
SCHORCH

Technology with drive

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THE COMPANY

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SCHORCH Profile

Turnover

92 Million €

Employees

551

Year of foundation

1882

Ownership

Member of
ATB-Group (Austria)

Main market segments

- Oil & Gas
- Petrochemicals & Chemicals
- Power Generation
- Steel & Metal
- Water Supply & Irrigation
- Shipbuilding
- Material Handling & Recycling
- Test Benches
- Tunnel

Activities

- Three- Phase Asynchronous Machines -
Low-voltage up to 4,000 kW
- Three- Phase Asynchronous Machines -
High-voltage up to 25,000 kW
- Drive Systems and System Engineering
- Maintenance and repair service

Schorch is one of the leading manufacturers in the field of electrical machines.

SCHORCH History

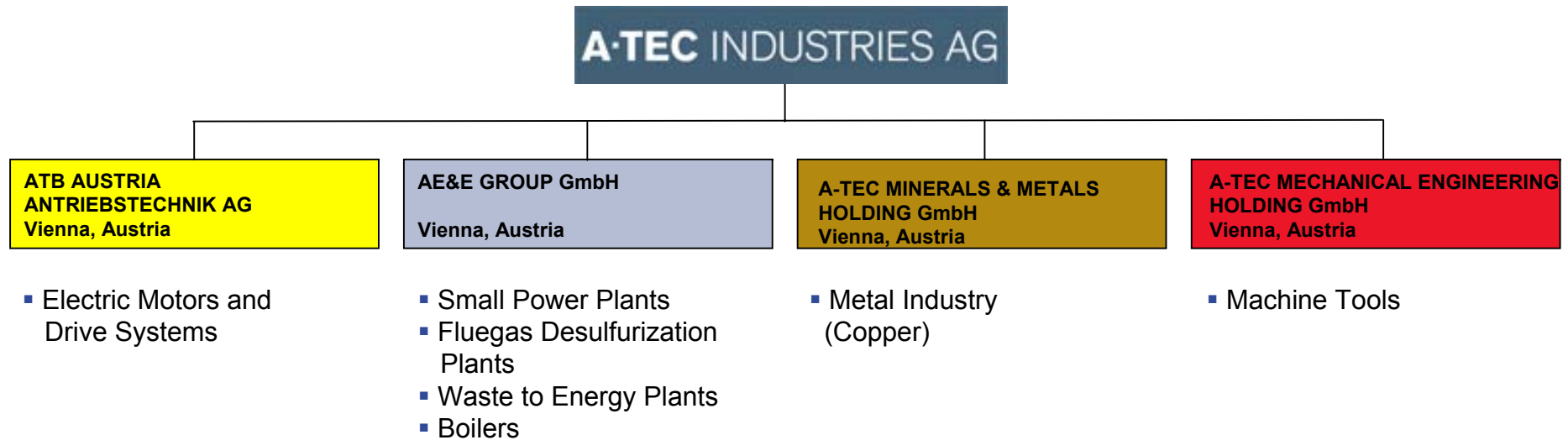
- 1882** Foundation of the company Max Schorch & Cie, Rheydt. Manufacturing of wiring accessories, arc lamps, dynamos, planning and delivery of electrical equipment.
- 1900** The company is converted into a joint stock company. SCHORCH specializes in the manufacture of electrical machines.
- 1925** Majority of shares Deutsche Continental-Gas Gesellschaft of Dessau.
- 1959** SCHORCH, together with other electrical firms, is merged into the Continental Elektroindustrie AG.
- 1964** Bergmann Group acquires a share of Continental Elektroindustrie AG.
- 1989** Röchling Industrierwaltung GmbH, Mannheim takes over the Bergmann group.
- 1990** SCHORCH - a subsidiary of AEG Aktiengesellschaft, Berlin and Frankfurt
- 1995** SCHORCH GmbH is separated into AEG-Schorch Transformatoren GmbH (legal successor) and Schorch Elektrische Maschinen und Antriebe GmbH
- 1996** SCHORCH Elektrische Maschinen und Antriebe GmbH becomes a subsidiary of Elexis Elektroholding GmbH, Frankfurt.
- 2001** SCHORCH Elektrische Maschinen und Antriebe GmbH is acquired by Lindeteves-Jacoberg Ltd., Singapore
- 2006** ATB Austria acquires the majority of shares in Lindeteves-Jacoberg Ltd., Singapore
- 2007** 125th anniversary of SCHORCH

Staff Structure

Employees	
Management	1
Financial Accounting / Personnel / IT	23
Purchasing and Logistics	34
Production / Service	376
Engineering, Design and Research / Quality Assurance	58
Sales / Marketing	50
Trainees	9
Total	551



A-TEC Organization



Schorch Headquarters



Moenchengladbach / Germany

Certification



Certification

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

PTB



(1) **Production Quality Assessment Notification**
(Translation)

(2) Equipment or protective systems or components intended for use in potentially explosive atmospheres - Directive 94/9/EC

(3) Notification number: **PTB 99 ATEX Q008-3**

(4) Product group(s): Low- and high voltage asynchronous motors in the decisive types of protection increased Safety "e", Flameproof Enclosure "d" and Pressurized Enclosure "p" as well as dust protection by enclosure

A list of the EC-Type Examination Certificates covered by this notification is held by the notified body.

(5) Applicant: Schorch Elektrische Maschinen und Antriebe GmbH
Breite Straße 131, 41239 Mönchengladbach, Germany

(6) Actual manufacturer: Schorch Elektrische Maschinen und Antriebe GmbH
Breite Straße 131, 41239 Mönchengladbach, Germany

(7) The Physikalisch-Technische Bundesanstalt (PTB), Notified Body No. 0102 for Annex IV in accordance with Article 9 of the Council Directive 94/9/EC of March 23, 1994 notifies the applicant that the actual manufacturer has a production quality system in compliance with the Annex IV to the Directive.

(8) This notification is based on the confidential audit report No. 09-38034, issued on April 04, 2003. This notification is valid until March 18, 2011 and can be withdrawn if the actual manufacturer no longer satisfies the requirements of Annex IV.

Results of periodical reassessments of the quality system are part of this notification.

(9) According to Article 10 (1) of Directive 94/9/EC the CE marking shall be followed by the identification number 0102 of PTB as the Notified Body involved in the production control stage.

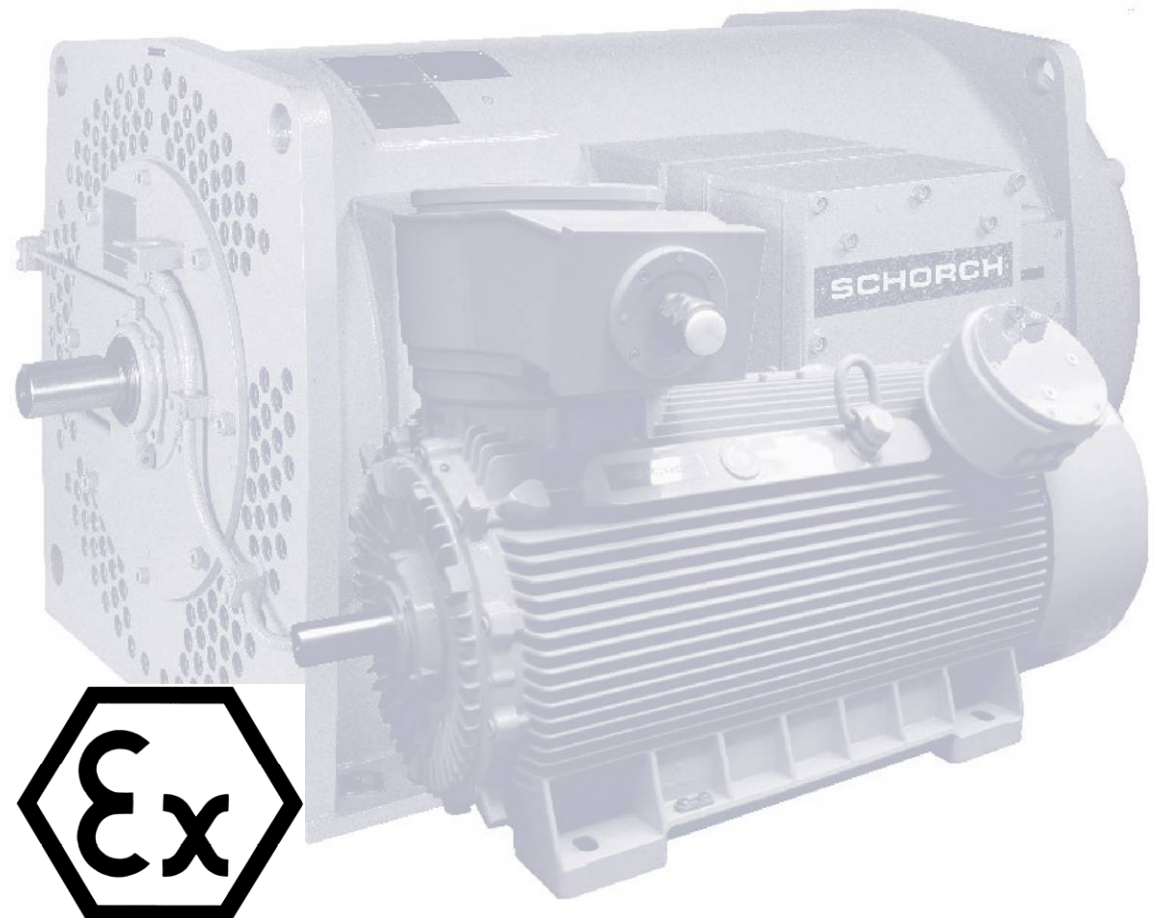
Zertifizierungsstelle für Arbeitsschutz
By order: 
Dipl.-Ing. M. Grottel

