



**Wölfer technology
is moving your business**

1

Who are we today?

2

**Applications
Products
Efficiency**

3

**References and
projects**

1 Who we are today ?

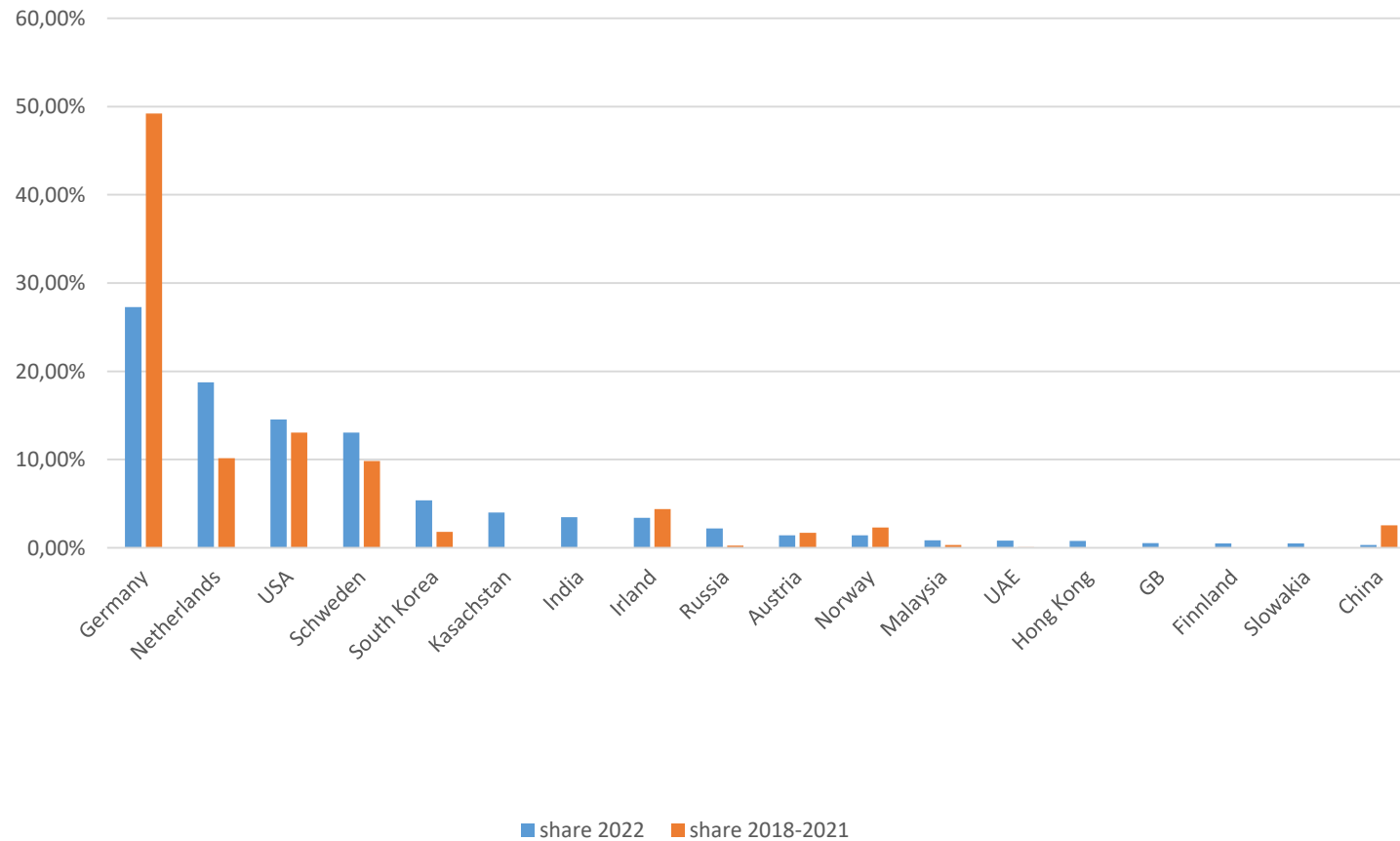


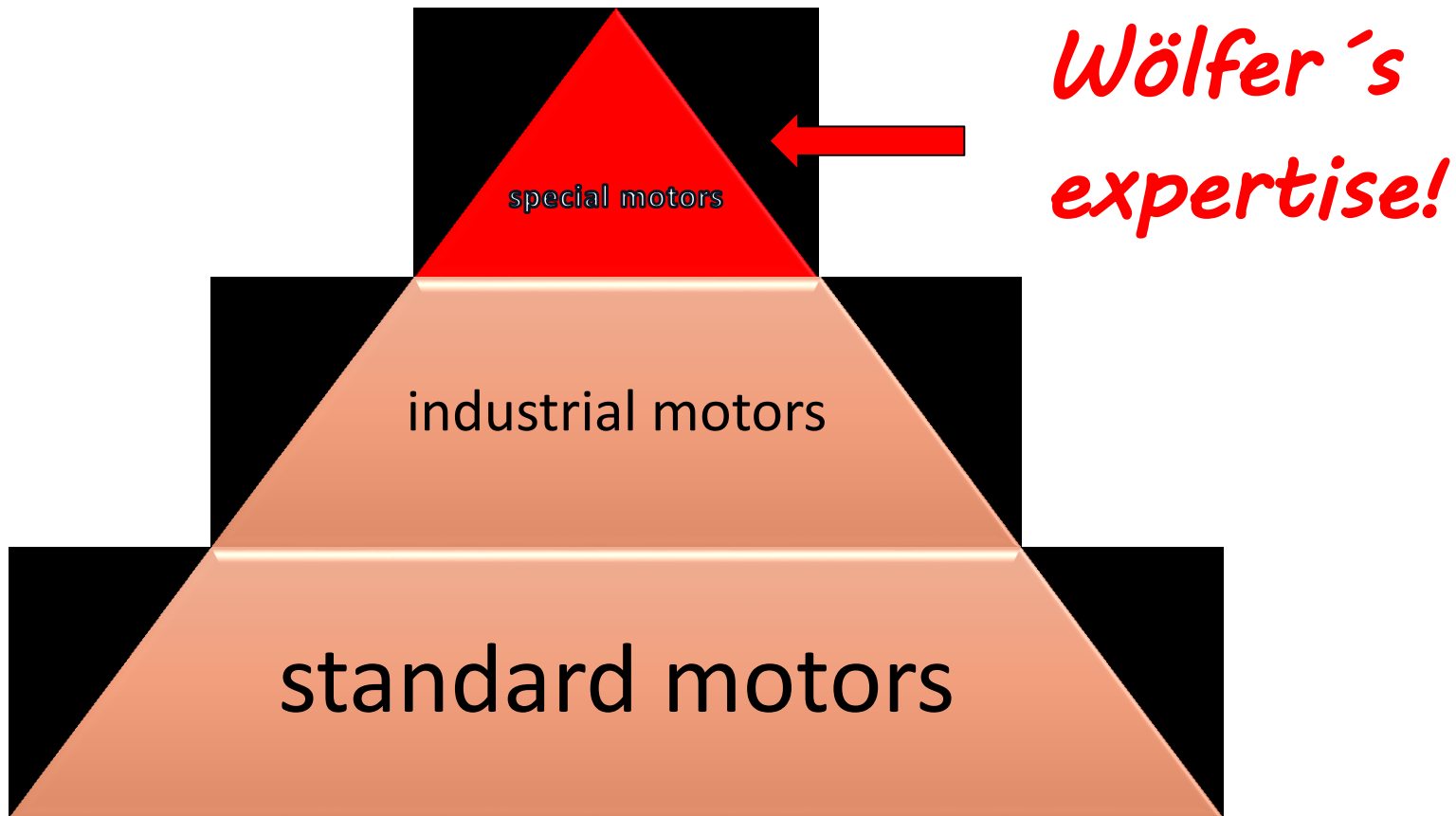
- **1945:** Founded by engineer Franz Wölfer
- **1955:** First slipring motors for lifting applications
