm	2 x 1.5 kW	GAL6-110/110	600 mm	2 x 11 kW	GAL9-550/550	900 mm	2 x 55 kW
GAL4-30/30	400 mm	2 x 3.0 kW	GAL6-150/150	600 mm	2 x 15 kW			
GAL5-55/55	500 mm	2 x 5.5 kW	GAL7-220/220	700 mm	2 x 22 kW			
GAL5-75/75	500 mm	2 x 7.5 kW	GAL7-300/300	700 mm	2 x 30 kW			

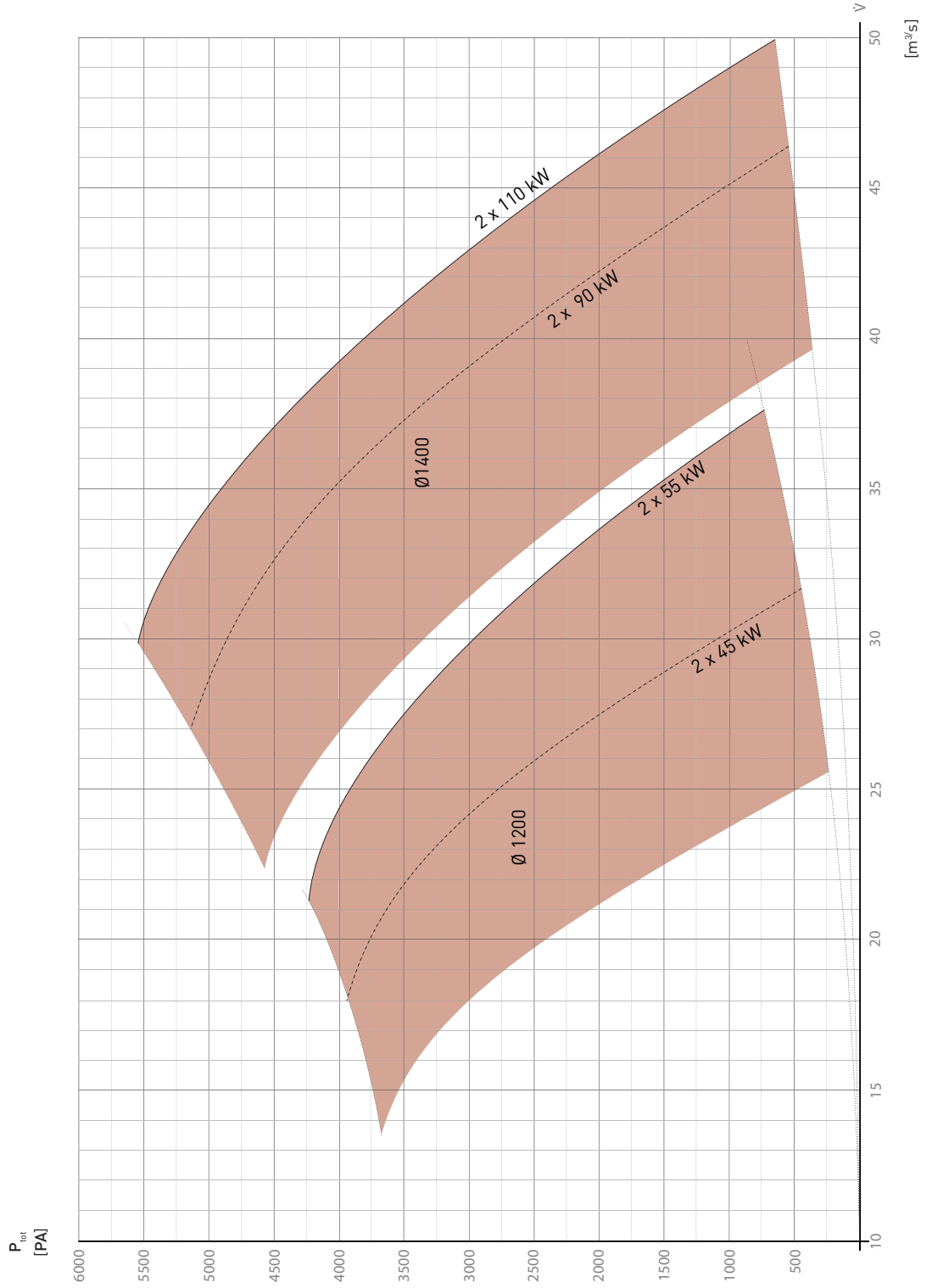


# AXIAL FANS GAL/dGAL

## GAL/dGAL

**GAL12-450/450 to GAL14-1100/1100** — Rotational speed: 1500 upm  
 Colour gamut corresponds to Ø energy spectrum  
 Characteristics valid for air density 1.2 kg/m³

GAL12-450/450	Ø 1200	2 x 45 kW	GAL14-900/900	Ø 1400	2 x 90 kW
GAL12-550/550	Ø 1200	2 x 55 kW	GAL14-1100/1100	Ø 1400	2 x 110 kW





GAL/dGAL



*Korfmann*

WE ARE BRINGING WIND  
TO YOUR SAILS

SL/DV/AGE/KORAX






PRODUCT LINE  
SL  
DV  
AGE  
KORAX

SL/DV/AGE/KORAX

# AXIAL FANS OVERVIEW KORAX AGE DV SL

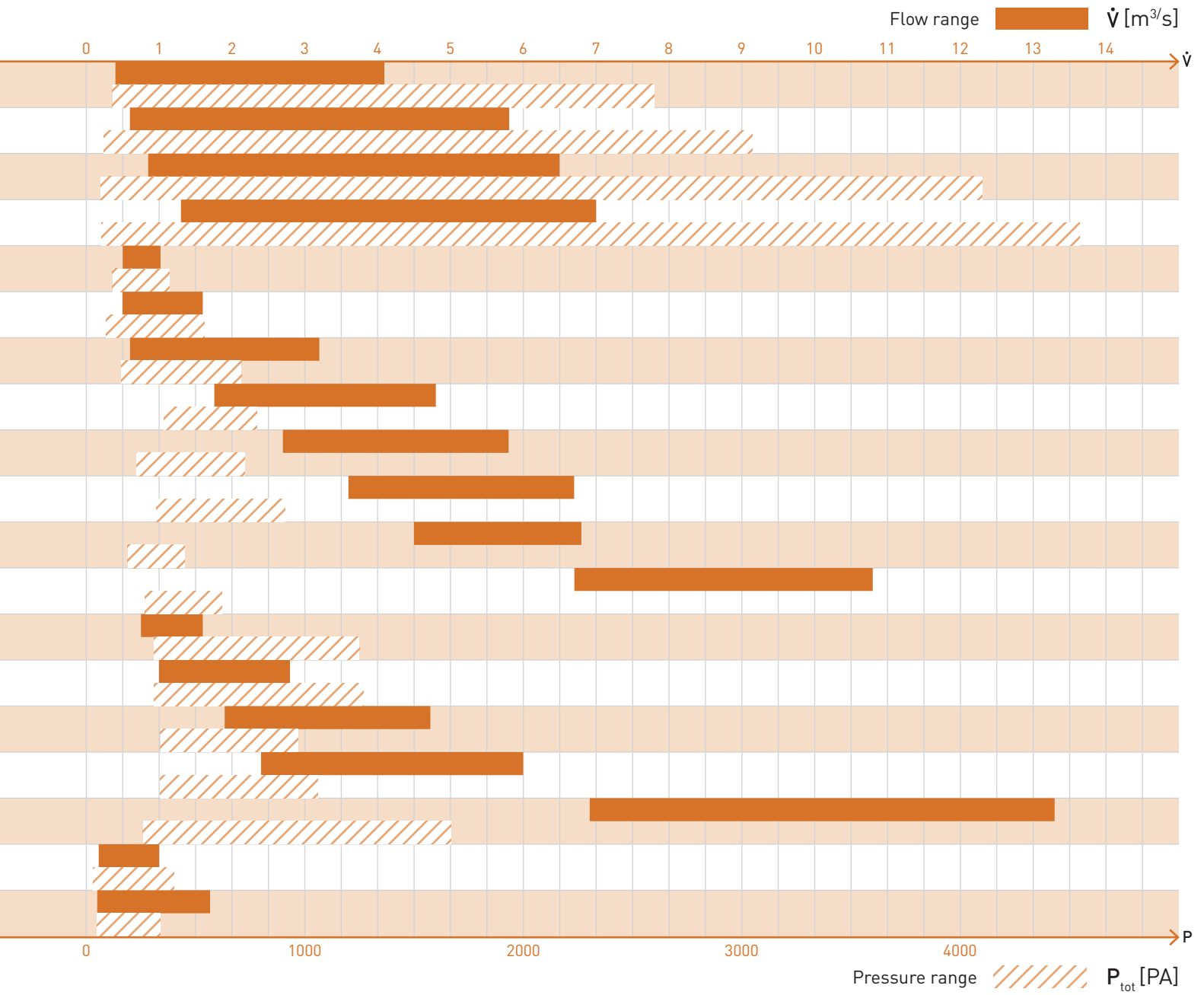
KORAX and AGE with electric drive  
SL and DV with compressed air drive

		Diameter	Power	$\dot{V}$ min.	$P$ max. @ $\dot{V}$ min.	$\dot{V}$ max.	$P$ min. @ $\dot{V}$ max.		
		[mm]	(kw)	(m <sup>3</sup> /s)	(Pa)	(m <sup>3</sup> /s)	(Pa)		
STANDARD	Korax 7-110	700	11.0	0.4	2600	4.1	70		
	Korax 8-185	800	18.5	0.6	3050	5.8	80		
	Korax 9-185	900	18.5	0.85	4100	6.5	65		
	Korax 9-300		30.0	1.3	4550	7.0	70		
	AGE3-8	EXPLOSION PROTECTION 	dAGE3-8	300	0.8	0.5	380	1.05	120
	AGE4-10		dAGE4-10	400	1.0	0.5	540	1.6	90
	AGE5-22		dAGE5-22	500	2.2	0.6	710	3.2	160
	AGE5-45		dAGE5-45		4.5	1.75	780	4.8	350
	AGE6-45		dAGE6-45	600	4.5	2.7	725	5.8	230
	AGE6-60		dAGE6-60		6.0	3.6	910	6.7	320
AGE7-30	dAGE7-30		700		3.0	4.5	450	6.8	190
AGE8-55	dAGE8-55		800	5.5	6.7	620	10.8	270	
FIRE DAMP PROTECTION 	EXPLOSION PROTECTION 		DV3	300	-	0.75	1250	1.6	310
			DV4	400	-	1.05	1270	2.8	310
		DV5	500	-	1.92	970	4.73	340	
		DV6	600	-	2.4	1060	6.0	340	
		DV9	900	-	6.9	1670	13.3	260	
		SL3	300	-	0.17	400	1.0	30	
SL4	400	-	0.42	340	1.7	50			