Braunschweig, May 05, 2008



Sheet 1/1

Notifications without signature and official stamp shall not be valid. The notification may be circulated only without alteration. Extracts or alterations are subject to rejection by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.
Physikalisch-Technische Bundesanstalt, Bundesallee 100, 38116 Braunschweig, Germany



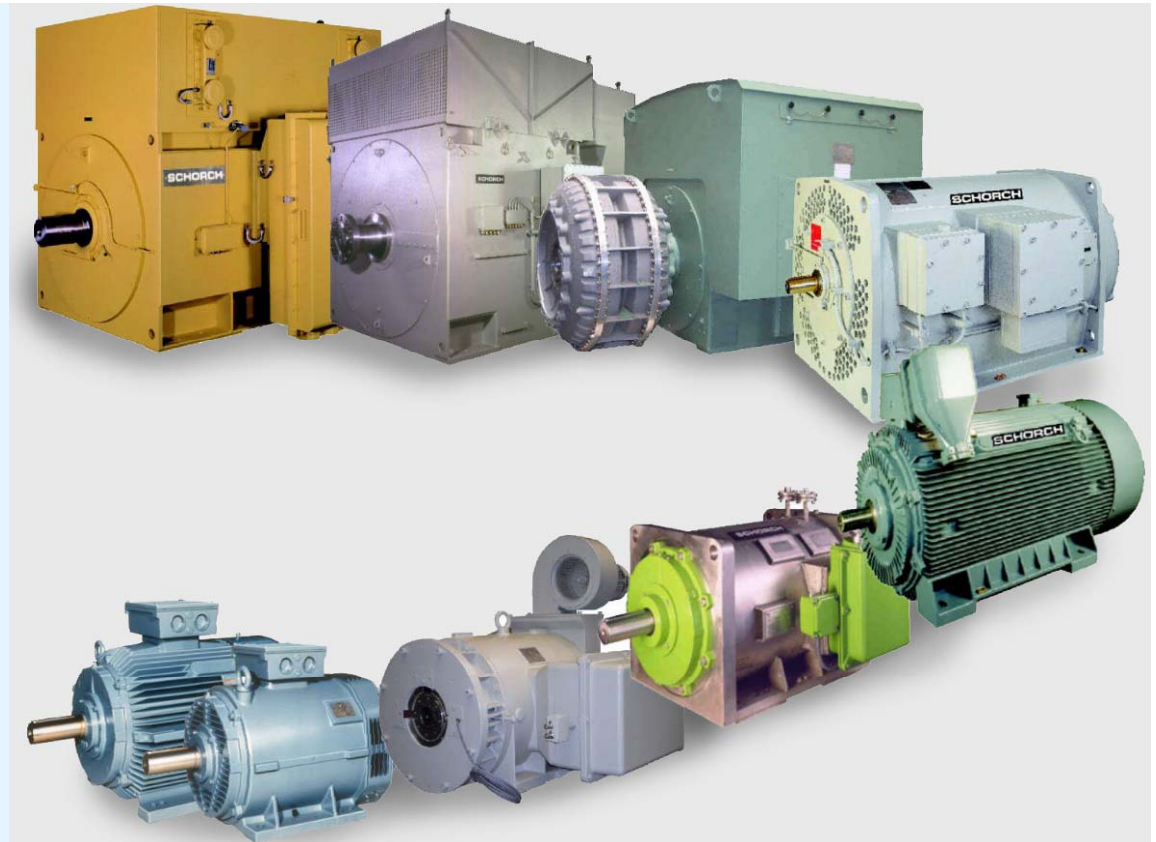
Production quality system
explosion-protected machines

International Sales Organization



PRODUCT PORTFOLIO

- Low-voltage asynchronous machines
- High-Speed Machines
- High-voltage asynchronous machines
- Explosion-protected machines
- Drive Systems and System Engineering



Product portfolio low-voltage asynchronous machines

Surface-ventilated machines

Basic design
Explosion-protected Ex e, Ex n
Frame sizes: 63 – 560
Power Range: 0.18 – 2,000 KW

**Branches:**

- Oil & Gas
- Petrochemicals
- Industry

Applications:

- Pumps, Compressors, Fans

Explosion-protected Ex de, Ex d
Frame sizes: 63 – 450
Power Range: 0.18 – 630 KW

**Branches:**

- Oil & Gas
- Petrochemicals

Applications:

- Pumps, Compressors, Fans

Water- jacket-cooled machines
Frame sizes: 250 – 500
Power Range: 45 – 1,500 KW

**Branches:**

- Petrochemicals
- Shipbuilding

Applications:

- Plastic Machines, Pumps

Internally ventilated machines

Frame sizes: 180 – 400
Power Range: 30 – 1,300 KW

**Branches:**

- Shipbuilding
- Food Industry

Applications:

- Refrig. Compressors

High-Speed Machines

Test bench applications
(for Engines, Gear boxes, Power trains, Rolling roads)

**IP23
Engine**

Frame sizes: 180-400
Power range: 50 up to 1,000 kW
Speed: up to 15,000 rpm

**IP23
Gear box**

Frame sizes: 315-710
Power range: 100 up to 4,000 kW
Speed: up to 4,000 rpm

Industrial applications
(for Compressors, Pumps)

IP23

Frame sizes 180-315
Power range: 100 up to 400 kW
Speed: up to 9,000 rpm



Product portfolio high-voltage asynchronous machines

Surface-ventilated machines

Basic design

Explosion-protected Ex e, Ex n

Power range: 180 – 17,000 kW



Explosion-protected Ex de, Ex d

Power range: 180 – 10,000 kW

Explosion-protected Ex p

Power range: 180 – 20,000 kW



Internally ventilated machines

Power range: up to 25,000 kW

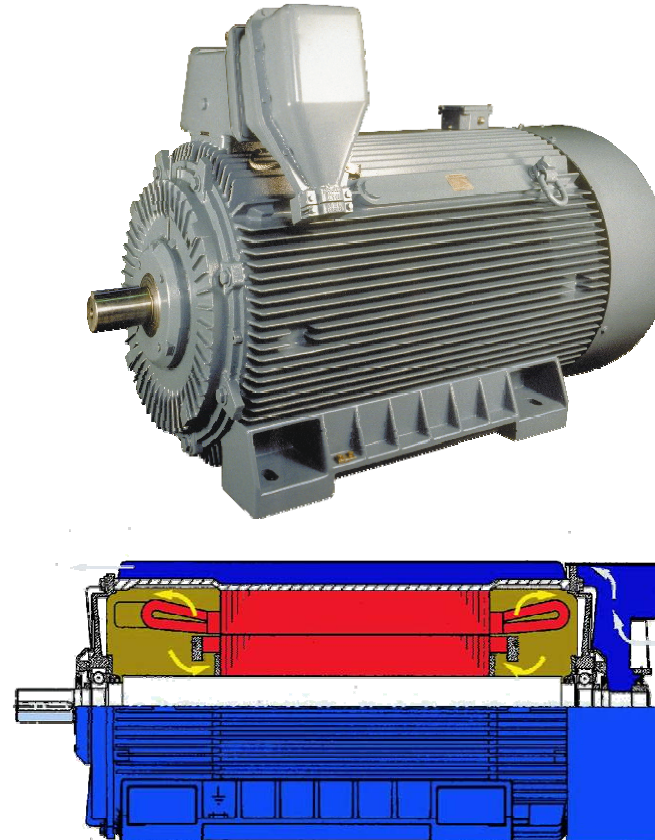
Option: Ex p – water-cooled



High-voltage asynchronous machines



Pump drive, 800 kW, 6 kV
1493 rpm

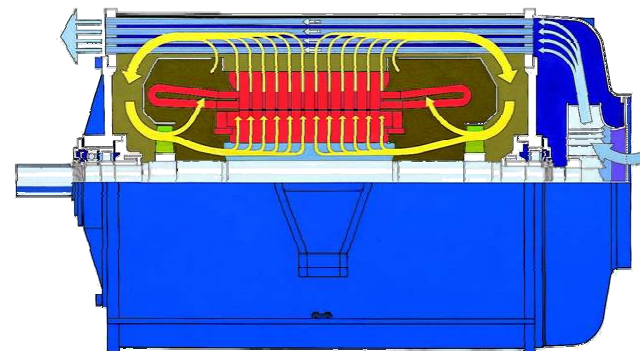
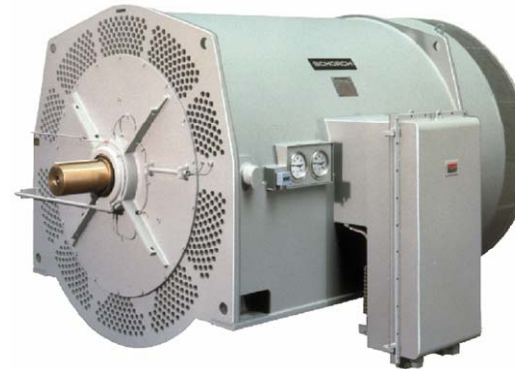


IP55, cast iron, shaft centre heights 355- 560;
Outputs 180 to 2,000 KW

High-voltage asynchronous machines



Pump drive, 2,250 kW, 6.3 kV
and 1492 rpm

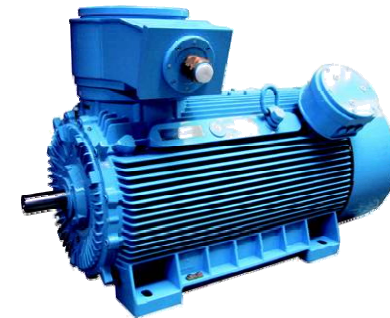


IP54, tube cooled
Outputs from 1,900 to 17,000 kW

High-voltage asynchronous machines



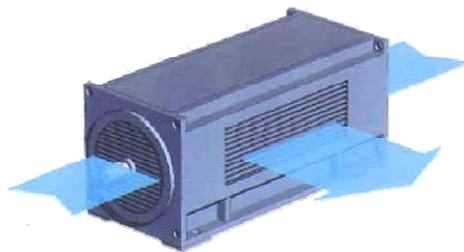
Drive for crude oil pumps, EExd(e) IIB T4, 1,500 kW, 10 kV, 1,490 rpm