- **1960:** First squirrel-cage motors
- **1985:** First squirrel-cage motors for inverter operation
- **2008:** New test field up to 2.100 kW
- **2019:** Wölfer becomes part of Menzel Group in Berlin
- **2022:** Launch of IP 68 motor design

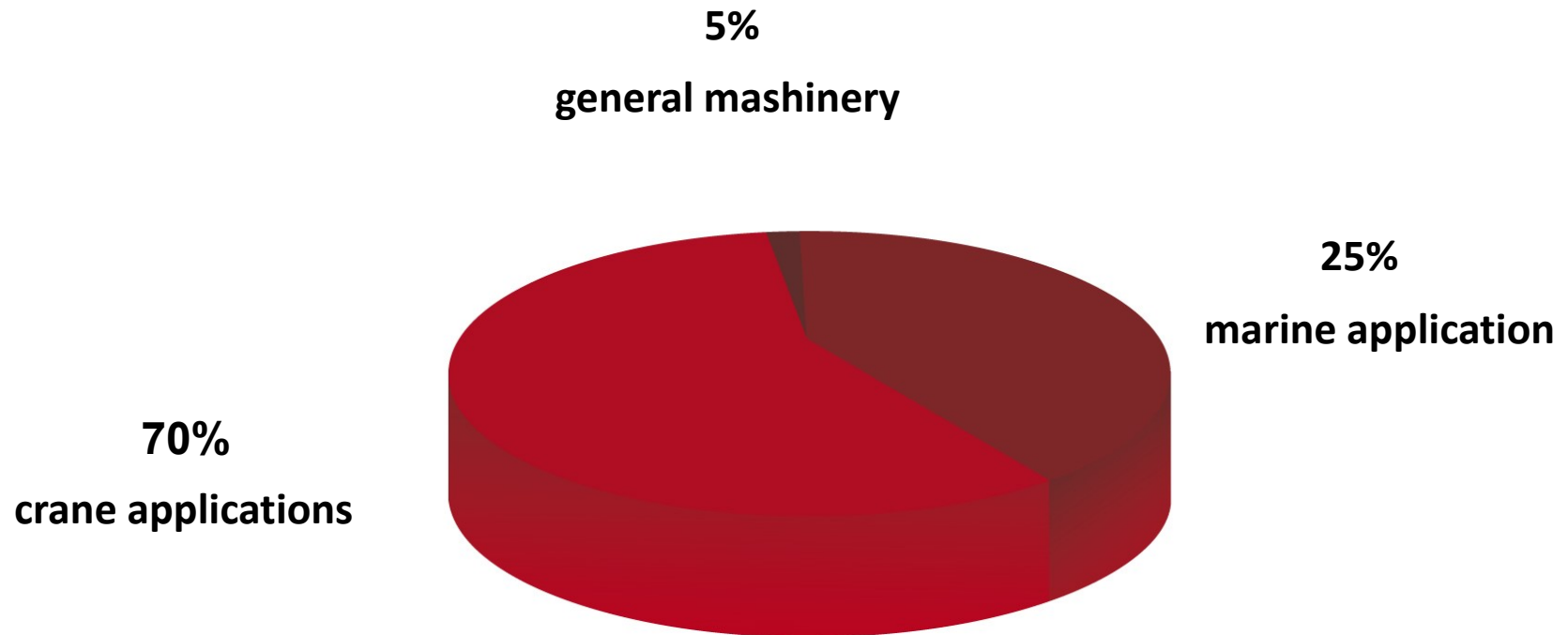
Wölfer becomes part of
Kairos Industries AG in Berlin