KORAX/AGE/DV/SL







KORAX/AGE/DV/SL



# KORAX



## KORAX7-110 to KORAX9-300

### TYPE

KORAX7-110 to KORAX9-300  
Radial axial fan  
Diameter: 700 to 900 mm

### PERFORMANCE RANGE

Volumetric flow up to 7 m<sup>3</sup>/s (420 m<sup>3</sup>/min)  
Total pressure increase up to 4550 Pascal  
Motor shaft output from 11.0 to 30.0 kW

### DESIGN

Radial impeller made of steel with axial outlet through guide vanes, sturdy steel housing, foot mounting

### CONTROL

Direct or star-delta starting  
Optional: variable speed (FU)

### DRIVE

- Voltage ranges 230-1000 Volt
- Three-phase AC – squirrel-cage motors S1 in special design
- Protection class  $\geq$  IP 55; insulation class F, tropicalised, permanently lubricated
- Energy efficiency class  $\geq$  IE2  
Terminal box position: top  
PTC thermistor

### COATING

Primer with top coat, alkyd resin Silac, total layer thickness min. 180  $\mu$ m  
Standard colour: Pure white (RAL9010)

### OPTIONS

Sealed motor, special coating, vibration dampers, VFD compatibility, cold environment, motor monitoring, incr. efficiency class, vibration sensors, volume flow, pressure difference

### TECHNICAL EXECUTION ACCORDING TO

Machinery Directive: EU Directive 2006/42/EC  
ErP ecodesign: Directive 2009/125/EG  
Test bench run based on DIN EN ISO 5801/2017

### VARIANTE IN ESPLOSIONSSCHUTZ



Protection class: Fire-damp proof\*, explosion-proof\*

TYPE: KORAX7-110 to KORAX9-300

ACCORDING TO: Directive 2014/34/EU

\*also available according to international explosion protection regulations





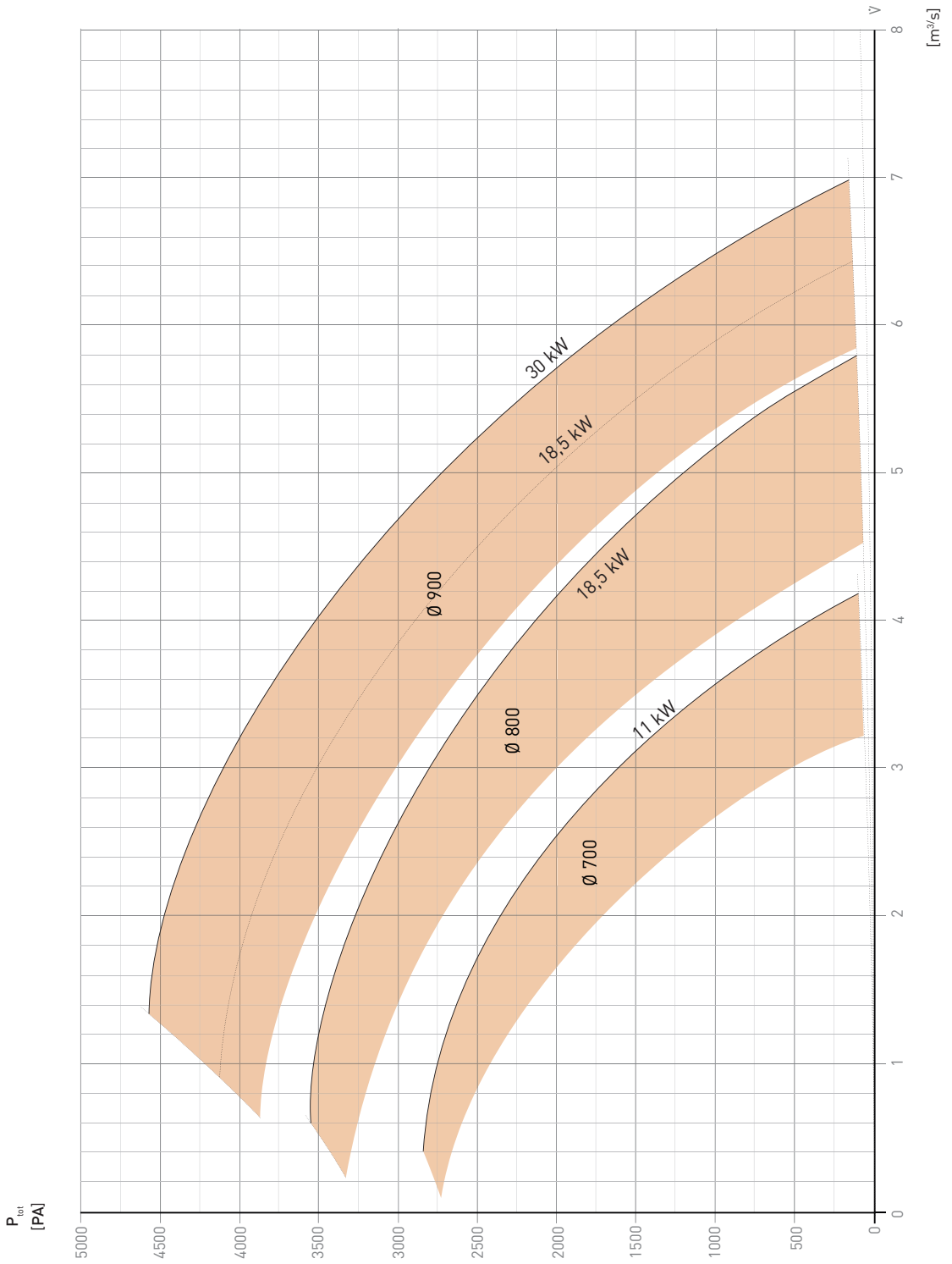
### KORAX7-110 to KORAX9-300

Rotational speed: 3000 rpm

Shaded area represents dia. performance range

Characteristics valid for air density 1.2 kg/m<sup>3</sup>

KORAX7-100	Ø 700	11 kW
KORAX8-185	Ø 800	18,5 kW
KORAX9-185	Ø 900	18,5 kW
KORAX9-300	Ø 900	30 kW



# AGE



## AGE3-8 to AGE8-55

### TYPE

AGE3-8 to AGE8-55; axial fan  
Diameter: 300 to 800 mm

### PERFORMANCE RANGE

Volumetric flow up to 10 m<sup>3</sup>/s (600 m<sup>3</sup>/min)  
Total pressure increase up to 910 Pascal  
Motor shaft output from 0.8 to 5.5 kW

### DESIGN

Axial-flow impeller as cast part from EN AB 43000, with guide vanes, profiled impeller blades with no edges in the flow surface, sturdy steel housing, foot mounting, optionally with rollers and/or folding handles for easy transport.

### CONTROL

Direct or star-delta starting  
Optional: variable speed (FU)

### DRIVE

- Voltage ranges 230-1000 Volt
- Three-phase AC – squirrel-cage motors S1 in special design
- Protection class  $\geq$  IP 55; insulation class F, tropicalised, permanently lubricated
- Energy efficiency class  $\geq$  IE2
- Terminal box position: top
- PTC thermistor

### COATING

Primer with top coat, alkyd resin Silac, total layer thickness min. 180  $\mu$ m  
Standard colour: Pure white (RAL9010)

### OPTIONS

Sealed motor, dust disks, hard coated impeller, special coating, vibration dampers, VFD compatibility, cold environment, motor monitoring, incr. efficiency class, vibrations sensors, adjustable blades

### TECHNICAL EXECUTION ACCORDING TO

Machinery Directive: EU Directive 2006/42/EC  
ErP ecodesign: Directive 2009/125/EC  
Test bench run according to DIN EN ISO 5801/2017

### VERSION WITH EXPLOSION PROTECTION



Protection class: explosion-proof

TYPE: dAGE 3-8 to dAGE8-55

Spark-protected design

ACCORDING TO: Directive 2014/34/EU



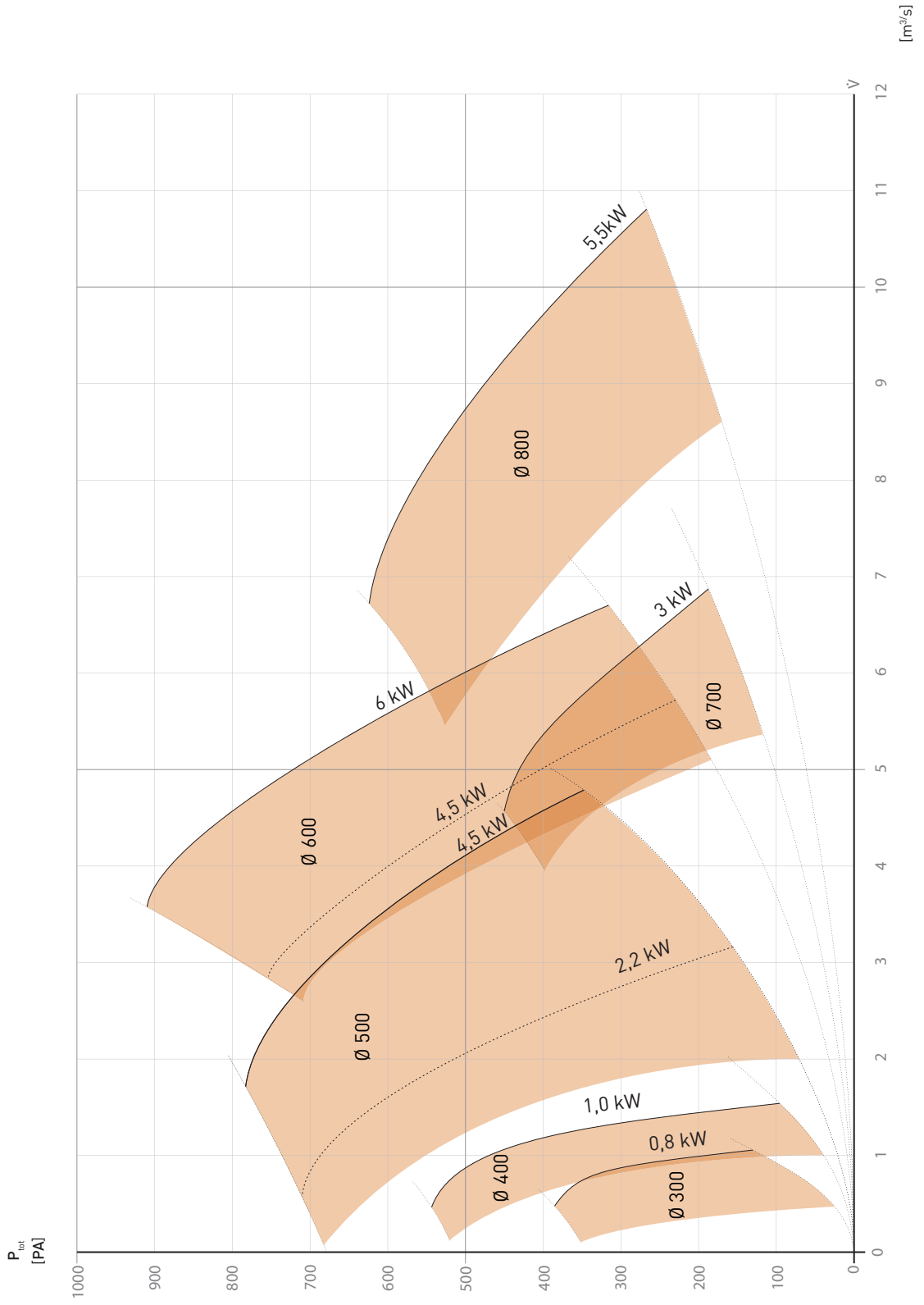


### AGE3-8 to AGE8-55

Rotational speed: 3000 rpm / 300-600 mm Ø  
1500 rpm / 700-800 mm Ø

Shaded area represents dia. performance range  
Characteristics valid for air density 1.2 kg/m³