IP55 Explosion-protected (flameproof),
Outputs from 180 to 10,000 kW

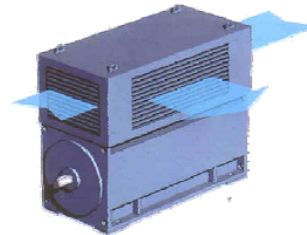
High-voltage asynchronous machines

Compact design (Outputs up to 1,500 kW)

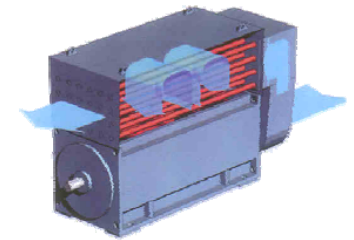


IP23, IC01

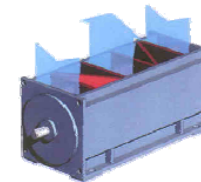
Modular design (Outputs up to 25,000 kW)



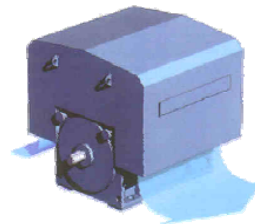
Top-mounted air guide cover,
IP23, IC01, for outputs up
to 7,000 kW



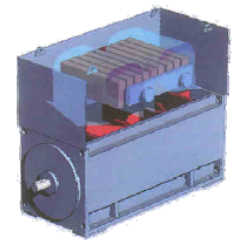
Top-mounted air/air tube-type
heat exchanger, IP54/55, IC611,
for outputs up to 17,000 kW



Standard frame



Top-mounted weather protection
hood, IPW24, IC01, for outputs
up to 15,000 kW



Top-mounted water/air heat
exchanger, IP54/55, IC81W,
for outputs up to 25,000 kW

Explosion-protected machines

Certification of flameproof motors

Extension of the certified range

Prod. Code		IIB	IIC
54	-	☺	
58	☺	☺	
60	☺	☺	
65	☺	☺	
68	☺	☺	
69	☺	☺	



Portfolio Drive Systems and System Engineering

Engineered drive solutions tailored to your specific requirements

- Plug-in units and cabinets ready for connection
- for 1 Q and 4 Q operation
- 6 and 12-pulse versions
- for mains voltages from 380 V to 1,000 V and above

Selected fields of application

- mechanical engineering (e.g. centrifuges, test benches)
- compressors, pumps, fans
- installations (e.g. cement, chemicals)
- utilities, electricity boards

Tailor-made system engineering from one and the same supplier

- We offer tailor-made solutions for a wide variety of applications in the field of electrical drives.



MAIN MARKET SEGMENTS

- Oil & Gas
- Petrochemicals & Chemicals
- Power Generation
- Steel & Metal
- Water Supply & Irrigation
- Shipbuilding
- Material Handling & Recycling
- Test Benches
- Tunnel



Oil & Gas

- Oil Production (On - & Offshore)
- Pipeline / Pumping Stations
- Refining
- Gas Processing (LNG, GTL, etc)
- Gas Storage



Oil & Gas – Oil Production

Customer: Wirth Maschinen- und Bohrgeräte-Fabrik GmbH
Drive: Mud pump for use on drilling platforms

Technical data

Type: KL6035B-EN06
 Output: 1,655 kW
 Fed by: Water-cooled IGBT-frequency converter
 Voltage: 690 V
 Speed range: 40 - 1,200 rpm at constant load torque
 Protection: IP56
 Explosion-protected: EExe II T3
 Power transmission: Via 2 shaft ends with sprocket wheel
 Design in accordance with NORSOK and DNV

References

SNORRE B
Norsk Hydro

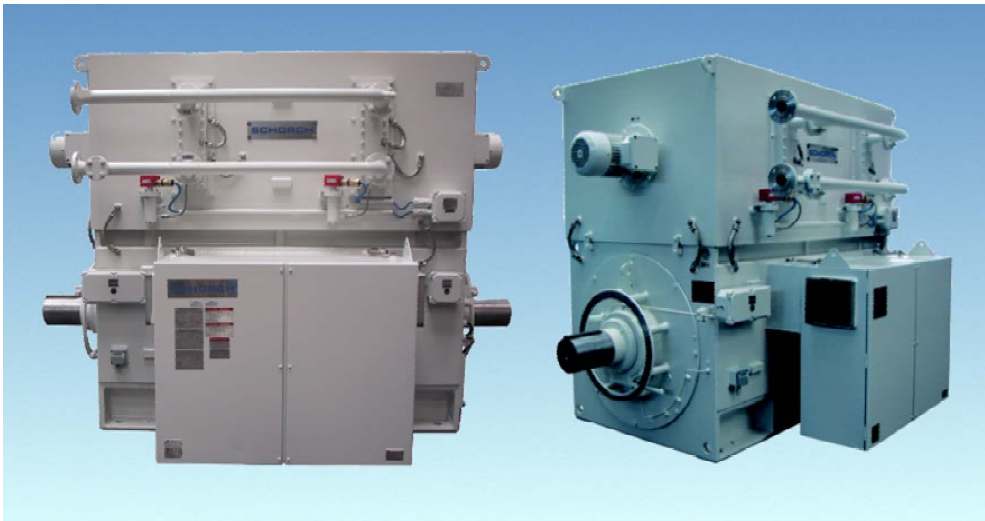
VALHALL
BP Amoco

RINGHORN
Esso

KVITEBJØRN
Statoil

MAERSK
A.P. Møller

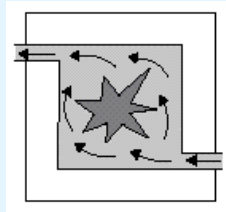
OSEBERG C
Norsk Hydro



Oil & Gas – Refining

Type of Protection

Pressurized apparatus ,p‘



Standards

DIN EN 50 016
VDE 0170/0171 Teil 3.

Philosophy

The entry of an explosive atmosphere into the enclosure of an electrical apparatus is prevented by maintaining a protective gas at a higher pressure than that of the surrounding atmosphere inside the enclosure.



Customer: MOL Hungarian Oil & Gas Co.
User: Dresser-Rand S.A. France
Driven machine: Reciprocating compressor

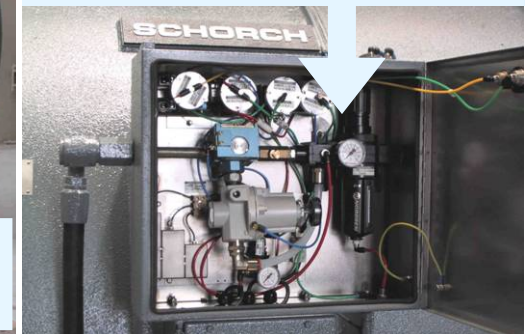
Motor type: KR7235K-PA16
Degree of protection: IP55
Type of protection: EEx pe II T4
Construction: IM B2
Output: 1,640 kW
Voltage: 6,000 V
Speed: 375 rpm
Mass: 19 t



Safety and outlet valve
for purging

Automatic EExp pressurization system for the motor enclosure

Monitoring of purging with
automatic leakage
compensation



Oil & Gas – Refining

Customer: Worthington S.p.A.
Plant: Sumed for Refinery Midor, Alexandria
Driven machines: Crude oil pumps
Type: KR6834H-EK04
Output: 2,160 kW
Service Factor: 1.15
Voltage: 11,000 V
Speed: 1,490 r.p.m.
Degree of protect.: IP55
Typ of protection: EEx ed II T3
Construction: IM V1

Final assembly, preparation for shipment



Full-load test in horizontal position



Design features:

Motor EExe, terminal boxes EExd; neutral CT in separate box; DE with non-reverse backstop; NDE with cylindrical-roller thrust bearing and oil-lubricated self-aligning roller thrust bearing for taking up the pump load of 3 t.