Turnover with markets in 2022 and 2018-2022







2

Applications
Products
Efficiency

Business Areas

Lifting Applications

Marine Applications

General Machinery

Container Cranes

Goliath Cranes

Tower Cranes

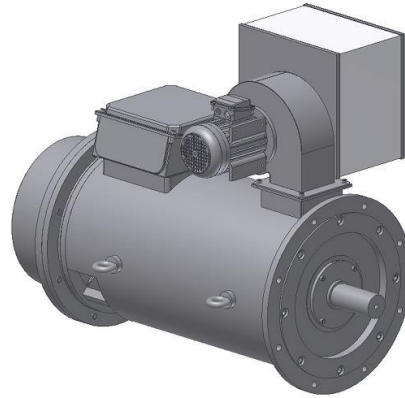
STS Cranes

RTG Cranes

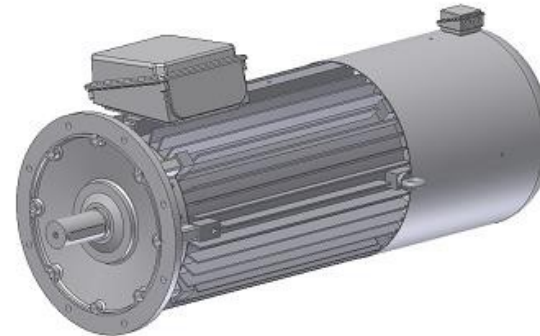
RMG Cranes

Straddle Carrier

IP 23
Inner cooled
Steel welded housing



IP 55/56
Outer cooled
Grey cast iron housing



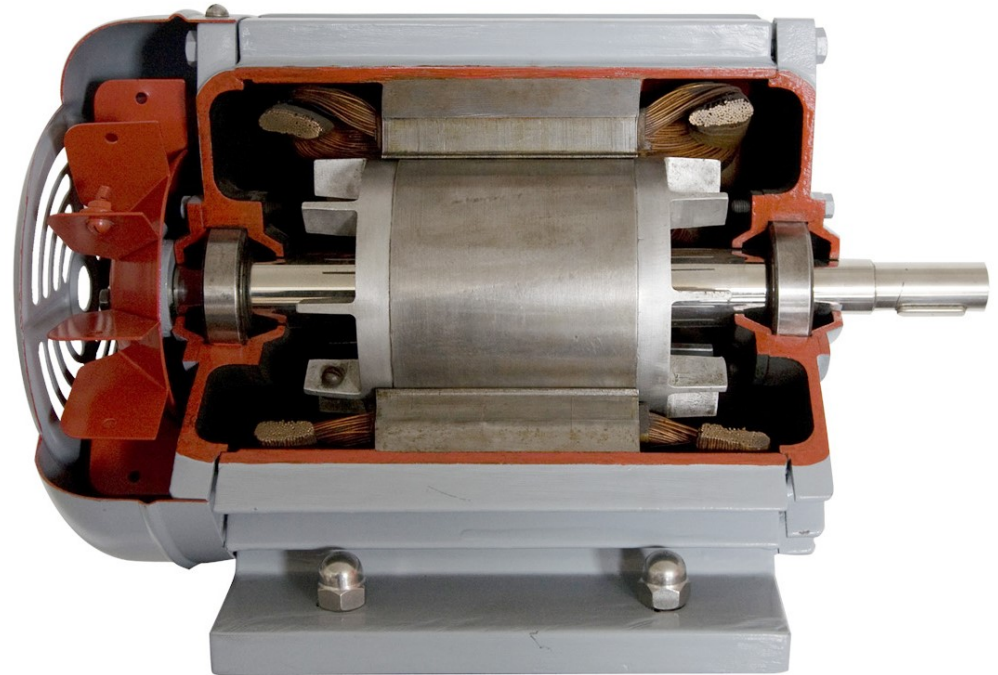
IP 66/68
Water cooled
Steel welded housing





- **Self ventilation**
(IC411 and IC01)
- **Forced ventilation**
(IC416 and IC06)
- **Without ventilation**
(IC410)
- **Air-air-cooler**
(IC616)
- **Air-water-heat-exchanger**
(IC86W)
- **Water cooled** (IC71W)

- Rated voltage up to 690 Volt
- Rated speed limited by mechanical carrying capacity, not by electrical parameter
- Insulation class F or H
- Available numbers of poles: 2, 4, 6, 8, 10, 12
- Duty cycles according to FEM
- Types of mounting according to IEC



- Special insulation system for inverter operation
- Special wires developed for frequency converter operation
- Resistance against partial discharges



Important constructive element - rotor, most special from Wölfer!