AGE3-8	Ø 300	0.8 kW	AGE6-45	Ø 600	4.5 kW
AGE4-10	Ø 400	1 kW	AGE6-60	Ø 600	6 kW
AGE5-22	Ø 500	2.2 kW	AGE7-30	Ø 700	3 kW
AGE5-45	Ø 500	4.5 kW	AGE8-55	Ø 800	5.5 kW





DV3 to DV9



## TYPE

DV3 to DV9  
Compressed air - axial ventilator explosion- and firedamp-proof  
Compressed air drive  
Diameter: 300 to 600 mm

## PERFORMANCE RANGE

Volumetric flow up to 800 m<sup>3</sup>/min  
Total pressure increase up to 1670 Pascal  
Nominal drive pressure 4 bar

## DESIGN

Axial-flow impeller as cast part from EN AB 43000, with miniature blading on the outer ring. Turbine nozzle for compressed air drive. Thrust collar made of EN AB 43000, spark protected. With guide vanes, profiled rotor blades with no edges in the flow surface, sturdy steel housing, foot mounting.

## CONTROL

Infinitely variable by regulation of the compressed air

## DRIVE

- Compressed air driven balanced pressure turbine at the impeller circumference
- Operating pressure 4-6 bar

## COATING

Primer with top coat, alkyd resin Silac,  
total layer thickness min. 180 µm  
Standard colour: Pure white (RAL9010)

## OPTIONS

Dust disks, special coating

## TECHNICAL EXECUTION ACCORDING TO

Machinery Directive: EU Directive 2006/42/EC  
ErP ecodesign: Directive 2009/125/EG  
Test bench run based on DIN EN ISO 5801/2017





## DV3-9

Air density  $\rho = 1.2 \text{ kg/m}^3$

Driving pressure  $\sim 4 \text{ bar}$

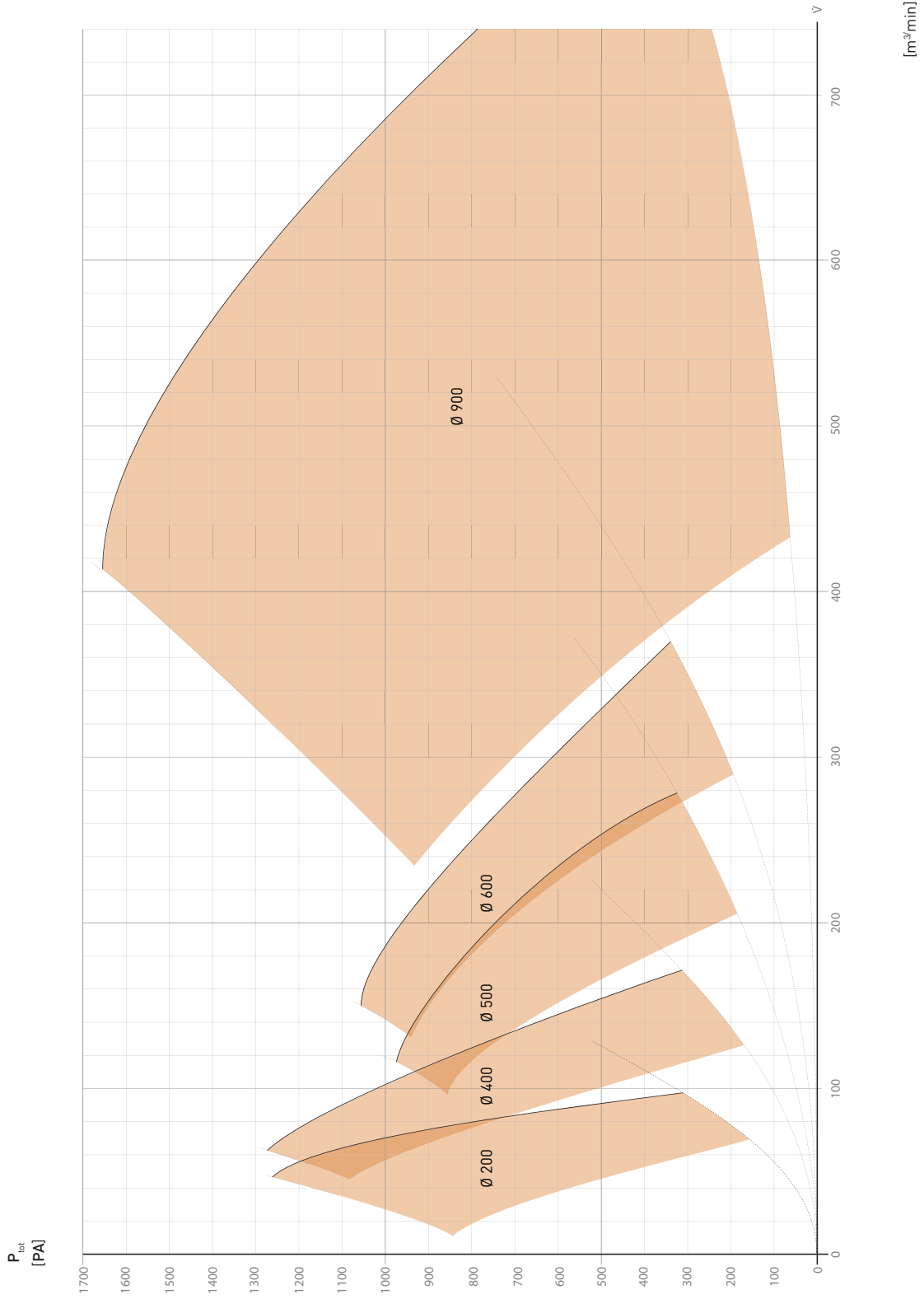
Air consumption [m<sup>3</sup>/min]

DV3	Ø 300
DV4	Ø 400
DV5	Ø 500
DV6	Ø 600
DV9	Ø 900

1.63 m <sup>3</sup>
2.38 m <sup>3</sup>
3.17 m <sup>3</sup>
4.24 m <sup>3</sup>
8.60 m <sup>3</sup>

Shaded area represents dia. performance range

Characteristics valid for air density 1.2 kg/m<sup>3</sup>



# SL



SL3 to SL4



## TYPE

SL3 to SL4  
Compressed air - economy fan, explosion-proof or firedamp-proof  
Compressed air drive  
Diameter: 300 to 400 mm

## PERFORMANCE RANGE

Volumetric flow up to 100 m<sup>3</sup>/min  
Total pressure increase up to 430 Pascal  
Nominal drive pressure 4 bar

## DESIGN

Axial-flow impeller as cast part from EN AB 43000, with miniature blading on the outer ring. Turbine nozzle for compressed air drive. Thrust collar made of EN AB 43000, spark protected. Profiled blades with no edges in the flow surface, sturdy steel housing.

## CONTROL

Infinitely variable by regulation of the compressed air

## DRIVE

- Compressed air driven balanced pressure turbine at the impeller circumference
- Operating pressure 4-6 bar

## COATING

Primer with top coat, alkyd resin Silac,  
total layer thickness min. 180 µm  
Standard colour: Pure white (RAL9010)

## OPTIONS

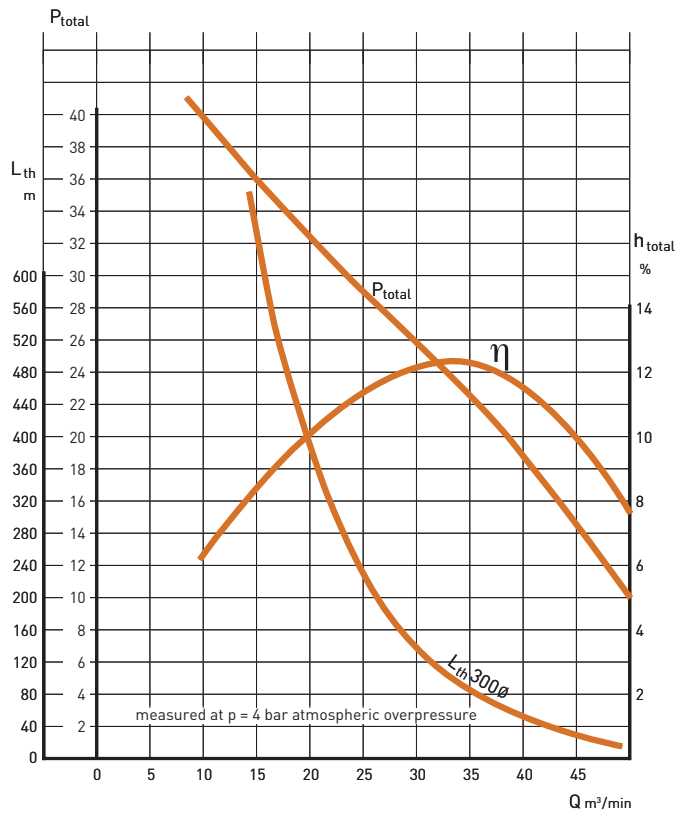
Special coating

## TECHNICAL EXECUTION ACCORDING TO

Machinery Directive: Directive 2006/42/EC  
Ex-protection according to directive 2014/34/EU  
Test bench run based on DIN EN ISO 5801/2017