DE with non-reverse backstop



NDE with self-aligning roller thrust bearing



Assembly of the NDE cylindrical-roller thrust bearing



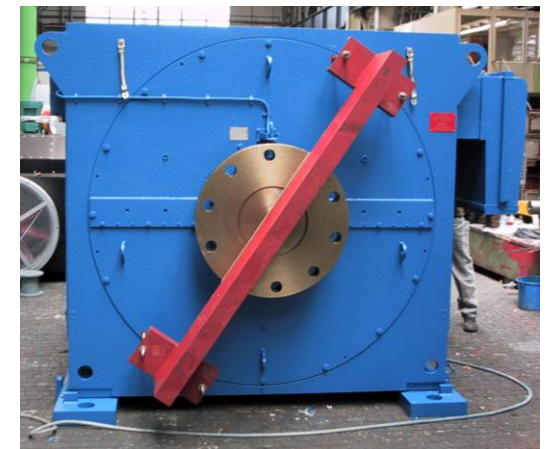
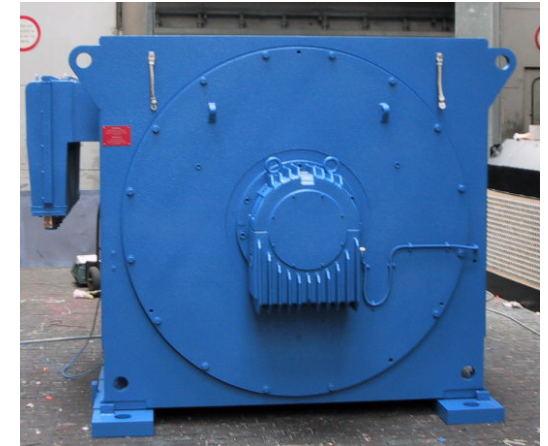
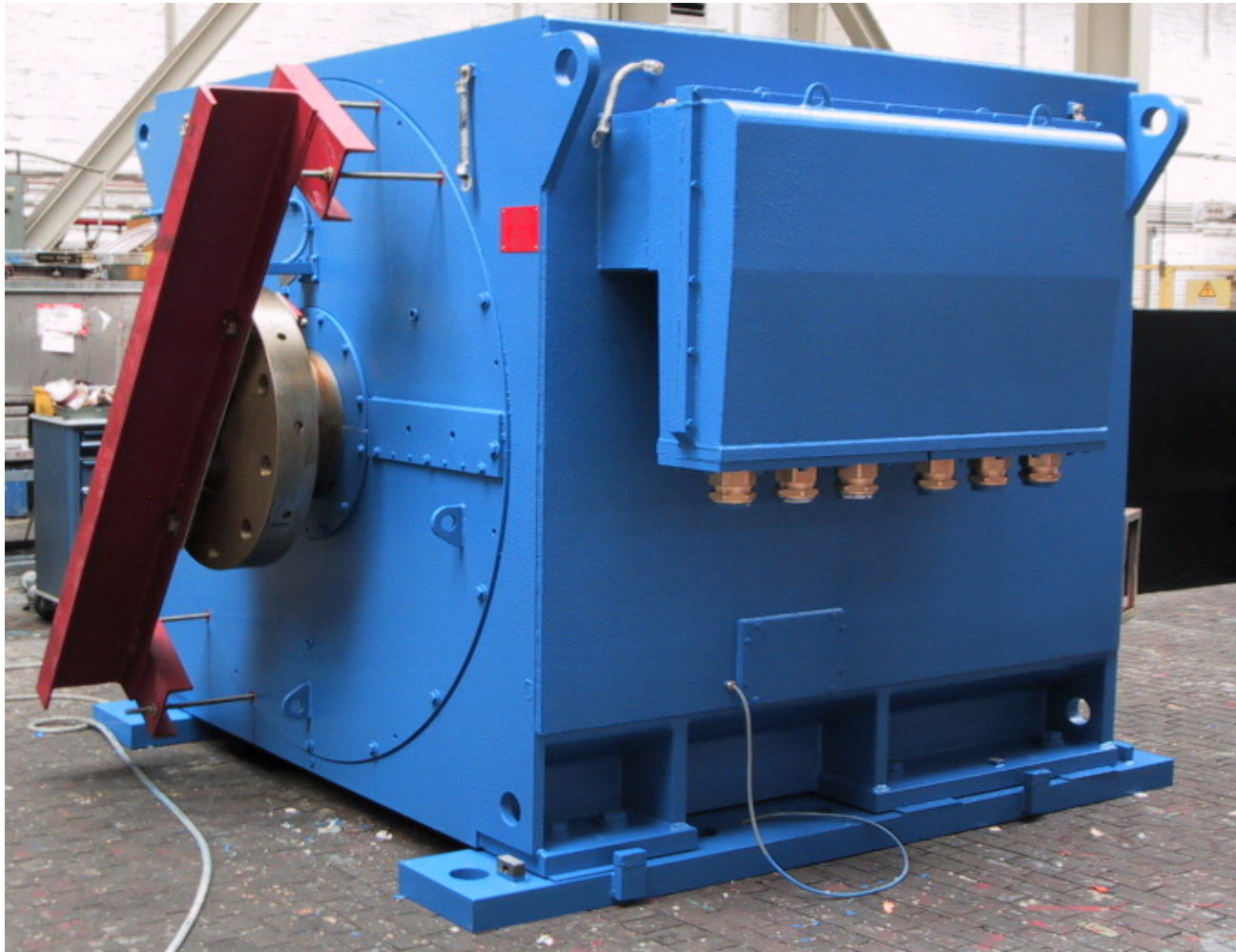
Oil & Gas – Gas cavern storage (1)

Installation:	Electrical equipment for cavern storage, Reckrod (Near Fulda, Germany)
End user:	Gasunion, Frankfurt
Customer:	PLE Pipeline Engineering, Essen
Motor customer:	Neuman & Esser
Driven machine:	Reciprocating compressor
Short description:	A cavern storage is a subterranean gas storage. Due to the weak power supply at site and to avoid current ripple caused by the reciprocating compressor, a converter-fed system was used.

Scope of Supply

Drive	Frequency converter	Transformer	Additional services rendered
2 converter-fed three-phase asynchronous motors	2 current source DC-link converters	2 cast-resin double-tier transformers	- Delivery and erection of an intermediate space for the converter cables - Ventilation system to dissipate the frequency converter heat loss - Complete installation of cable system, erection and putting into operation
Type: KR 7531K-EZ14 Protection: IP55, EEx e II T2 Construction: IM B2 Output: 1,900 kW Voltage: 2x920 V Current: 2x770 A Frequency: 58.4 Hz Speed: 498 rpm Mass: 24 t Add.-J: 2,790 kgm ²	Power: 2,962 kVA Voltage: 2x950 V Current: 2x900 A Frequency: 0 to 58.4 Hz	Power: 2,800 kVA Voltage: 20/1 kV	

Oil & Gas – Gas cavern storage (2)



Oil & Gas – Selected References

Customer	Country	Application	Location	Enduser/Project	Type of Motor	Power kW	Speed rpm	Voltage V	Qty
Aker Kvaerner	Denmark	Pump	Mongstad/Norway	Statoil	KD2358XBH41E	315	1500	6000	8
Burckhardt Compression	Switzerland	Compressor	Saudi Arabia	IBN ZAHR III	KU7840GPL20	2300	360	13200	1
Converteam GmbH	Germany	ID Fan	Austria	OMV/SNOx	KU6836GAS06	4250	1194	3300	3
Gruppo Aturia S.p.A.	Italy	Pump	Sannazzaro/Italy	ENI Refinery	KD2409XCH45E	380	1000	6000	2
HGC Consulting	Germany	Compressor	Epe/Germany	Essent/GS	KL7540GPS08	7400	750	3100	2
Kirchner Italiana S.p.a.	Italy	Fan	Italy	Raffineria di Roma	KD2355XBH41E	275	1500	6000	2
Neuman & Esser GmbH	Germany	Piston Compressor	Epe/Germany	Trianel/Gas Storage	KL7536AES10	3720	598	4000	3
Neuman & Esser GmbH	Germany	Piston Compressor	Germany	Bayern Oil/Refinery	KV8138AEA18	3400	332	6000	2
Neuman & Esser Italia	Italy	Piston Compressor	Payandan/Iran	Nargesi Gas Storage Plant	KR6838BUA14	1250	428	3300	4
PCK Raffinerie GmbH	Germany	Turbo Compressor	Schwedt/Germany	PCK Refinery	KR6834GDA02	4000	3000	6000	3
RUHR OEL GMBH	Germany	Refrig. Compressor	Gelsenkirchen/Germany	RUHR OEL GMBH	KU7544GEH04	11000	1500	10000	1
Ruhrpumpen GmbH	Germany	Pump	China	YongHuNing Pipeline	KR6531GUA02	2200	3000	6000	8
Ruhrpumpen GmbH	Germany	Pump	Poland	Pern/Druscba Pipeline	KR6535GDA02	3200	3000	6000	12
Ruhrpumpen GmbH	Germany	Pump	Saudi Arabia	Tasnee Al Jubail	KR6534BAL04	1500	1800	13800	1
Siemens AG	Germany	Piston Compressor	Germany	EWE/Hunddorf/GS	KL6936GPA06	3700	996	4160	3
Snamprogetti SpA	Italy	Pump	Abu Dhabi	Gasco Ruwais 3	KR6942HAK08	3200	750	11000	4
Sofinter SPA	Italy	Pump	Indonesia	Tanguh/LNG	KA2457XBH01GZ	580	1500	6600	3
Sudprogetti	Italy	Pump	Italy	Raff. Di Milazzo	KD2358XBH45E	355	1500	6000	2
Sulzer Pumps Ltd	Great Britain	Pump	Ukraine	Kinef-Kirishi Refinery	KD2355XAH41E	280	3000	6000	3
Sumed Arab Petroleum	Egypt	Pump	Alexandria/Egypt	Sumed Refinery	KR6836GEA04	2500	1500	6600	4
Taigetosz Kft	Hungary	Compressor	Russia	Lukoil	KR6031BDA02	1500	3000	6000	3
Technip	Germany	Gas Compressor	Turkmenistan	Refinery Turkmenbashi	KR7836AUA18	2950	332	6600	2
TOTAL Gonfreville	France	Pump	Gonfreville/France	TOTAL Gonfreville Refinery	KD2409XAH41ZZ	485	3000	5500	1
WIRTH GMBH	Germany	Mud Pump	Norway/North Sea	Drilling Platform	KL6035BAT06	1655	1000	690	8

Petrochemicals & Chemicals

- Olefine
- Polyolefine (PE, PP)
- Plastics
- Chloride / VCM / PVC
- Fertilizers



Petrochemicals & Chemicals

Customer: Kobelco, Japan
User: Borouge
Location: Abu Dhabi
Driven machine: Mixer

Technical data:
Type: KU7846G-AK06
Output: 11,500 kW
Voltage: 11,000 V
Speed: 1,000 rpm
Type of protect. IP55
Construction: IM B3
Special: 2nd Shaft extension
Mass: 49.5 t



Polypropylene Plant

Petrochemicals & Chemicals

Customer: Linde AG
User: LIMES
Project: Saint-Herblain
Location: Saint Herblain, France
Driven machine: Compressor for air separation plant

Technical data:

Type: CU6938G-MA04
Output: 6,200 kW
Voltage: 6,000 V
Speed: 1,490 rpm
Type of prot.: IP55
Construction: IM B3
Special: Slipring motor



Petrochemicals & Chemicals

Customer: Burckhardt Compression
User: Sinopec Tianjin
Location: China
Driven machine: Compressor

Technical data:

Type: KR6538B-DA14
Output: 765 kW
Voltage: 6,000 V
Speed: 425 rpm
Type of prot.: IP55
Construction: IM B3



Petrochemicals & Chemicals – Selected References

Customer	Country	Application	Location	Enduser/Project	Type of Motor	Power kW	Speed rpm	Voltage V	Qty
BASF Antwerpen N.V.	Belgium	Turbo Compressor	Antwerp/Belgium	BASF Antwerpen	KU6940GUH04	7500	1500	10000	1
Borsig ZM Compression	Germany	Piston Compressor	Leuna/Germany	Leuna	KV6935BEA12	1570	500	600	1
Burckhardt Compr.	Switzerland	Compressor	Saudi Arabia	Sabic/IBN ZAHR III	KU7840GPL20	2300	360	13200	1
Converteam GmbH	Germany	Compressor	Caojing/China	Bayer/MDI Train	KL6035GUC04	2000	1230	4000	2
FINA Antwerpen	Belgium	Pump	Antwerp/Belgium	FINA/Olefins	KD2456XCH41F	736	1000	6300	1
Flowserve B.V.	The Netherlands	Pump	Saudi Arabia	Sabic/Yansab	KA2458XRH31ZZ	550	1200	4000	2
Industrie Technofrigo	Italy	Refrig.Compressor	Saudi Arabia	Sahara Basell	KR6835GPL02	2510	3600	13200	3
Infraserv Höchst	Germany	Refrig.Compressor	Frankfurt/Germany	Infraserv Höchst	KU6034GAH02	1950	3000	10000	2
ITT GOULD PUMPS	USA	Pump	Saudi Arabia	Al Jubail VII	KR6535BAB08	1550	900	4160	6
LINDE Engineering	Germany	Air Separation	Saudi Arabia	Yanbu III	KU6035GAB02	2600	3600	4160	1
MAN TURBO AG	Germany	Compressor	Saudi Arabia	Sabic/Yanbu	KU5434BUB04	1495	1800	4000	1
Ruhrpumpen GmbH	Germany	Pump	Saudi Arabia	Tasnee/Al Jubail/LDPE	KR6534BAL04	1500	1800	13800	1
Sofinter SPA	Italy	Pump	Saudi Arabia	Sabic/Yanbu	KA2457XRH01ZZ	500	1200	4000	6
SOLVAY S.A.	Belgium	Compressor	Antwerp/Belgium	BASF/ HPPO-HP	KU7544GAH04	9600	1500	10000	1
Sulzer Pompes France	France	Pump	Qatar	Ras Laffan Olefin	KR6035GAA02	1850	3000	6600	2
Total Petrochemicals	Belgium	Pump	Antwerp/Belgium	FINA/Olefins	KV6036BAA06	1800	1500	6000	1
York Refrigeration	Denmark	Refrig.Compressor	Saudi Arabia	SIPS	KV6031GAB02	1650	3600	4160	2

Power Generation

Power Plants:

- Coal
- Gas
- Oil
- Nuclear
- Steam
- Water



Power Generation

Three-phase drives for lignite-fired power station

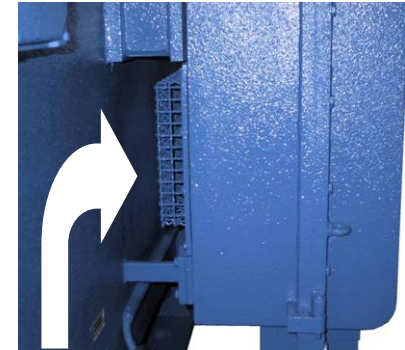
Customer: RWE
Plant: Niederaußem,
 950 MW block K

Boiler feed pump drive

No. of units: 2
Type: KU7244G-AH04
Output: 12,000 kW
Voltage: 10,000 V
Speed: 1,488 rpm
Protection: IP54
Construction: IM B3
Mass: 29 t

Other supplies for the project

24 drives from 400 kW to 3,400 kW for
 9 Coal crushers
 6 Absorber circulating pumps
 3 Forced-draft fans
 3 Condenser main pumps
 3 Conveyor belts



Short-circuit proof 10 kV
 terminal box with rupture joint
 facing the motor

DE



EM-type sleeve bearings with
 forced oil lubrication.

Curved-tooth couplings:

DE with oil shrink fit

NDE with key for driving an MP
 circulating pump

NDE



Power Generation

Customer: TLT Turbo
User: STEAG AG
Location: Germany
Driven machine: ID Fan
No. of units: 4

Technical data:

Type: KU7542G-AH08
Output: 7,850 kW
Voltage: 10,000 V
Speed: 745 rpm
Type of protect. IP55
Construction: IM B3
Mass: 31 t



Coal fired power plant

Power Generation – Selected References

Customer	Country	Application	Location	Enduser/Project	Type of Motor	Power kW	Speed rpm	Voltage V	Qty
Alstom Power Boiler	Germany	Coal Mill	Poland	Patnow	KR6832BAN12	1050	500	690	8
AREVA NP GmbH	Germany	Pump	Varberg/Sweden	Vattenfall/Ringhals	DA2357XAB71HZ	355	3000	500	2
Braunschw. Kohlenkraftw.	Germany	Blower	Helmstedt/Germany	Plant Buschhaus	KR7540GAH08	5500	750	10000	3
DSD Industrieanlagen	Germany	Gas Compressor	Wuppertal/Germany	HKW/Wuppertal	KU5431GPH02	710	2970	10500	3
Dong Energy	Denmark	Pump	Denmark	Dong Energy	KR6536BAA04	2800	1500	6300	5
E.ON Kraftwerke West	Germany	Pump	Kiel/Germany	E.ON/Scholven	KR6034HAA04	1400	1500	6300	1
Energi E2	Denmark	Pump	Kopenh./Denmark	Energi E2	KR6536BAA04	2800	1500	6300	1
Energi E2	Denmark	Fan	Kopenh./Denmark	Energi E2	KR7238BAA06	5500	1500	6300	1
GKW Franken	Germany	Fan	Nuernberg/Germany	Plant Franken 1	KR6835BAA04	3000	1500	6000	2
Gruppo Aturia S.p.A.	Italy	Pump	Ferrara/Italy	EniPower	KA2354XAH01E	200	3000	6000	3
Hitachi Power Europe	Germany	ID Fan	Portugal	EDP/Portugal	KU6838BAA06	4200	1000	6000	8
Linde KCA	Germany	Compressor	Germany	Vattenfall	KU6834GAH04	3200	1500	10000	1
Reggiane Cranes + Plants	Italy	Pump	Saudi Arabia	Shoaiba	KA2456XSJ01G	440	900	6600	4
RWE Power AG	Germany	ID Fan	Neurath/Germany	RWE Power	KU8346GAH10	13500	590	10000	5
RWE Power AG	Germany	Pump	Niederaussem/Germ.	RWE Power	KU7244GAH04	12000	1488	10000	2
Sofinter SPA	Italy	Fan	Bahrain	HIDD POWER	KA2508XBH01J	670	1500	11000	3
SPIG SPA	Italy	Cooling Tower	Ferrara/Italy	EniPower	KA4355LBH01E	200	1500	6000	18
Stoewer GmbH	Germany	Pump	Schkopau/Germany	Steag/Schkopau	KR6834HUH08	1480	750	10000	4
SULZER PUMPEN	Germany	Pump	Italy	Turbigo	KU6034GAA02	2600	3000	6000	2
SVENSKA SCHORCH	Sweden	Pump	Skogas/Sweden	Fortum	KU6534BAT06	2200	1000	690	1
TLT Turbo	Germany	ID Fan	Voerde/Germany	Steag	KU7542GAH08	7850	745	10000	4

Steel & Metal

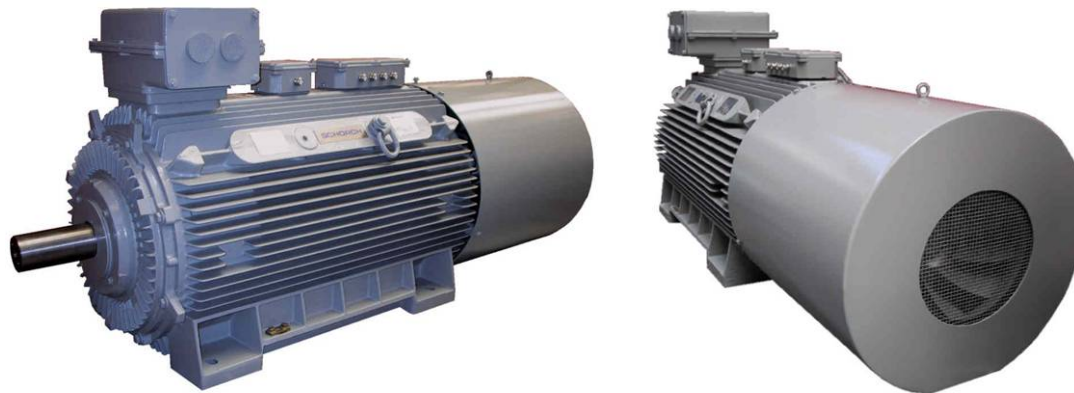
- Iron & Steel - Production
- Iron & Steel - Processing
- Non-ferrous - Production
- Non-ferrous - Processing
- Machine Building