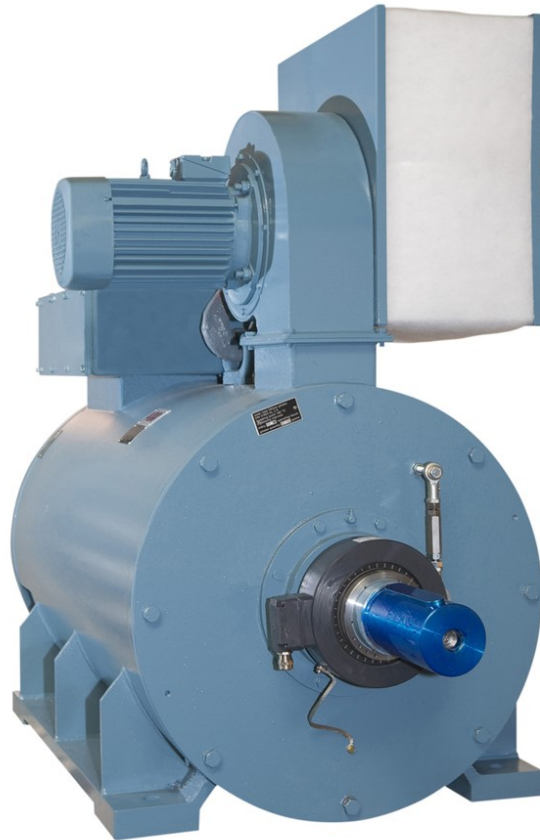


- Lowest moments of inertia
- High pull-out torques
- Excellent control qualities, in whole range of speed
- Shorter acceleration times
- Low current consumption

- Lower moment of inertia
- Shorter acceleration time
- Excellent control characteristics in whole range of speed



- Lower starting and operating currents
- Due to lower currents possible to use:
 - smaller cables
 - smaller inverters
- more moves of containers per hour!



- Brake
- Encoder (specified by customer)
- Forced ventilation
- Two shaft ends
- Anti-condensation heater
- All kind of winding protection
- Bearing monitoring
- Vibration monitoring
- Insulated bearings,
standard $\geq$ frame size 315
- Special grounding system

Comparison of 6 pole type, protection IP23, cooling IC06					
Competitor					
motor size	power (kW)	voltage (V)	current (A)	pull-out torque (%)	moment of inertia
355M	255	460	400	315	6
355L	290	460	450	319	6,7
355L	375	460	580	329	8,6
Wölfer					
280L	250	460	385	440	3,51
280X	300	460	465	405	4,6
315L	385	460	610	420	6,23
Competitor					
400M	450	460	706	352	8,2
400M	530	460	822	352	12,1
400L	560	460	880	370	14
Wölfer					
355L	480	460	815	440	8,2
355L	530	460	815	360	9,02
355L	580	460	910	400	9,84
Competitor					
450M	610	460	950	340	16,6
450L	700	460	1085	315	18,5
450L	760	460	1170	320	20,6
Wölfer					
355L	650	460	985	365	10,99
400L	700	460	1015	335	16,18
400L	750	460	1090	335	17,24

3 | References / Projects



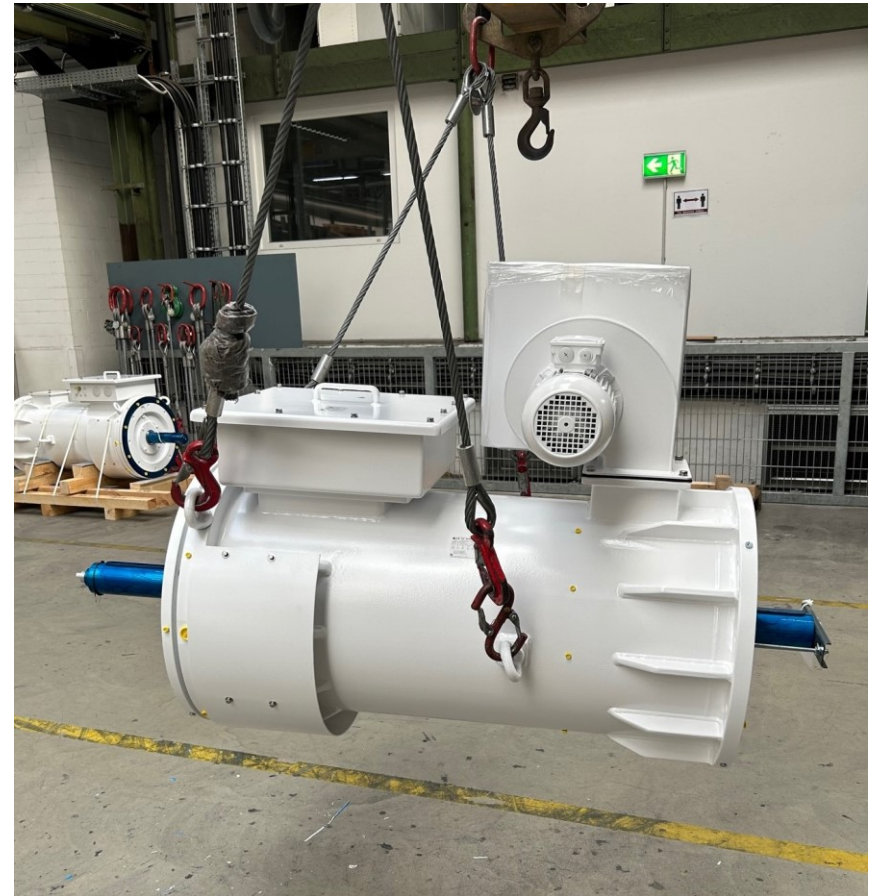
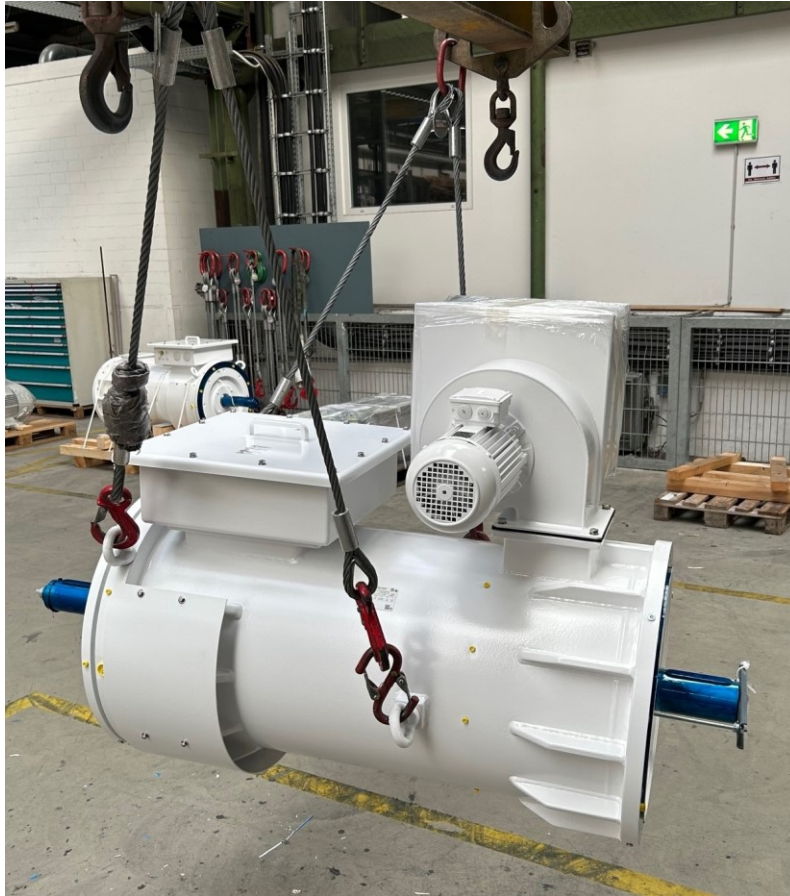