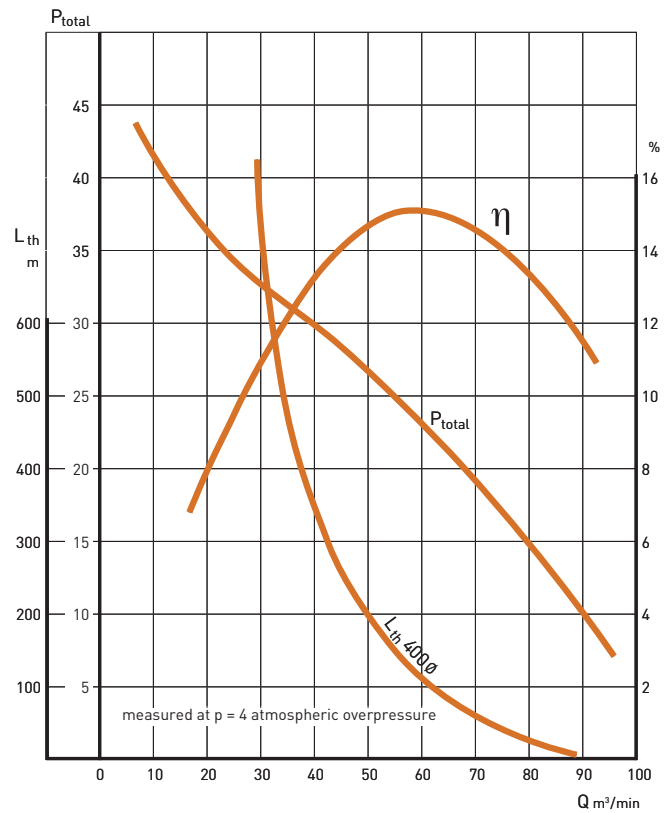






**Compressed air, economy fan; type SL 3**

Nominal diameter = 300 mm; Air consumption  $q_a=0.4\text{m}^3/\text{min}$




**Compressed air, economy fan; type SL 4**

Nominal diameter = 400 mm; Air consumption  $q_a=0.56\text{m}^3/\text{min}$



*Körfermann*

WE CAN DO ANYTHING!  
BUT YOU DON'T HAVE TO  
TAKE IT



# MODULAR ACCESSORIES

# ADDITIONAL OPTIONS FANS

## OPTIONS/EXTENSIONS/FANS

### Environment options — Tough environmental conditions (dust etc.)

#### SEALED MOTOR

Recommended for    

Upgraded motor in increased protection class incl. additional protective measures

#### DUST DISKS

Recommended for    

Capped impeller ensures edge-free surfaces against dust deposits

#### HARD-COATED IMPELLER

Recommended for 

Surface-treated impeller for increased material durability

#### SPECIAL COATING

Special coating depending on application profile (marine coating etc.)

### Stability options — Durability and stability

#### VIBRATION DAMPER

Recommended for 

Decoupling of device vibrations from the connecting structure

#### ANTI-STALL MONITORING

Recommended for 

Stall-point monitoring by means of instrumentation and evaluation device, for safe and damage-free fan operation

#### IMPACT PROTECTION

Additional bracket to protect the motor terminal box in mining conditions




## Motor options — Motor and electrical operation

**FREQUENCY CONVERTER COMPATIBILITY** Recommended for  

Upgraded motor in increased protection class incl. additional protective measures

**COLD ENVIRONMENT** Recommended for 

Preparation by installation of stand-by heater, special grease etc. at low ambient temperatures

**MOTOR MONITORING** Recommended for 

Additional internal sensors and probes for monitoring motor parameters

## INCREASED EFFICIENCY CLASS

Energy efficiency rating of the motor increased to a higher classification

## Sensor options — Sensor system and monitoring

See also measurement technology

**VIBRATION MONITORING** Recommended for 

Monitoring of machine vibration on bearings and/or housings

**VOLUMETRIC FLOW MONITORING** Recommended for  

Measurement of relevant parameters to determine volume or mass flow

**PRESSURE MONITORING** Recommended for  











Differential measurement for determining total or operating pressures

## GAS MONITORING

Gas detection sensors for various substances for further processing in monitoring and control systems.



# TABLE OF CONTENTS ACCESSORIES

Page		 Mining	 Tunnelling	 Jet-ventilation	 Drill/Blast	 TBM/Roadheader	 Main fans	 Duct fans/special ventilation fans	 Deduster/filter	 Heating/cooling units	 Special machinery
53	Plant construction										
54	AS	X	X	X	X	X	X	X	X	X	X
54	ÜF/P	X	X	X	X	X	X	X	X	X	X
55	ED	X	X	X	X	X	X	X	X	X	X
55	Frame	X	X	X	X	X	X	X	X	X	X
56	ASP	X	X	(X)	X	X	X	X	X	X	X
57	LVS	X	X			X		X			X
58	Sound insulation										
59	Acoustics										
60	SDS	X	X	X	X	X	X	X	X	X	X
60	SDSI	X	X	X	X	X	X	X	X	X	X
61	SDM	X	X	X	X	X	X	X	X	X	X
62	NS		X			(X)	(X)	X		X	X
63	KSD	X	X		(X)		X	X	X	X	X
63	SH	X	X	X	X	X	X	X	X	X	X
64	LUM	X	X	X	X	X	X	X	X	X	X
64	PSD	X	X	X	X	X	X	X	X	X	X
65	CS	(X)	X		(X)			X	X	X	X
66	Ventilation concept										
67	Measurements										
68	Vibration measurement										
69	Measurement technology V+P										
70	Control technology										
71	PU combination	X	X	X	X	X	(X)	X	X	X	X
71	Star delta	X	X	X	X	X	(X)	X	X	X	X
72	TSA softstarter	(X)	X	X	X	X	X	X	X	X	X
73	FU and FU/UB	(X)	X	X	(X)	(X)	(X)	X	X	X	X
74	FU outdoor	(X)	X	X	X	X	X	X	X	X	X
75	FU cabinet	(X)	X	X	(X)	X	X	X	X	X	X
76	Higher-level control	X	X	X	X	X	X	X	X	X	X
77	Air guard										



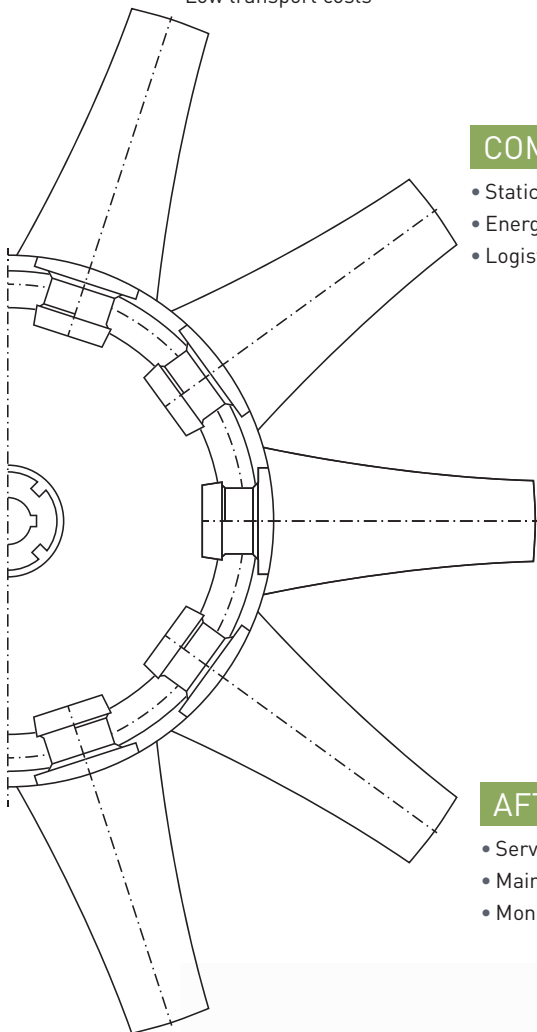
## CUSTOMER-ORIENTED SOLUTIONS FOR EVERYTHING RELATED TO VENTILATION SYSTEMS

Korfmann ventilation systems are modular.

Accessories can be combined according to the application.

### KORFMANN – MODULAR CONCEPT

- Flexible use
- Individually exchangeable
- Low transport costs
- High reusability
- Simple assembly



### COMPREHENSIVE ENGINEERING

- Static and dynamic loads
- Energy optimisation
- Logistics planning
- Sound insulation optimisation
- Plant expansion

### SIMULATION

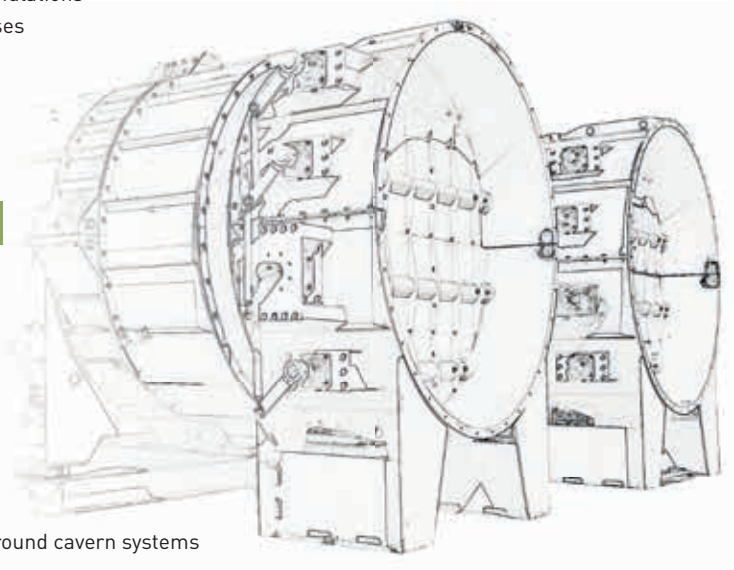
- Flow simulations
- Strength analyses
- Vibration simulations
- Noise analyses

### AFTER SALES

- Services
- Maintenance
- Monitoring

### EXPERIENCE

- Special plant construction for ventilation technology
- Mechanical engineering
- Underground cavern systems
- Mining
- Tunnelling



# AS AND ÜF/P



## AS duct adapter

### TYPE

AS3 to AS42; adapter  
Diameter: 300 to 4200 mm

### DESIGN/APPLICATION

Steel component with connecting flange for all fan types for direct connection of ducts or compensators

### COATING

Primer with top coat, alkyd resin Silac,  
total layer thickness min. 180 µm,  
Standard colour: Pure white (RAL9010)

### OPTIONS

Adaptation of special compensators, special flange,  
Split design

### TECHNICAL EXECUTION ACCORDING TO

Flange pattern according to DIN 21603



## ÜF/P transition piece

### TYPE

ÜF3/P4 to ÜF30/P35; flange transition piece - duct  
Diameter: 300 to 3500mm

### DESIGN/APPLICATION

Steel component with connecting flange for all fan types for direct connection of ducts of larger diameter compensators

### COATING

Primer with top coat, alkyd resin Silac,  
total layer thickness min. 180 µm,  
Standard colour: Pure white (RAL9010)

### OPTIONS

Adaptation of special compensators, special flange,  
flange/flange design for further module types: (ÜF/F),  
split design

### TECHNICAL EXECUTION ACCORDING TO

Flange pattern according to DIN 21603







## ED – Inlet bell

### TYPE

ED 3 – ED 42; inlet bell  
Diameter: 300 to 4200 mm

### DESIGN/APPLICATION

Semi-circular or conical steel component with connecting flange for all fan types to optimise the air flow on the intake side including mesh guard.