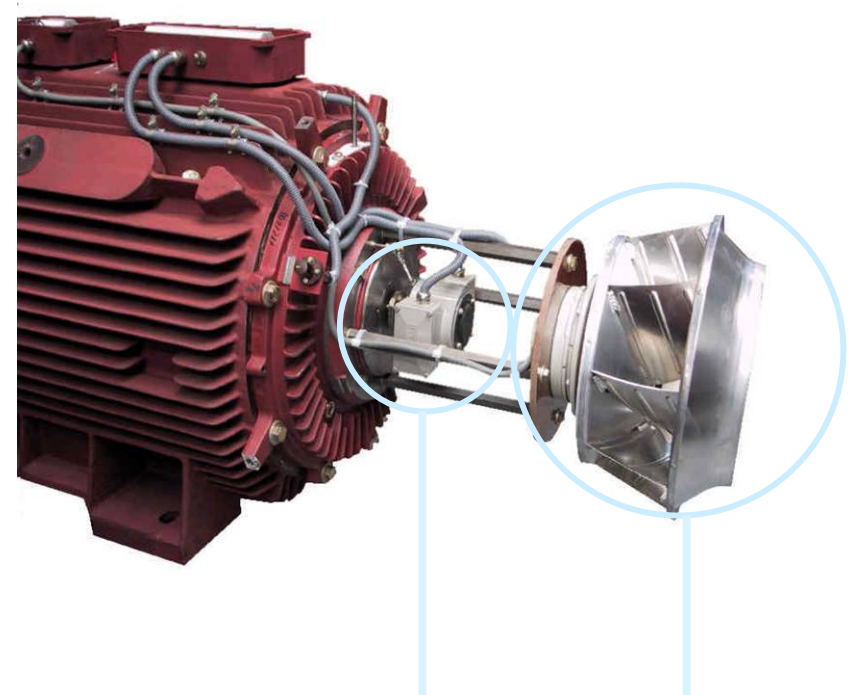
Steel & Metal

Converter-fed three-phase squirrel-cage motor

Project:	Sidmar, ARBED-Group Gent, Belgium
Drive:	Sheet steel coiler
Type:	DG2 357X-BB81-Z
Output:	400 kW
Voltage:	660 V
Speed:	1490 rpm
Speed range:	0-1500 rpm with constant torque 1500-2000 rpm with constant output



Accessories



Transducer for
speed monitoring

Independent fan

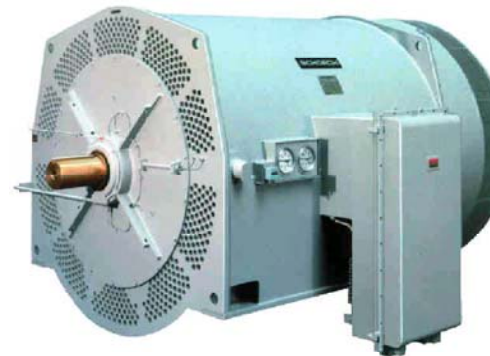
Steel & Metal

Customer: ILVA S.P.A
Location: Italy
Drive: Pump
Type: KU7238H-AH12
Output: 2,700 kW
Voltage: 10,000 V
Speed: 500 rpm
Protection: IP55
Construction: V 1
Weight: 18 t



KU7238

Customer: ILVA S.P.A
Location: Italy
Drive: Pump
Type: KR6929B-AQ08
Output: 1,550 kW
Voltage: 3,000 V
Speed: 750 rpm
Protection: IP55
Construction: IM B3
Weight: 10.7 t



KR6929

Steel & Metal

Converter- fed Drives

Customer: Converteam GmbH
User: Dunafer, Hungary

Drive: Roller Plant
Type: KY6835B-AN08
Output: 1,950 kW
Voltage: 660 V
Speed: 750 rpm
Protection: IP55
Construction: IM B3
Weight: 11 t

Customer: Converteam GmbH
User: Dunafer, Hungary

Drive: Roller Plant
Type: DG2355X-RC81Z
Output: 355 kW
Voltage: 660 V
Speed: 1,200 rpm
Protection: IP55
Construction: IM B3
Weight: 2.3 t



Steel & Metal – Selected References

Customer	Country	Application	Location	Enduser/Project	Type of Motor	Power kW	Speed rpm	Voltage V	Qty
Aluminium Bahrain	Bahrain	Fan	Bahrain	Alu Bahrain	DA2509XCB71L	750	1000	690	1
Converteam GmbH	Germany	Roller Plant	Hungary	Dunaferr	DG2355XRC81Z	355	1200	660	2
Converteam GmbH	Germany	Roller Plant	Hungary	Dunaferr	KY6835BAN08	1950	750	660	1
Corus Staal BV	The Netherlands	Compressor	Velzen Noord/NL	Corus Staal BV	KR5432GUA02	570	3000	6000	1
Corus Staal BV	The Netherlands	Blower	Velzen Noord/NL	Corus Staal BV	KR6538BAA08	1250	750	6000	1
Flue Gas	The Netherlands	Pump	Bahrain	Alu Bahrain	KA2357XCB01B-Z	250	992	400	3
Flue Gas	The Netherlands	Fan	Bahrain	Alu Bahrain	DA2569XDT71L-Z	1000	747	690	3
ILVA S.P.A.	Italy	Pump	Taranto/Italy	ILVA S.P.A.	KU6835HAH10	1620	600	10000	2
ILVA S.P.A.	Italy	Pump	Taranto/Italy	ILVA S.P.A.	KU7238HAH12	2700	500	10000	1
Kobe Steel	Japan	Compressor	Korea	Pohang Iron & Steel	KD2358XQH41B	350	1800	3300	1
Linde KCA	Germany	Air Separation	India	Mittal Steel/Kribhco	KU6534GEK	1370	3000	11000	1
Pohang Iron & Steel	Korea	Coal Crusher	Korea	Pohang Iron & Steel	KR5831GAR04	900	1800	3300	1
SIEMENS MALAYSIA	Malaysia	Compressor	Malaysia	Megasteel/DRI Project	KV7238GAK04	6500	1500	11000	2
SMS Demag Meer	Germany	Forging Machine	Shanghai/China	Boasteel / No. 5	KA2358XBH01EZ	355	1500	6000	8
Sundwiger Messingwerk	Germany	Roller Plant	Hemer/Germany	Sundwiger Messingwerk	DG2458XDB81Z	500	750	660	1
Sundwiger Messingwerk	Germany	Roller Plant	Remscheid/Germany	Sundwiger Messingwerk	KL6536B1Z08	1000	500	460	1
ThyssenKrupp	Germany	Press	Hemer/Germany	ThyssenKrupp	KC4355MBB01N	125	1500	380	1
ThyssenKrupp	Germany	Press	Remscheid/Germany	ThyssenKrupp	CR5429BAN06	300	1000	400	1
Voest Alpine Stahl	Austria	several	Linz/Austria	Voest Alpine Stahl	DG7315SBA81P	110 - 500	1500	400	14

Water Supply & Irrigation

- Seawater desalination plants
- Pumping station
- Waste water treatment
- Water regulation in mining



Water Supply & Irrigation

Technical data

Type:	HB2 459X-ZX05P-Z
Output:	350 kW
Voltage:	400 V
Current:	760 A
Speed:	423 rpm
Degree of protection:	IP68
Construction:	IM V1
Weight:	4.8 t
Submersion depth:	20 m

Special features

Cable entry via self-sealing glands (Gothé).
Bearing ring seals with oil seal. Oil level check and topping-up device.

DE	One pair of angular-contact ball bearings One grooved ball bearing (locating) Permissible axial load 60 kN
NDE	One grooved ball bearing
Monitoring	6 PTC thermistors for the winding PT 100 for the bearing Oil level monitoring Leakage monitoring

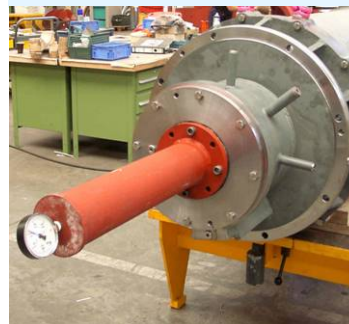
Driven machine: Submersible propeller pump
Purpose: High-water regulation in a mine
Customer: SKB, Belgium
Motor customer: Ruhrpumpen GmbH
Project: Groote Schijn, Belgium



Arrangement



DE



NDE with supply cable



Main and auxiliary terminal box



Seal-tight test with 2 bar

Water Supply & Irrigation

Customer: Ministry of Public Works
and Water Resources

Plant: Pump Station
EI Max
Country: Egypt
Driven machines: water pumps

Type: CR6035B-MA06
slipring motor
Output: 880 kW
Voltage: 6,000 V
Current: 105 A
Speed: 992 rpm
Degree of protect.: IP55
Construction: IM B3
Rotor data:
Voltage: 750 V
Current: 710 A

Other supplies for the project:

- Control panel
- Starter



Pump Station

Water Supply & Irrigation – Selected References

Customer	Country	Application	Location	Enduser/Project	Type of Motor	Power kW	Speed rpm	Voltage V	Qty
AEG	Germany	Pump	Bottrop/Germany	Emschergenossenschaft	KB5832HAZ10	520	600	660	4
Comet KSB Pumps	Egypt	Pump	Egypt	Pumping Station El Obour	KA2458XCH05B	535	1000	3300	5
Emschergenossenschaft	Germany	Pump	Germany	Pump. Station Bottrop	KF6536HAH12	675	500	10000	3
Emschergenossenschaft	Germany	Pump	Germany	Pump. Station Gelsenkirchen	KF6535HAH10	800	600	10000	3
KSB AG	Germany	Pump Station	India	Chennai	AG2407XCZ05P	360	1000	400	4
KSB AG	Germany	Pump Station	Iran	Teheran Water Board/ LAR DAM	KY6540KAZ10	1100	600	690	4
KSB AG	Germany	Lift Pump Station	Saudi Arabia	Al Kumrah	KA2458XTB05	370	1500	400	3
KSB AG	Germany	Pump Station	UAE	Dubai	AG2407XCZ05P	400	1000	400	4
Ministry of Public+Water	Egypt	Pump	Egypt	several Pumping Stations	CR5434BMA04	520	1500	6000	3
Ministry of Public+Water	Egypt	Pump	Egypt	several Pumping Stations	KA2509XFH05EZ	522	500	6000	1
Ministry of Public+Water	Egypt	Pump	Egypt	several Pumping Stations	CR5835BMA06	600	1000	6000	3
Ministry of Public+Water	Egypt	Pump	Egypt	several Pumping Stations	KA2504XBH01ZZ	630	1500	11000	1
Ministry of Public+Water	Egypt	Pump	Egypt	several Pumping Stations	CR6032HMA06	670	1000	6000	4
Pleiger GmbH & Co. KG	Germany	Pump	Germany	Emschergenossenschaft	KA7250MBB05BZ	55	1500	400	12
Ritter	Germany	Pump	Duisburg/Germany	Emschergenossenschaft	DA458XDB75L	450	750	690	2
Ritter	Germany	Pump	Duisburg/Germany	Emschergenossenschaft	KF6535HAZ10	735	400	690	4
Ruhrpumpen GmbH	Germany	Pump	Düsseldorf/Germany	Pumping Station Sued	KF6535HAH12	670	500	10000	2
Ruhrpumpen GmbH	Germany	Pump	Schwedt/Germany	Retrofit Recooling Plant	KR6532HDA08	1170	750	6000	4
VA-Tech Hydro	Austria	Water turbine	Wien/Austria	Austrian Hydro Power	HH2564XZB02Z	545	333	690	12
Voith Siemens Hydro	Austria	Pump	Egypt	Pumping Station Kasaby	KR5032BAA04	344	1500	6000	5