2x 10.000 t marine crane Huisman / Netherlands





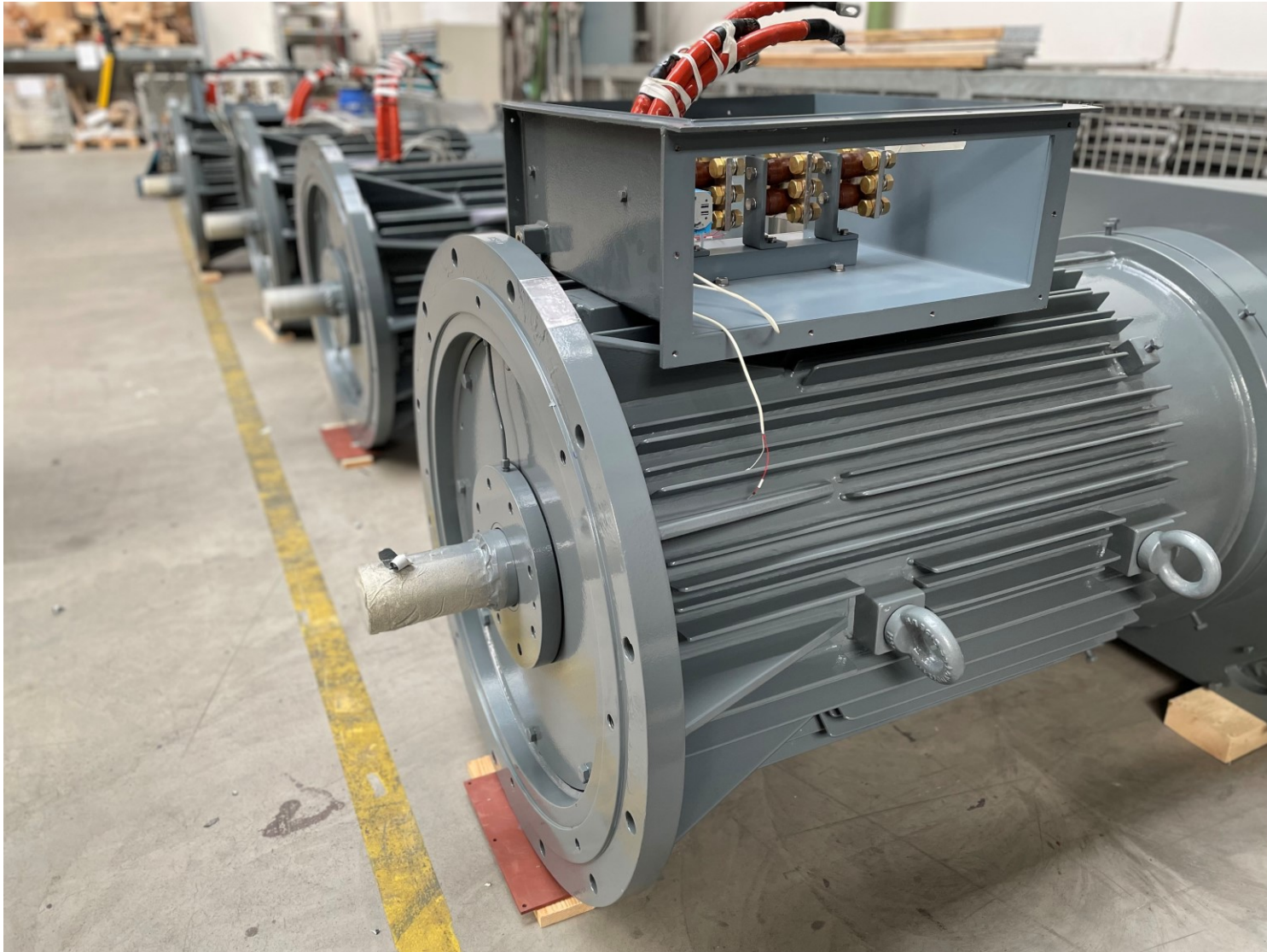
Around 150 motors installed





Swimming crane SC -14000XL for Japan







New caliver brake design for this application



Offshore application with C5 coating system







Hoist:

Motor type: ODRKF 355 L-6bbT

Power: 4 x 550 kW

Type of cooling: IC 06

Type of construction: IM B3

IP 23 Hoist motors type ODRKF 355L-6bbT – 4x 550kW



New cranes for Hamburg Port HHLA from ZPMC





Hoist:

Motor type: DRKF 315 L-6bbbT

Power: 1 x 210 kW

Type of cooling: IC 416

Type of construction: IM B5

Trolley:

Motor type: DRKO 180 M-4bSFB10HT

Power: 2 x 15 kW

Type of cooling: IC 410

Type of construction: IM V1

Gantry:

Motor type: DRKO 200 L-4bSFB25HT

Power: 4 x 30 kW

Type of cooling: IC 410

Type of construction: IM V1

Straddle Carrier for HHLA Port Hamburg



Woelfer hoist motor 190 kW





AGV – Kone (former Gottwald) - CTA -Hamburg, Germany



6x Heat exchanger motors 1150 kW for a special winch



Container crane for railroad



Stacker Reclaimer project in Port Louisiana



Franz Wölfer
Elektromaschinenfabrik Osnabrück GmbH
Tel 0049 (0)541/ 99022 – 0
Fax 0049 (0)541/ 99022 – 22
Email: info@woelfer-motoren.com

Drehstrom-Käfigläufermotoren für Frequenzumrichter

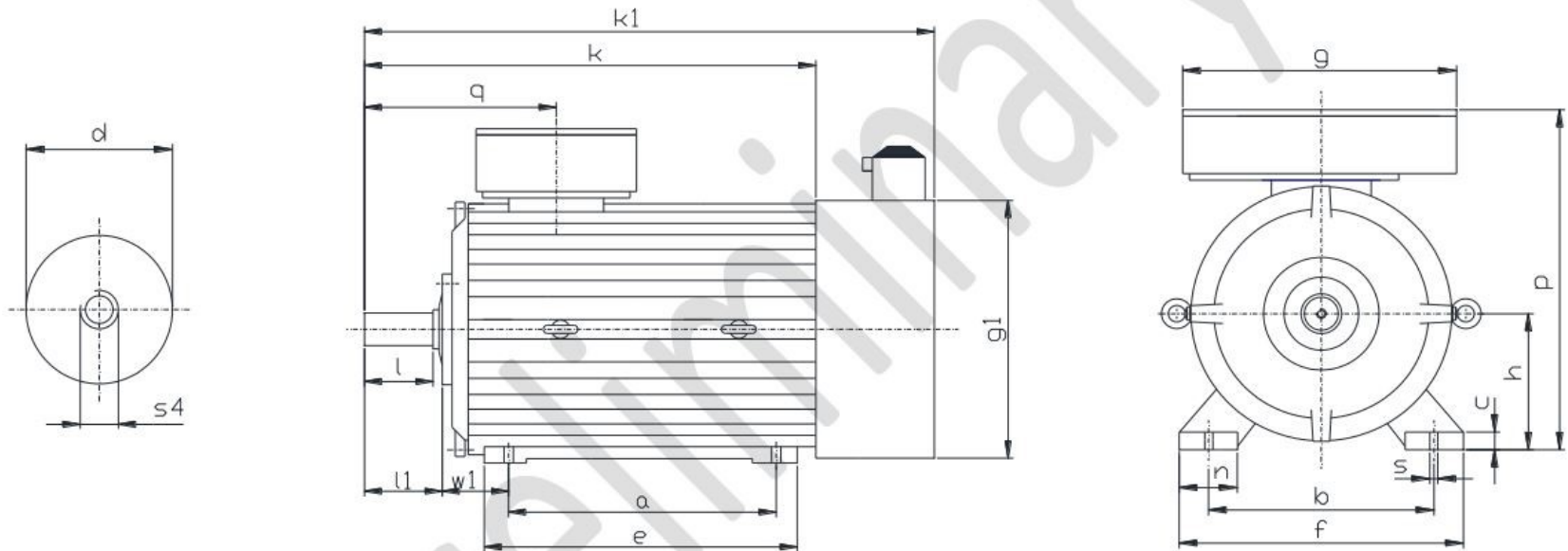
three phases low voltage squirrel cage motors for frequency converter

Enclosure IP 55

Schutzart

Mounting IM B3

Bauform



Alle Maße in Millimeter (Zoll) / All dimensions are in mm (inch)

female thread DIN 332D
tolerance range shaft end DIN 748 page3
up to Ø55mm"K6", over Ø55mm"m6"
fitting key to DIN 6885 page1

Innengewinde S4 nach DIN332D
Passungen für Wellenenden DIN 748 Bl.3
bis Ø55mm"K6, über Ø55mm"m6"
Paßfeder nach DIN 6885 Bl.1