### COATING

Primer with top coat, alkyd resin Silac, total layer thickness min. 180 µm, Standard colour: Pure white (RAL9010)

### OPTIONS

Measuring inlet nozzle module "MED" with measuring ring line for volume flow determination, split design

### TECHNICAL EXECUTION ACCORDING TO

Flange pattern according to DIN 21603



## Frame - carriage/foundation frame

### TYPE

Skids/base frames  
All sizes

### DESIGN/APPLICATION

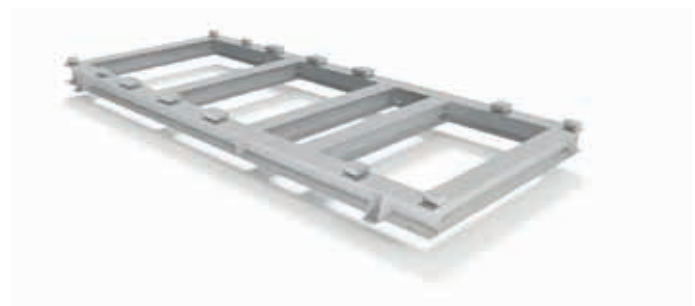
Substructure frame as skid or foundation frame for full-area mounting and alignment of the entire structure. Designed as transport carriage for underground use or as foundation frame for permanent installations

### COATING

Primer with top coat, alkyd resin Silac, total layer thickness min. 180 µm, Standard colour: Pure white (RAL9010)

### OPTIONS

Split design; shear-resistant vibration dampers for decoupling the active parts. Load-bearing supports and anchoring fixtures to the foundation



# ASP



## ASP butterfly valve

### TYPE

ASP 3 – ASP 42; butterfly valve  
Diameter: 300 to 4200 mm

### DESIGN/APPLICATION

Steel tube design with flange on both sides. Internal, single or multi-axis horizontally mounted flap, rib-reinforced. In mining version. For ventilation systems in parallel operation. Can be used as throttle valve and bypass valve

### COATING

Primer with top coat, alkyd resin Silac,  
total layer thickness min. 180 µm,  
Standard colour: Pure white (RAL9010)

### OPTIONS

- Designed as mechanical damper – manually adjustable (type: ASP M)
- Designed as automatic damper – incl. servo motor and gear (type: ASP A)
- Designed as automatic damper – adjustable via pneumatic lifting cylinder (type: ASP AP)  
Designed for explosion-protected areas (type: dASP...)

### TECHNICAL EXECUTION ACCORDING TO

Machinery Directive; 2006/42/EC





## LVS duct storage cassette

### TYPE

LVS 5 – LVS 35; air duct accumulator  
Diameter: 500 to 3500 mm

### DESIGN/APPLICATION

Steel tube with core. Front unit for accommodation of duct sections. Storage for up to 250 m flexible duct. Consisting of exchangeable cassette and outlet diffuser.

### COATING

Primer with top coat, alkyd resin Silac,  
total layer thickness min. 180 µm,  
Standard colour: Pure white (RAL9010)

### OPTIONS

Rope pulley with holder, special diffusers, split and oval versions, special designs, exchangeable cassette, pre-storable cassettes, brake



# SOUND INSULATION

FOR THE ENVIRONMENT AND OUR FELLOW HUMANS.

Solutions for any application

Compliance with project-related noise emission values

## ACOUSTIC PLANNING

- Analysis of the environment
- Finding problem areas
- Preliminary analyses of emissions
- Noise appraisals

## ACOUSTIC DESIGN

- Design of necessary sound insulation measures
- Consideration of tonal additions
- Frequency considerations
- Sound insulation solutions
- Optimisation of device attenuation
- Optimisation of locations

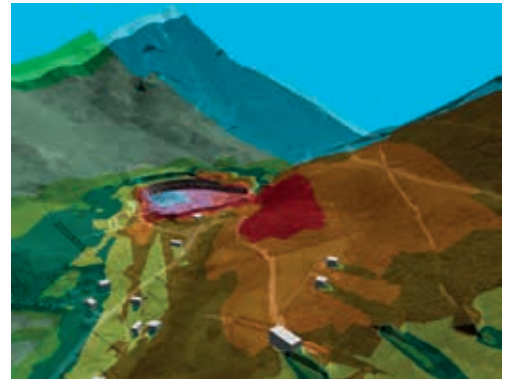
## NOISE-LEVEL MEASUREMENT

- Measurements of the environment
- Measurements on machines
- Measurement of insertion attenuation
- Octave and third-octave band analyses

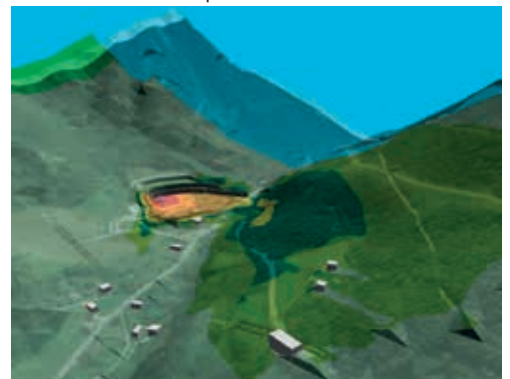
## DESIGN

- Reusable components
- Comprehensive combination options
- High insertion attenuations
- Sound insulation flow-optimised
- Compact design
- Low maintenance costs

Actual condition



Optimisation



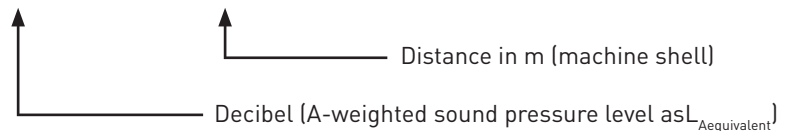
Project-specific requirements

Tailored design

Customer requirement

Definition as "NOISE KIT" – customer information

**NOISE KIT** NK \_\_\_\_ dB(A) - \_\_\_\_ m



Example: NK 80 dB(A) – 10m

Means target definition:  
80 dB(A) sound pressure level at 10 m distance  
from the machine under free field conditions!

Example: NK 55dB(A)-50 m for an AL16



INLET: 3 X SDSI  
AL16 at approx. 35 Hz/1000 RPM  
OUTLET: 3 X SDSI + duct



INLET: 1 X SDSI + KSC10  
AL16 + soundproof container 20"  
OUTLET: 4 X SDSI + duct



INLET: 4 X SDSI  
AL16 + soundproof container 20"  
OUTLET: 3 X SDSI + steel pipe



INLET: 1 X SDSI + KSC10  
AL16 + soundproof container 20"  
OUTLET: 1 X SDSI + NS +  
ventilation duct



# SDS AND SDSI



## SDS – Silencers

### TYPE

SDS 3 – 30;  
Diameter: 300 to 3000mm

### DESIGN/APPLICATION

Pipe silencers to minimise noise emissions. Multiple combinations. Designed as pipe silencers with connecting flanges on both sides and composite brackets. Mining version with internal, anti-static, replaceable damping elements. Size adapted to underground material transport

### INSERTION LOSS

8 – 15 dB

### COATING

Priming with top coat, alkyd resin Silac, total layer thickness min. 180µm, Standard colour: Pure white (RAL9010)

### OPTIONS

Short version type: SDSk with adapted lengths for transport in narrow shafts



## SDSI – Sound Silencers (rigid with inner core)

### TYPE

SDSI 7 – 30;  
Diameter: 300 to 3000mm

### DESIGN/APPLICATION

Pipe silencers to minimise noise emissions. Multiple combinations. Designed as pipe silencers fabricated from steel with additional inner core for increased insertion loss, connecting flanges on both sides and composite brackets. Mining version with internal, antistatic, replaceable damping elements. Size adapted to underground material transport.

### INSERTION ATTENUATION

10 – 20 dB

### COATING

Primer with top coat, alkyd resin Silac, total layer thickness min. 180µm, Standard colour: Pure white (RAL9010)

### OPTIONS

Short version type: SDSIk with adapted lengths for transport in narrow shafts





## SDM – Modular silencers

### TYPE

SDM 3 - 25;  
Diameter: 300 to 2500mm

### DESIGN/APPLICATION

Pipe silencers to minimise noise emissions. Multiple combinations. Designed as pipe silencers, connecting flange on both sides and composite brackets.

- Designed for tunnel construction with mineral wool insulation under perforated sheet
- Available in module lengths of 0.5 m; 1 m and 2 m

### INSERTION ATTENUATION

8 – 15 dB

### COATING

Primer with top coat, alkyd resin Silac, total layer thickness min. 180 microns, standard colour: Pure white (RAL9010)

### OPTIONS

Split design





## NS – Noise shield silencers

### TYPE

NS 14 – 24;  
 Diameter: 1400 to 2400mm

### DESIGN/APPLICATION

Pipe silencers to minimise noise emissions in special design. Three-part special module with increased insertion loss values in the low-frequency range. Suction-side and pressure-side variants.

### INSERTION ATTENUATION

15 – 22 dB

### COATING

Primer with top coat, alkyd resin Silac,  
 total layer thickness min. 180µm,  
 Standard colour: Pure white (RAL9010)

### OPTIONS

Various lengths of the intermediate module to achieve of the total insertion loss.







## KSD – Baffle silencers

### TYPE

KSD  
Size depending on application

### DESIGN/APPLICATION

Fixed, specified sound attenuation. Designed using baffles for absorption of noise. Square steel frame. Baffles made of perforated sheet metal with inner lining and glass fleece as trickle protection. Absorption material: Mineral wool (non-combustible according to DIN 4102)

Silencer directly connected or as peripheral unit in the air line. For increased insertion attenuation above the levels of pipe silencers.

### INSERTION LOSS

According to design  
(Recommended for requirements > 25 dB)

### COATING

Galvanised or painted according to application

### OPTIONS

Combined mobile design in a container/ split design (see also sound attenuator type CS)



## SH – Acoustic enclosure

### TYPE

SH 3 -14;  
For fan sizes 300 mm to 1400 mm

### DESIGN/APPLICATION

Acoustic enclosure as a complete enclosure for the fan and adjacent flow components. Fixed specific sound attenuation in sandwich construction with galvanised sheet metal. Multi-part design depending on application.

### INSERTION LOSS

up to ~25 dB

### COATING

Galvanised

### OPTIONS

Custom-made with cut-outs

# LUM AND PSD



## LUM silencers, fan enclosure

### TYPE

LUM 3 - 18  
Diameter: 300 to 1800mm

### DESIGN/APPLICATION

Flexible lagging made of antistatic duct materials, filled with special mineral wool insulation, one- or two-piece. For direct enclosure of the fan housing.

### INSERTION LOSS

3 - 5 dB

### COATING

Coating of air duct material

### OPTIONS

Custom-made with cut-outs; steel housing design, Anti-static



## PSD silencers, sound deflector panel

### TYPE

PSD 3 - 18  
For fan sizes 300 mm to 1800mm

### DESIGN/APPLICATION

Sound attenuation as a fixed insulating panel made of sheet steel with mineral wool insulation. Suction side on spacer bolts to reduce axial noise emissions.