Shipbuilding

Marine Applications:

- Main Propulsion
- Thruster
- Cranes
- Compressors
- Pumps
- Winches



Shipbuilding

Customer: Kvaerner Aker a. s. Norway

Installation: Main propulsion

Technical data:

Type: KL6834B-AN08

Output: 2,000 kW at 600 rpm

Fed by: Water-cooled frequency converter

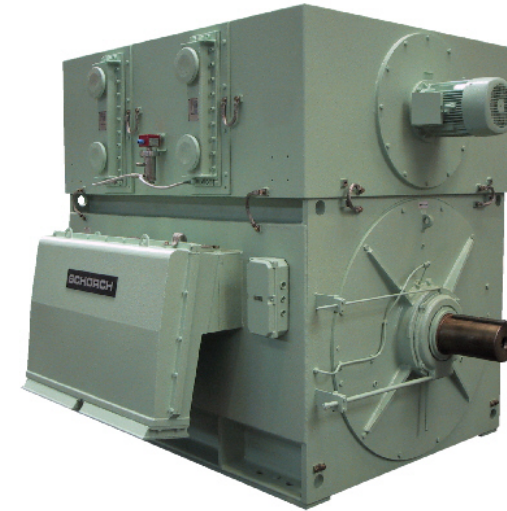
Voltage: 635 V

Speed range: 30 - 600 rpm at constant load torque

Protection: IP54

Construction: IM B3

Designed in acc. with the **DNV** classification society



Main Propulsion



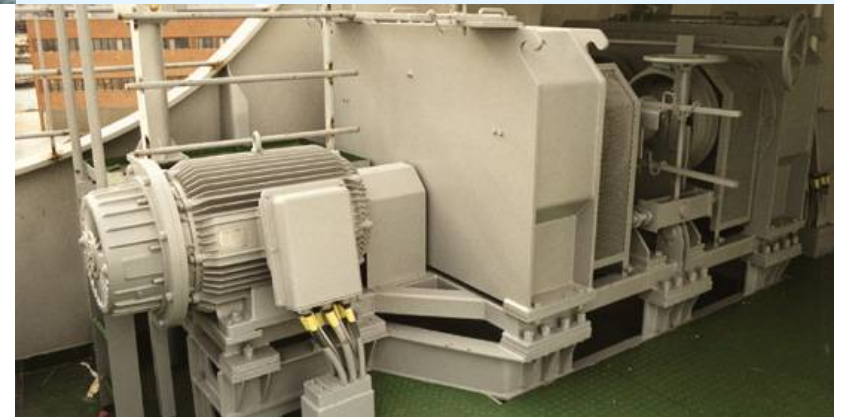
Shipbuilding



Winch drives

Features

- Three-phase squirrel-cage induction motor, frame size 315M
- IP56 without external fan
- Built-on brake on NDE
- Outputs 45/90/90 kW at 375/750/1,500 rpm and 380 V, 50 Hz
- Slip rotor design for particularly smooth starting
- Design in acc. with RS



Shipbuilding

Customer: Neuenfelder Maschinenfabrik,
Hamburg

Driven machines: Ship cranes

Technical data (exemplary) :

Type: BN7 315S-QB55U-Z

Output: 190 kW

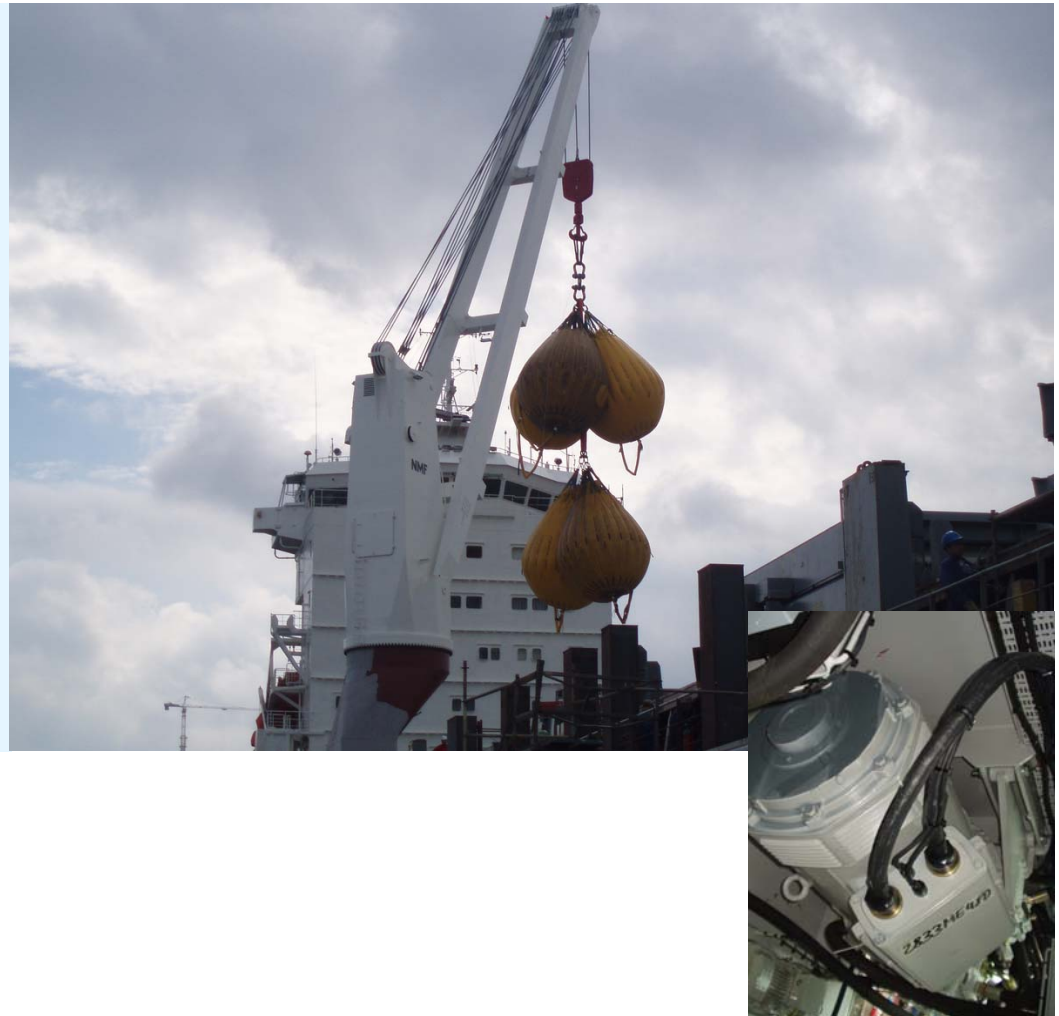
Voltage: 440 V

Speed: 1,780 rpm

Type of prot.: IP23

Construction: IM V1

Design in accordance with classification society **GL**.



Shipbuilding

Customer: York Marine AB, Norrköping – Sweden

Driven machines: Refrigeration compressors

Technical data:

Type: KU5831G-AL02

Output: 4 x 1,575 kW

Voltage: 11,000 V

Speed: 3,572 rpm

Type of prot.: IP55 – IC81W

Construction: IM B35

Design in accordance with classification society **RINA**



Shipbuilding

STADT STASCHO DIESEL- ELECTRIC PROPULSION

SEISMIC RESEARCH VESSEL MS 'SANCO STAR'

Customer: STADT AS, Gjerdsvika - Norway

Driven machine: Main propulsion
Bow thruster

Technical data:

Main propulsion:

Type: KU6938B-AP99

Output: 2 x 2.500 kW

Voltage: 690 V

Speed: 900 rpm

Type of prot.: IP54 – IC81W

Contruction: IM B3

Bow thruster (Type Brunvoll AS):

Type: HB2 400X-RX05Y-Z

Output: 2 x 700 kW

Speed: 690 V

Drehzahl: 1.500 min⁻¹

Type of prot.: IP55 – IC77W

Construction: IM V1

Design i.a.w. classification society **DNV**.