Type	a	b	c	e	f	g	ll	k	k1	p	q	h	w1	n	s	l	d	s4
DDRKf 200Z – 4	717,5	317,5	25	790	398	415	140	1070	1600	615	410	200	146	80	Ø20	127	60	M20
	28.25	12.5	0.98	31.1	15.67	16.33	5.5	42.1	63	24.2	16.14	7.87	5.75	3.15	Ø0.69	5	2.36	

Datum: 10.03.2022

Zg.Nr.: MK2001155



Three phase low voltage squirrel cage motor
Drehstrom-Käfigläufer-Motor
for frequency converter
für Umrichterbetrieb

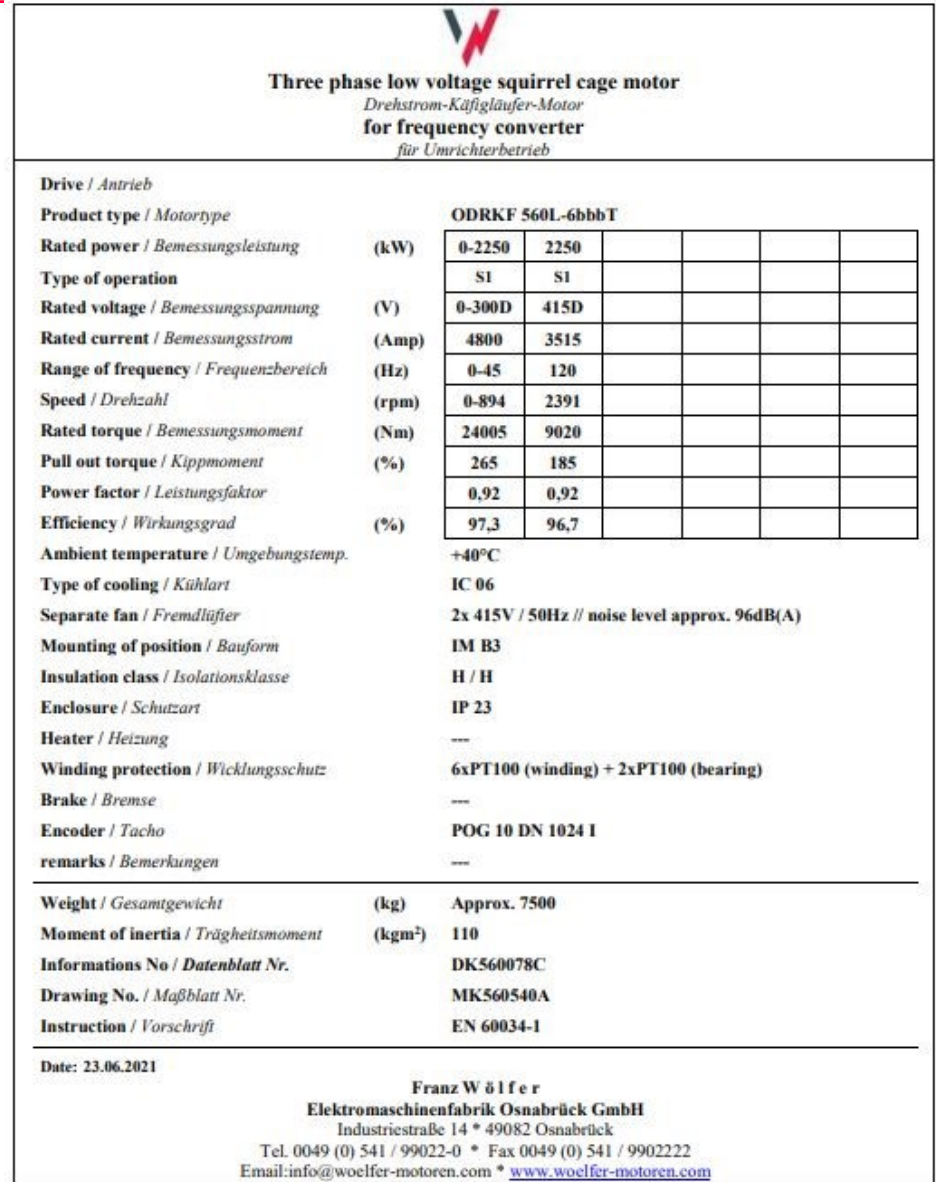
Drive / Antrieb		DRKF 200Z-4			
Product type / Motortype					
Rated power / Bemessungsleistung	(kW)	135	135		
Type of operation		S3-60%	S3-60%		
Rated voltage / Bemessungsspannung	(V)	460Y	460Y		
Rated current / Bemessungsstrom	(Amp)	195	195		
Range of frequency / Frequenzbereich	(Hz)	60	120		
Speed / Drehzahl	(rpm)	1750	3495		
Rated torque / Bemessungsmoment	(Nm)	735	365		
Pull out torque / Kippmoment	(%)	375	190		
Power factor / Leistungsfaktor		0,94	0,94		
Efficiency / Wirkungsgrad	(%)	92,6	92,0		
Height of installation / Aufstellhöhe		< 1000 m above sea level			
Insulation class / Isolationsklasse		F			
Ambient temperature / Umgebungstemp.		-15°C to +40°C			
Type of cooling / Kühlart		IC416			
Separate fan / Fremdlüfter		400V / 50Hz			
Mounting of position / Bauform		IM B3			
Enclosure / Schutzart		IP 55			
Heater / Heizung		---			
Winding protection / Wicklungsschutz		3xNC180°C			
Brake / Bremse		---			
Encoder / Tacho		---			
remarks / Bemerkungen		---			