### INSERTION ATTENUATION

10 - 15 dB

### COATING

Primer with top coat, alkyd resin Silac, total layer thickness min. 180µm, Standard colour: Pure white (RAL9010)

### OPTIONS

Intake-side mesh guard





## CS – Container silencers

### TYPE

CS 10 - CS 40

### DESIGN/APPLICATION

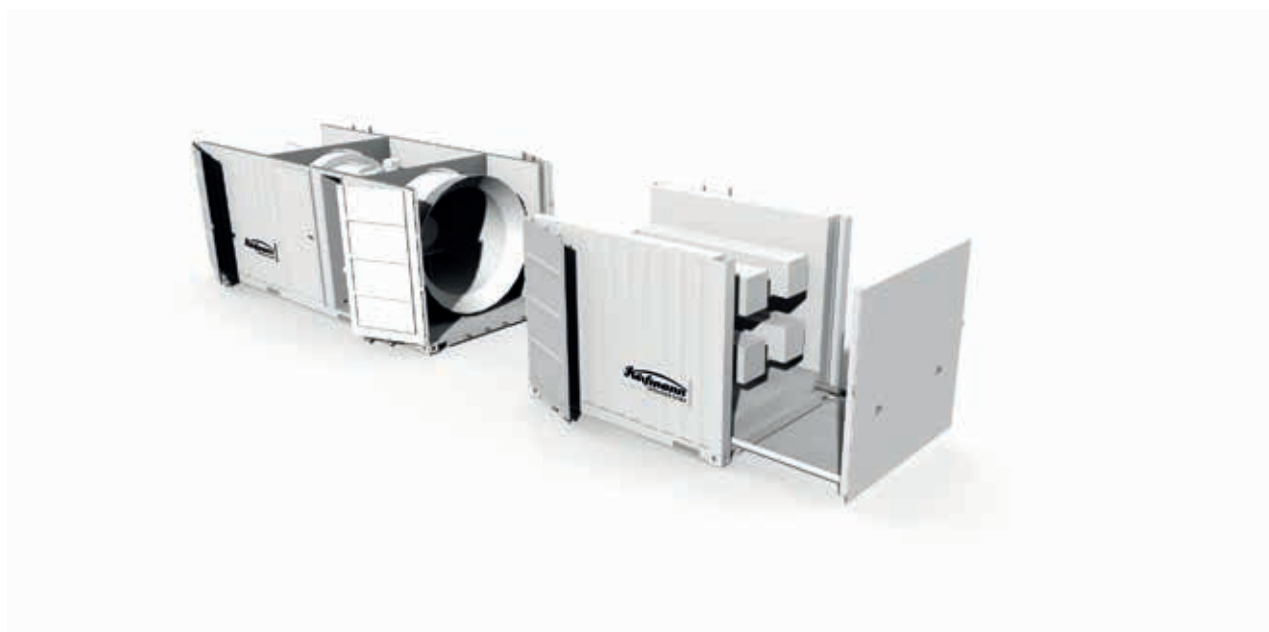
Fully lined lined container. Sound proofing with insulating material under galvanised perforated steel plating. Designed As a complete housing for axial fans, insertion loss according to design. Depending on requirements with integrated baffle silencers. Designs ranging from the front baffle in a 10" container to a 40" integral container.

### COATING

Primer with top coat, alkyd resin Silac, total layer thickness min. 180 µm, Standard colour: Pure white (RAL9010)

### OPTIONS

Multi-purpose doors, control panel niches, power socket mounting plates, guide rails, stud walls, sound deflector panel, bends up to 180°, fan connection



# VENTILATION CONCEPTS

## CONVINCING TECHNOLOGY

Assessment of ventilation requirement

Project-related optimised ventilation schemes

Ongoing communication with universities and authorities

Knowledge of current occupational health regulations

### NEEDS ASSESSMENT

- Up-to-date occupational health
- Applicable OSH legislation
- High level of experience

### DETERMINATION OF THE FAN SPECIFICATIONS

- Optimised selection
- Consideration of customer equipment
- Process oriented requirements

### MORE COMPLEX PROJECTS

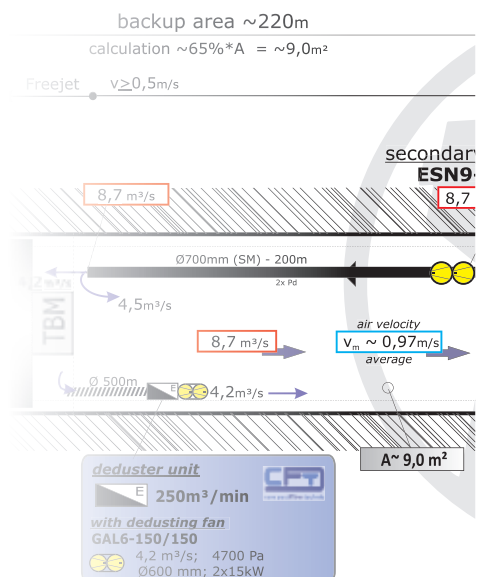
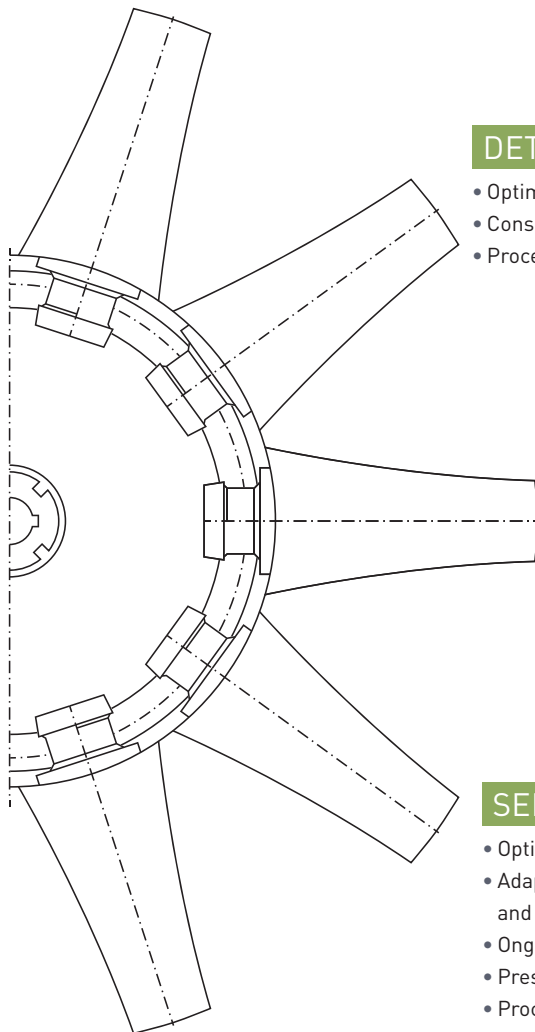
- Development of project solutions
- Practical concepts
- Energy efficiency considerations
- Case analyses
- Alternatives

### SERVICES

- Optimised concepts
- Adaptation in case of project changes and development
- Ongoing project support
- Presentation of expected changes
- Process optimisation

### INTERDISCIPLINARY

- Practical experience from thousands of projects
- Wide range of ventilation expertise
- Conformity with statutory requirements



## TRUST IS GOOD – CONTROL IS BETTER!

Consulting for suitable measurement technology

Selection of targeted measurement technology for project monitoring

Fully automatic measurements

Integration in process analyses and comprehensive control mechanisms

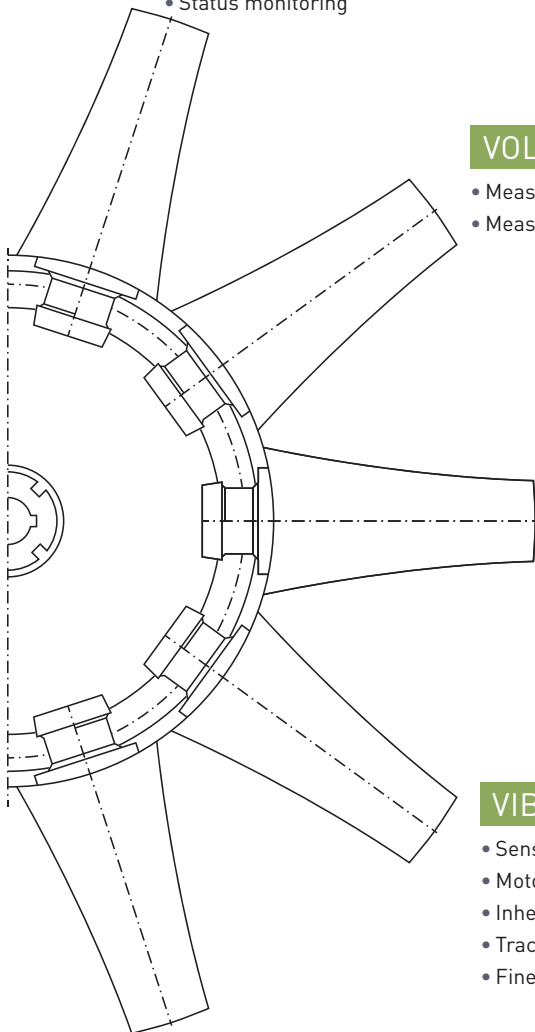
Qualified measurements by experienced technicians

Professional fact finding

### CROSS-PROJECT

- Complete system monitoring
- Status monitoring

- Measurement analyses for the optimisation of processes and applications
- Concept planning of evaluation control systems with visualisation



### VOLUMETRIC FLOW MEASUREMENTS

- Measurement in duct runs
- Measurement in open sections

- Measurements in special components
- Mass flow determination

### PRESSURE MEASUREMENTS

- Determination in air duct sections
- Determination in open sections
- Total pressure increases main fan

- Thrust measurement
- Consideration of air pressure

### VIBRATION MEASUREMENTS

- Sensors of various types
- Motor analyses
- Inherent frequencies analyses
- Tracking analyses
- Fine balancing

### NOISE-LEVEL MEASUREMENT

- Measurements of the surroundings
- Measurements on machines
- Measurement of insertion attenuation
- Octave and third-octave band analyses



# VIBRATION MEASUREMENT

## VIBRATION MEASUREMENT

### TYPE

Intelligent systems for vibration monitoring and diagnosis of systems and machines.

### DESIGN

From simple vibration transducers to acceleration sensors with connected diagnostic electronics for FFT analysis.

### USER BENEFITS

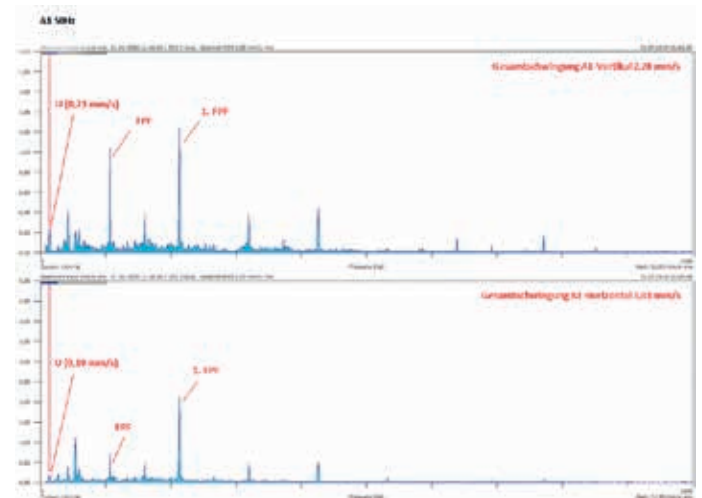
- Actual recording based on status
- Early detection of machine damage
- Reliable permanent vibration monitoring according to DIN ISO 10816
- Machine-integrated system monitoring
- Visualisation and storage of measured data
- Evaluation/analysis of data
- Data transmission for remote monitoring
- Integration of measured data into a higher-level control system
- Defined limit value setting with alarm and switch-off functions

### OPTIONS

- Motor analyses, bearing inspection and actual value recording
- Resonance frequencies analysis
- Overrun analysis
- Fine balancing in installed condition
- Sum and frequency spectrum analyses of simple or higher order

### SYSTEMS/SENSORS

- Acceleration sensors
- Vibration sensors and transmitters of various types and Ex versions
- Evaluation units with FFT visualisation
- Diagnostic electronics



## VOLUME AND PRESSURE MEASUREMENT

Various methods for measurement of volumetric flow and pressure in open cross-sectional profiles, duct runs, at the fan and in special components. In addition to these options, mass flow and thrust can also be integrated into existing system, taking the air pressure into account.

### VOLUMETRIC FLOW MEASUREMENT FOR FLEXIBLE AND RIGID DUCTS AND FANS

Measuring device: Multifunction transmitter for differential pressure measurement  
In addition, one of the following options is required (selection depending on application):

- Prandtl tube
- Measuring lances in the defined pipe section or duct
- Differential pressure sensor duct (type: WDL)
- Measuring inlet nozzle (type: MED)

### VOLUMETRIC FLOW MEASUREMENT TYPE IN OPEN PROFILES

Various anemometers (e.g. impeller anemometers, heat wire anemometers)

### PRESSURE MEASUREMENT TYPE IN DUCTS, AIR DUCTS AND FANS

Measuring devices:

- Multifunction transmitter for differential pressure measurement
- Differential pressure manometer

In addition, one of the following options is required (selection depending on application):

- Ring pipelines
- Silencers measuring modules for static pressure or total pressure increase at the fan
- Measuring nipple for static pressure measurement

### TYPE OF AIR PRESSURE GAUGE

- Absolute pressure meter

### VISUALISATION AND FURTHER PROCESSING OF THE MEASURED VALUES

- Display of measured values on measuring instrument
- Signal transmission (analogue or digital signals) to higher-level system
- Display of measured values to control room
- Installation of a needs-based control
- Warning against exceeding or falling short of setpoints.

### STORAGE OF MEASURED VALUES

- Storage of the values by means of data logger
- Storage of values by overriding system

### ADVANTAGES

- Proof of compliance with regulations
- Development of the system traceable



# CONTROL TECHNOLOGY

## WHERE ENERGY FLOWS - OUR FOCUS GOES

Extensive expertise

Optimised drive solutions

### DRIVE SOLUTIONS

- Direct starting
- Star-delta contactors
- Pole-switching combinations
- Softstarter
- Frequency converters
- Customer-oriented

### SWITCHGEAR PRODUCTION

- Different grid voltages
- Different network frequencies
- Robust metal housing
- Main switch, potentiometer etc.
- Bypass, emergency stop etc.
- Explosion-proof

### PROCESS OPTIMISATION

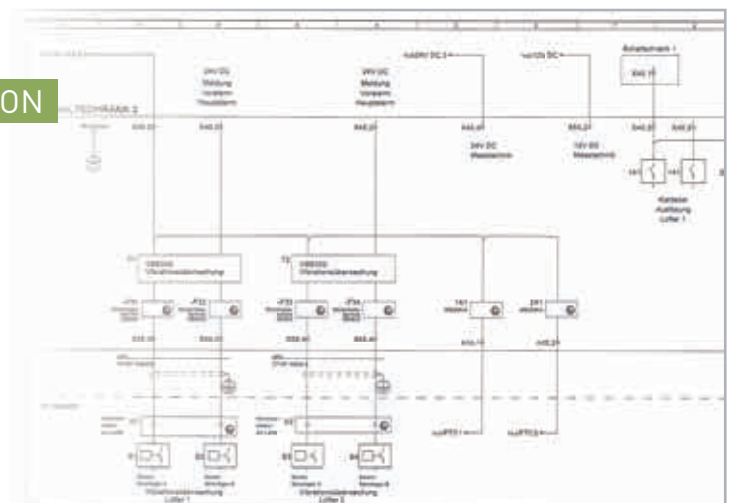
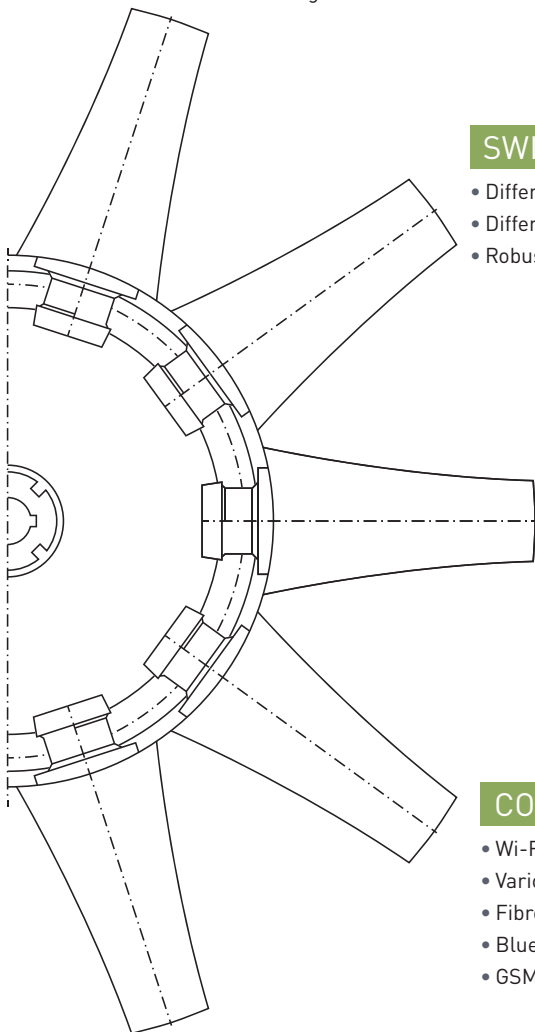
- Software for optimising the motor control
- Visualisation
- Touch panel, remote controls
- Siemens, B+R, Alan Bradley etc.
- Target value dependent controls

### COMMUNICATION

- Wi-Fi
- Various bus systems
- Fibre optic technology
- Bluetooth
- GSM operation

### EXPERTISE

- Complete drive solutions
- Control algorithms
- Power electronics
- Motor development





# PU COMBINATION AND STAR TRIANGLE

## PU pole-switching combination

### TYPE

Pole-switching combination 15 kW to 250 kW in switchgear panel

### DESIGN

Pole switching contactor combination in switchgear panel, protection class IP54, dimensions depending on size, voltage and power levels

### USER BENEFITS

Pole-switching combination for current and starting torque reduction when switching on by using several power stages (min. two speeds). Controlled start-up.

### ELECTRICAL DATA

Mains voltage (+10%/-15%),  
Mains voltage: 380 to 690 V  
Mains frequency: 50/60 Hz  
Ambient temperature: 0° to + 40°C

## Star-delta contactor combination – Controller

### TYPE

Star-delta contactor 15 kW to 250 kW in switchgear panel

### DESIGN

Contactor combination in switchgear panel, protection class IP54, Dimensions depending on size, voltage and output

### USER BENEFITS

Starter for current and starting torque reduction when switching on. Controlled start-up.

### ELECTRICAL DATA

Mains voltage (+10%/-15%),  
Mains voltage: 380 to 690 V  
Mains frequency: 50/60 Hz  
Ambient temperature: 0° to + 40°C



### EQUIPMENT

- Circuit-breaker with emergency stop function
- Ventilated compartment
- PTC thermistor evaluation PTC
- Start/stop button

### OPTIONS

Remote controls  
Further options and control cabinet equipment according to agreement

### TECHNICAL EXECUTION (EUROPE) ACCORDING TO

EMC Directive 2004/108/EEC  
Low Voltage Directive 2006/95/EC  
WEEE Directive 2002/96/EC



### EQUIPMENT

- Circuit-breaker with emergency stop function
- Ventilated compartment
- PTC thermistor evaluation PTC
- Start/stop button

### OPTIONS

Remote controls  
Further options and control cabinet equipment according to agreement

### TECHNICAL EXECUTION (EUROPE) ACCORDING TO

EMC Directive 2004/108/EEC  
Low Voltage Directive 2006/95/EC  
WEEE Directive 2002/96/EC



# SOFTSTARTER



## TSA softstarter control

### TYPE

TSA 7.5 kW to 250 kW  
in switch housing

### DESIGN

Softstarter in switch housing, system protection class  $\geq$  IP54  
Dimensions depending on size, voltage and output

### USER BENEFITS

Softstarter for digital current and starting torque reduction when switched on. Protected start/stop operation, no switch-over peak as with star-delta, reliable operation through monitoring, can be used as motor controller

### ELECTRICAL DATA

Mains voltage (+10%/-15%),  
TSA52-: 200 to 525 V  
TSA69-: 200 to 690 V  
Mains frequency: 45 to 65 Hz  
Three fully controlled phases  
Control voltage: 100 - 240 V  
Ambient temperature: -10° to +40°C  
(incl. cabinet heating and  
hygrostat)

### EQUIPMENT

- Circuit-breaker with emergency stop function
- Integrated bypass contactor
- Coated circuit boards
- Aeration and ventilation
- PTC thermistor evaluation PTC
- PPU – Operating and parameterisation panel in housing door
- Start/stop button, fault acknowledgement, indicator lights

### OPTIONS

- Interface RS232
- Bus systems: Profibus, Profinet, Modbus/TCP (Ethernet)
- Remote controls
- Further options subject to coordination

### TECHNICAL EXECUTION (EUROPE) ACCORDING TO

EMC Directive 2004/108/EEC  
Low Voltage Directive 2006/95/EC  
WEEE Directive 2002/96/EC





## FU frequency converters (in metal housing)

### TYPE

FDU 5.5 kW to 200 kW  
in metal housing

### DESIGN

Frequency inverter in metal housing, system protection class  $\geq$  IP54  
Dimensions depending on size, voltage and output

### USER BENEFITS

controlled start and stop operation, controlled run-up and  
rundown, stepless fan operation, efficient energy consumption  
adapted to air demand, reliable operation through monitoring,  
can be used as motor controller

### ELECTRICAL DATA

Mains voltage (+10%/-15%),  
FDU48-: 380 to 480 V (on request from 230 V)  
FDU52-: 500 to 525 V - (size B,C,D)  
FDU69-: 500 to 690 V - (C69 - F69)  
Mains frequency: 45 to 65 Hz  
Input power factor: 0.95  
Output voltage: 0 to mains voltage  
Output frequency: 0 to 400 Hz  
Output switching frequency: 3 kHz  
Efficiency at rated load: 98%  
Ambient temperature: 0° to + 40°C