Weight / Gesamtgewicht	(kg)	Approx.
Moment of inertia / Trägheitsmoment	(kgm²)	Approx. 0,6
Informations No / Datenblatt Nr.		DK2001038
Drawing No. / Maßblatt Nr.		MK200
Instruction / Vorschrift		IEC (DIN-EN) 60034-

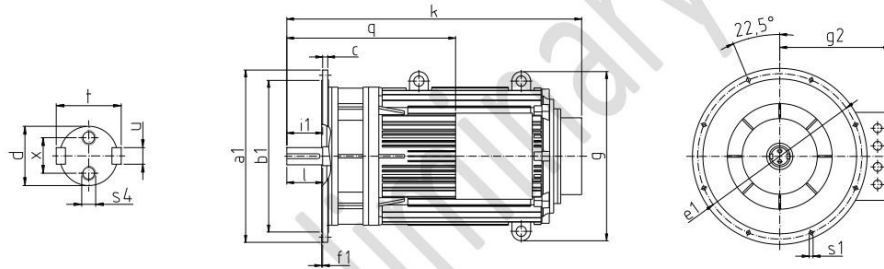
Date: 07.03.2022

Franz Wölfer
Elektromaschinenfabrik Osnabrück GmbH
 Industriestraße 14 * 49082 Osnabrück
 Tel. 0049 (0) 541 / 99022-0 * Fax 0049 (0) 541 / 9902222
 Email: info@woelfer-motoren.com * www.woelfer-motoren.com

Technical data are issued to change / Technische Änderungen vorbehalten



Franz Wölfel Elektromaschinenfabrik Osnabrück GmbH Tel 0049(0)541/ 99022-0 Fax 0049(0)541/ 99022-22 Email: info@woelfel-motoren.com	Three phase low voltage squirrel cage motor <i>Drehstrom-Käfigläufer-Motor</i>	Enclosure: IP 68 Schutzart Mounting: IM V1 Bauform
--	--	---



Alle Maße in Millimeter / all dimensions are in mm

female thread DIN 332D
 tolerance range shaft end DIN 748 page3
 up to Ø55mm"46", over Ø55mm"m6"
 fitting key to DIN 6885 page1
 n1=number of flange holes
 flanges to DIN 42948

Innengewinde S4 nach DIN332D
 Passungen für Wellenenden DIN 748 Bl.3
 bis Ø55mm"46", über Ø55mm"m6"
 Paßfeder nach DIN 6885 Bl.1
 n1=Anzahl der Flanschlöcher
 Befestigungsflansche nach DIN 42948

Type	a1	b1	c	e1	f1	g	g2	i1	k	n	q	s1	d	l	u	t	s4
DRKO 400L - 12	1000	880	30	940	6	985	640	210	1730	8	1020	22	100	210	28	112	M24
													x				
													60				

Datum: 17.11.2021
 Zg.Nr.:MK4001078

Three phase low voltage squirrel cage motor
Drehstrom-Käfigläufer-Motor
for frequency converter
für Umrichterbetrieb

Drive / Antrieb	TPKR500			
Product type / Motortype	DRKO 400L-12			
Rated power / Bemessungsleistung (kW)	75			
Type of operation	S1			
Rated voltage / Bemessungsspannung (V)	400D			
Rated current / Bemessungsstrom (Amp)	140			
Range of frequency / Frequenzbereich (Hz)	50			
Speed / Drehzahl (rpm)	492			
Rated torque / Bemessungsmoment (Nm)	1450			
Pull out torque / Kippmoment (M _k /M _n)	2,3			
Starting torque / Anlaufmoment (M _A /M _n)	1,3			
Pullup torque / Sattelmoment (M _S /M _n)	1,0			
Starting current / Anlaufstrom (I _A /I _N)	5,3			
	100%	125%	75%	50%
Power factor / Leistungsfaktor	0,84	0,85	0,80	0,71
Efficiency / Wirkungsgrad (%)	94,1	93,4	94,2	93,7
Ambient temperature / Umgebungstemp.	-15°C to +40°C			
Installation altitude / Aufstellhöhe	< 1000m above sea level			
Type of cooling / Kühlung	IC410 / noise level max. 80dB(A)			
Separate fan / Fremdlüfter	---			
Mounting of position / Bauform	IM V1			
Insulation class / Isolationsklasse	F / B			
Enclosure / Schutzart	IP 68			
Heater / Heizung	---			
Winding protection / Wicklungsschutz	3xPTC 155°C			
Starting time / Hochlaufzeit	2,8 s			
Encoder / Tacho	---			
remarks / Bemerkungen	Zulässige Anläufe / h: aus betriebswarmen Zustand: 12 aus kaltem Zustand: 14			
Weight / Gesamtgewicht (kg)	Approx. 2900			
Moment of inertia / Trägheitsmoment (kgm ²)	33,89			
Informations No / Datenblatt Nr.	DK400893A			
Drawing No. / Maßblatt Nr.	MK4001078			
Instruction / Vorschrift	IEC (DIN-EN) 60034-1			

Date: 27.01.2022

Franz Wölfel
 Elektromaschinenfabrik Osnabrück GmbH
 Industriestraße 14 * 49082 Osnabrück
 Tel. 0049 (0) 541 / 99022-0 * Fax 0049 (0) 541 / 9902222
 Email: info@woelfel-motoren.com * www.woelfel-motoren.com

Technical data are issued to change / Technische Änderungen vorbehalten

Thank you for your attention !