### EQUIPMENT

- Integrated line filters (FU)
- Coated circuit boards (FU)
- PTC thermistor evaluation PTC
- PPU – Operating and parameterisation panel in housing door  
incl. Bluetooth interface

### OPTIONS

- Main switch in FI housing (up to 37 kW)
- Housing for substructure mounting with main switch  
(type FDU\_\_UB) incl. frame and canopy (up to 200 kW)
- Stand
- Interface
- Bus systems: Profibus, Profinet, Modbus/TCP (Ethernet)
- Remote controls
- Further options subject to agreement
- Fire mode

### TECHNICAL EXECUTION (EUROPE) ACCORDING TO

EMC Directive 2004/108/EEC  
Low Voltage Directive 2006/95/EC  
WEEE Directive 2002/96/EC



# FU OUTDOOR



**Korfmann**  
INNOVATION



## FU frequency converters (in outdoor housing)

### TYPE

FDU to 400 kW  
in outdoor housing (OD)

### DESIGN

Frequency inverter in housing, system protection class  $\geq$  IP54  
Skid mounting suitable for construction sites with skids  
Dimension: Height: 2.21 m  
Width: 1.2 to 1.7m  
Depth: 0.5 to 0.97m

### USER BENEFITS

controlled start and stop operation, controlled run-up and  
rundown, stepless fan operation, efficient energy consumption  
adapted to air demand, reliable operation through monitoring,  
can be used as motor controller

### ELECTRICAL DATA

Mains voltage (+10%/-15%),  
FDU48-: 380 to 480 V – size G (2xE),  
H (2xF)  
FDU69-: 500 to 690 V – (on request)  
Mains frequency: 45 to 65 Hz  
Input power factor: 0.95  
Output voltage: 0 to mains voltage  
Output frequency: 0 to 400 Hz  
Output switching frequency: 3 kHz  
Efficiency at rated load: 98%  
Ambient temperature: -10° to + 40°C  
(integr. heating)

### EQUIPMENT

- Integrated line filters (FU)
- Coated circuit boards
- circuit breaker with emergency stop function
- Fuses in the FU
- PTC thermistor evaluation PTC
- PPU – Operating and parameterisation panel in housing door  
incl. Bluetooth interface

### OPTIONS

- Interface
- Bus systems: Profibus, Profinet, Modbus/TCP (Ethernet)
- Remote controls
- Further options subject to coordination
- Fire mode
- Safe stop

### TECHNICAL EXECUTION ACCORDING TO

EMC Directive 2004/108/EEC  
Low Voltage Directive 2006/95/EC  
WEEE Directive 2002/96/EC





## FU frequency converters control (in control panel)

### TYPE

FDU to 3000 kW  
in control cabinet

### DESIGN

Frequency inverter in control cabinet, system protection class  $\geq$  IP54

Dimension:      Height: 2.35m  
                         Width: 1.2 depending on performance  
                         Depth: 0.6 m

### USER BENEFITS

controlled start and stop operation, controlled run-up and run-down, stepless fan operation, efficient energy consumption adapted to air demand, reliable operation through monitoring, can be used as motor controller

### ELECTRICAL DATA

Mains voltage (+10%/-15%),  
FDU48-:                      380 to 480 V -  
   (on request from 230V)  
FDU69-:                      500 to 690 V - (from size H69)  
Mains frequency:        45 to 65 Hz  
Input power factor:      0.95  
Output voltage:            0 to mains voltage  
Output frequency:        0 to 400 Hz  
Output switching frequency: 3 kHz  
Efficiency at rated load: 98%  
Ambient temperature:    -10° to + 40°C  
   (integr. control cabinet heater)

### EQUIPMENT

- Integrated line filters (FU)
- Coated circuit boards
- Circuit breaker with Voltage tripping
- Fuses in the FU
- Control cabinet ventilated
- PTC thermistor evaluation PTC
- PPU – Operating and parametrising panel in cabinet door incl. Bluetooth interface
- Button for start, stop, reset, signal lamps
- Potentiometer
- Emergency off pushbutton

### OPTIONS

- Interface
- Bus systems: Profibus, Profinet, Modbus/TCP (Ethernet)
- Remote controls
- Further options subject to coordination
- Large systems up to 6,600 V
- Air conditioning
- Fire Mode
- Safe stop

### TECHNICAL EXECUTION (EUROPE) ACCORDING TO

EMC Directive 2004/108/EEC  
Low Voltage Directive 2006/95/EC  
WEEE Directive 2002/96/EC



# HIGHER-LEVEL CONTROL



**Korfmann**  
INNOVATION



## Higher-level control

### TYPE

Visualisation and/or control in various designs. From simple relay technology to fully automatic control operation of several fan units

### DESIGN

Remote control via PLC or IPC  
Signal transmission via radio or cable

### USER BENEFITS

Energy-optimised operation, recording and storage of air parameters, simple operation and remote control, fast reactions in the event of an event, needs-based fan insert

### ELECTRICAL DATA

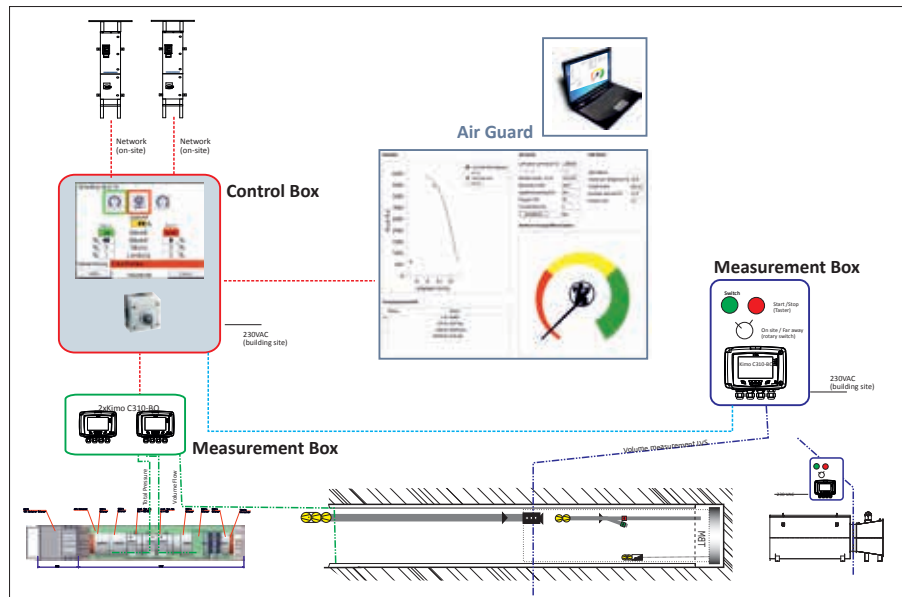
Standard auxiliary voltages from 24 - 240 V

### EQUIPMENT

Displays in different sizes, touch display  
Programming (e.g.) Siemens, B&R, Alan Bradley etc.  
Various components are installed depending on the degree of automation and design.  
Designed optimised for the application purpose.

### OPTIONS

- Cable remote control with selection buttons
- Wireless (GSM) or optical fibre remote transmission of signals
- Touch display or input devices (e.g. IPC with keyboard)
- Various bus systems: Profibus, Profinet, Modbus/TCP (Ethernet)
- The control system can process single logic connections, individual signals from measuring devices or highly complex signal chains and dependencies according to customer requirements.
- The Korfmann "Airguard" system as well as the various measuring systems can be integrated into the higher level control system



# KORFMANN AIR GUARD

**Korfmann**  
INNOVATION



Korfmann Air Guard

patented system

Ventilation by means of ducts

optimised energy management in real time

## ADVANTAGES

The following things can be achieved through an intelligent target/actual comparison:

- Enormous energy savings
- Detection of defects in the system
- System development (preview into the future)
- Limit considerations (fans + ducts)

## FURTHER ADVANTAGES

- Location-independent monitoring and control
- Documentation of the air situation

## OPTIONS

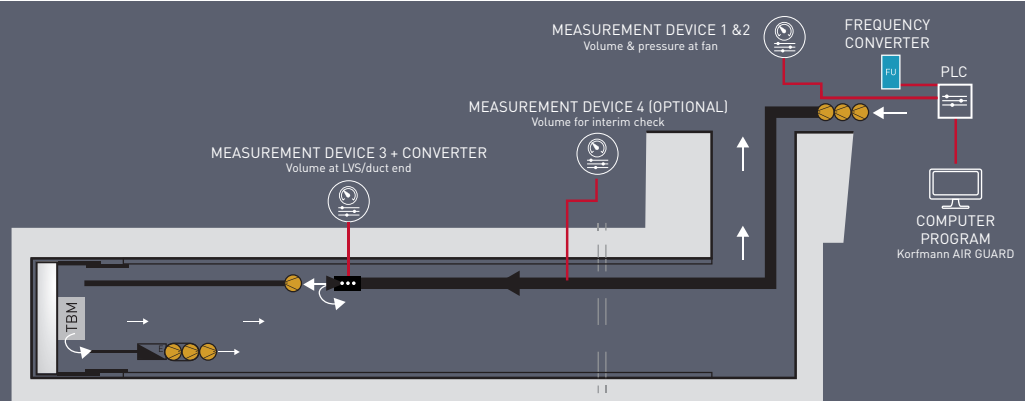
- Control according to different measured values (e.g. NO<sub>x</sub>, methane etc.)
- Integration into higher-level systems

## VARIANTS

	BASIC	BASIC +	PREMIUM	PREMIUM +
<b>Software engineering</b>				
Korfmann AIR GUARD basic software	X	X	X	X
Documentation function		X	X	X
TeamViewer remote maintenance function			X	X
Future approximation				X
<b>Hardware control technology</b>				
Fan control Korfmann AIR GUARD	X	X	X	X
<b>Hardware measurement technology</b>				
Volume measurement duct end	X	X	X	X
Volume measurement fan	X	X	X	X
Pressure measurement fan	X	X	X	X
Ethernet converter (Ethernet -> 4-20 mA)	(X)	(X)	(X)	(X)
LWL converter (LWL->4-20 mA)	(X)	(X)	(X)	(X)
Conversion LVS with measuring blades	(X)	(X)	(X)	(X)
Additional meter + orifice plate				X
<b>Hardware/additional</b>				
Laptop + Software			X	X
Measurement data (1x)	X	X	X	X
Test bench measurement + measurement data of further fans				X
Commissioning on site	X	X	X	X

(x) = depending on case

Intelligent control and monitoring system which consists of various measurement and control components as well as computer software (see picture).











KORFMANN LUFTECHNIK GmbH  
HÖRDER STR. 286  
58454 WITTEN  
PHONE: +49 2302 1702-0  
FAX: +49 2302 1702-153

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FURTHER PRODUCT INFORMATION AND TECHNICAL DATA IS PROVIDED  
UNDER [WWW.KORFMANN.COM](http://WWW.KORFMANN.COM)