Seismic Kompressor:

Neuman & Esser Group,
Übach-Palenberg, Germany

Motor:

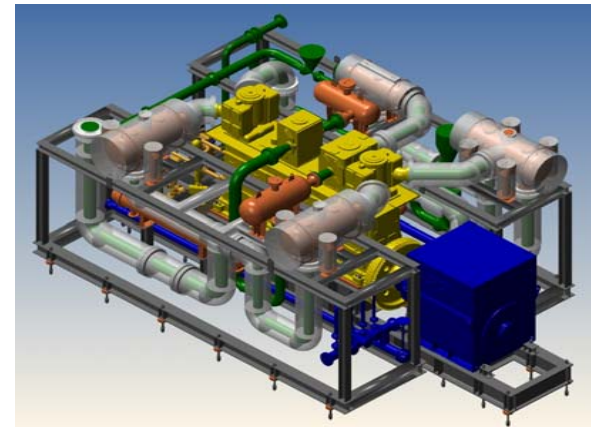
HB2 459Y-RZ81Z-Z

2 x 1,100 kW, 1,200 rpm , 690 V



Shipbuilding

Explosion protected motors – LNG – FPSO/FRSU



Laby®-GI compressor unit, installed on FSRU, delivery in 2009

Shipbuilding – Selected References

Customer	Country	Application	Shipping Company	Ship name	Type of Motor	Power kW	Speed rpm	Voltage V	Qty
A. van Kaick Deutschland GmbH	Germany	Stern Thruster	P&O Cruises Line	Caribbean Princess	KU6531BAB06	1720	1200	6600	1
A. van Kaick Deutschland GmbH	Germany	Bow Thruster	P&O Cruises Line	Caribbean Princess	KU6534BAB06	2200	1200	6600	3
Aerzener Maschinenfabrik GmbH	Germany	Compressor	First Olsen Tankers	M/T Knock Ann	KR5435GUB02	1100	3600	6600	1
Aerzener Maschinenfabrik GmbH	Germany	Compressor	Shell / Rassmussen	M/T Borga	KR5435GUB02	1100	3600	6600	1
Neuman & Esser GmbH & Co. KG	Germany	Compressor	Sanco Shipping AS	M/S Sanco Star	HB2459YRZ81ZZ	1100	1200	690	2
SAM Electronics	Germany	Bow Thruster	Peter Döhle Schiffahrts KG	FFS Solea	BN7357MBX51PZ	470	1500	400	2
SER Schiffselektronik	Germany	Bow Thruster	Peter Döhle Schiffahrts KG	TS Independent Pursuit	BN7357MQX55UZ	750	1800	440	1
SER Schiffselektronik	Germany	Bow Thruster		TS Keelung	BN7357MQX55UZ	750	1800	440	1
Siemens	Germany	Compressor	Princess Cruises	Crown Princess	KU5834G-AL03	1500	3600	11000	4
Stadt AS	Norway	Main Propulsion	TFDS-Hurtigruten	M/S Trollfjord	KL6834BAN08	2000	900	690	2
Stadt AS	Norway	Main Propulsion	TFDS-Hurtigruten	M/S Midnatsol	KL6834BAN08	2000	900	690	2
Stadt AS	Norway	Main Propulsion	TFDS-Hurtigruten	M/S Vardehorn	KU5834BAZ06	1000	1200	690	2
Stadt AS	Norway	Main Propulsion	TFDS-Hurtigruten	M/S Meslhorn	KU5834BAZ06	1000	1200	690	2
Stadt AS	Norway	Main Propulsion	Geoshipping AS	M/S GeoSea	KU6032BAP06	1400	1200	690	2
Stadt AS	Norway	Thruster	Geoshipping AS	M/S GeoSea	KU5830HAP994/6	275 / 925	1800/1200	440	1
Stadt AS	Norway	Main Propulsion	Gunnar Stokke	M/S Stokke Senior	HB2459YHT81YZ	500 / 1100	750/1500	690	1
Vacon Drives UK Ltd.	Great Britain	Thruster	Torpoint Ferry	Hull 717	HB2315XBX01PZ	250	1500	400	2
York Marine AB	Sweden	Compressor	P&O Cruises Line	Coral Princess	KU5431GAB02	1350	3600	11000	4
York Marine AB	Sweden	Compressor	P&O Cruises Line	Island Princess	KU5431GAB02	1350	3600	11000	4
York Marine AB	Sweden	Compressor	ResidenSea	M/V The World	KU5429GAB02	900	3600	6600	3
York Marine AB	Sweden	Compressor	Costa Crociere	Costa Concordia	KU5434GAB02	1575	3600	11000	4
York Marine AB	Sweden	Compressor	Carnival Cruise Line	Carnival Freedom	KU5434GAB02	1575	3600	11000	4
York Marine AB	Sweden	Compressor	Royal Caribbean Cruise Line	Endeavour of the Seas	BD4355SPB63ZZ	280	3600	440	3
York Marine AB	Sweden	Compressor	Royal Caribbean Cruise Line	Freedom of the Seas	BD4355SPB63ZZ	280	3600	440	3
York Marine AB	Sweden	Compressor	Carnival Cruise Line	Carnival Miracle	BD7315LPB63UZ	185	3600	440	2
York Marine AB	Sweden	Compressor	Birka Cruises AB	Birka Paradise	BD2358XAB81Z	500	3000	690	2

Material Handling & Recycling

- Material Handling
- Preparation Plants
- Recycling Plants

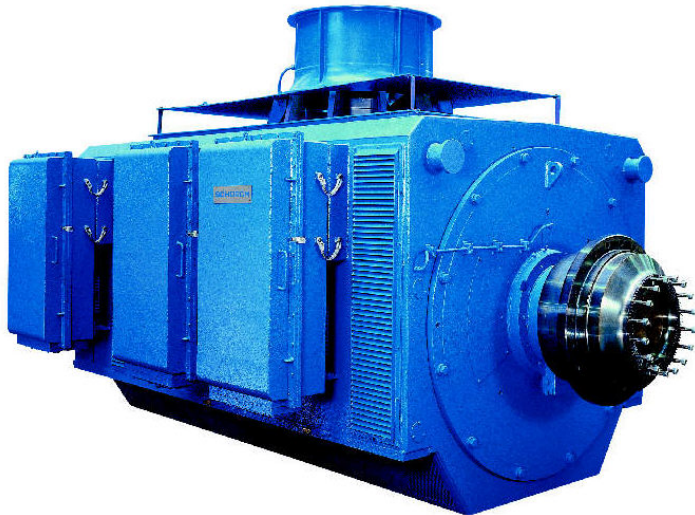


Material Handling & Recycling

Scrap Metal Shredder

Self-cooled open HV slipring motor with forced ventilation and permanent brush contact

Rated output	9,000 HP
Rated voltage	4,160 V
Rated speed	445 rpm
Degree of protection	IP23R
Mass	43 t



MV switchgear, with motor management relay Multilin, power monitor, reactive power compensation



Liquid starter with switchgear and Hagenuk regulator. SPS control, monitoring of brush sparking, conductivity, and cooling circuit



Material Handling & Recycling



Scrap Metal Shredder

THE WORLD'S BIGGEST SHREDDER DRIVE

- Rated output: 10,000 HP
- Rated voltage: 6,000 V
- Rated current: 1,020 A
- Rated speed: 423 rpm
- Degree of protection: IPW 24(R)
- Type of construction: IM B3



Material Handling & Recycling



Scrap Metal Shredder

Material Handling & Recycling

Customer:	Siemens AG
User:	LAUBAG – Vattenfall
Location:	Germany
Driven machine:	Bucket-wheel excavator
Technical data:	
Type:	KY5835B-AT08
Output:	630 kW
Fed by:	IGBT – frequency converter
Voltage:	690 V
Speed range:	150 - 745 rpm
Type of protect.	IP55
Construction:	IM B3



Bucket-wheel excavator

Material Handling & Recycling – Selected References

Customer	Country	Application	Location	Enduser/Project	Type of Motor	Power kW	Speed rpm	Voltage V	Qty
Adams Steel	USA	Shredder	USA	Adams Steel	CG7542BAB16	4475	450	4160	1
Albert Hoffmann GmbH	Germany	Shredder	Norway		KP6838BAA10	2200	600	6000	1
American Contex Corp.	USA	Shredder	USA	Hugo-Neu Rhode Island	CG7540BAB14	4475	514	4160	1
CEES	Germany	Shredder	China		CG7548BAA14	7463	428	6000	1
ELG Haniel Metals	Great Britain	Shredder	Great Britain	EJG Haniel Metals	KP6832BAK04	2200	1500	11000	1
FAM Förderanlagen	Germany	Conveyor Belt	Latvia	Ventspils	DA2357XBB81GZ	400	1500	400	1
FAM Förderanlagen	Germany	Mill	Duisburg/Germany	Kokerei Schwelgern	DG2407XBB81LZ	500	1500	690	2
H.J. Hansen	Denmark	Shredder	Denmark	H.J. Hansen	CP7548BAH14	5970	428	10000	1
Harris	USA	Shredder	Peru		CG7238BAJ12	2985	600	10000	1
Harris	USA	Shredder	USA		CG7236BAB12	3730	600	4160	1
Hugo-Neu Proler	USA	Shredder	USA	Hugo-Neu Proler	CG7548BAB16	6715	450	4160	5
Luxfer	Belgium	Shredder	Belgium	Luxfer	KR6535BAA04	2400	1500	6000	2
Metso Lindemann	Germany	Shredder	USA		CR7544BAB14	4470	514	4160	1
Metso Lindemann	Germany	Shredder	Great Britain		CP7548BAA14	7463	428	6000	1
MKS-Industriebedarf	Germany	Shredder	France	CFF-Recycling	CG6932BAB12	1865	600	4160	1
NV Galloo S.A.	Belgium	Shredder	Belgium	NV Galloo S.A.	KP6534BAA10	1030	600	6000	1
Parfer	Italy	Shredder	Italy	Parfer	CP6934BAA10	1900	600	6000	1
Siemens AG	Germany	Bucket-wheel excavator	Germany	Laubag-Vattenfall	KY5838BAT08	630	150-745	690	1
Svenska Schorch	Sweden	Shredder	Sweden	Stena	CP7540BAH12	4500	500	10500	2
The Rosekrans Group	USA	Shredder	Mexico	Deacero	CG7544BAB16	5220	450	4160	2
The Rosekrans Group	USA	Shredder	USA	Sturgies Iron & Metal	CG7546BAB16	5970	450	4160	1
Voith Turbo Limited	Great Britain	Shredder	Great Britain		KP7544BAK12	4475	500	11000	1

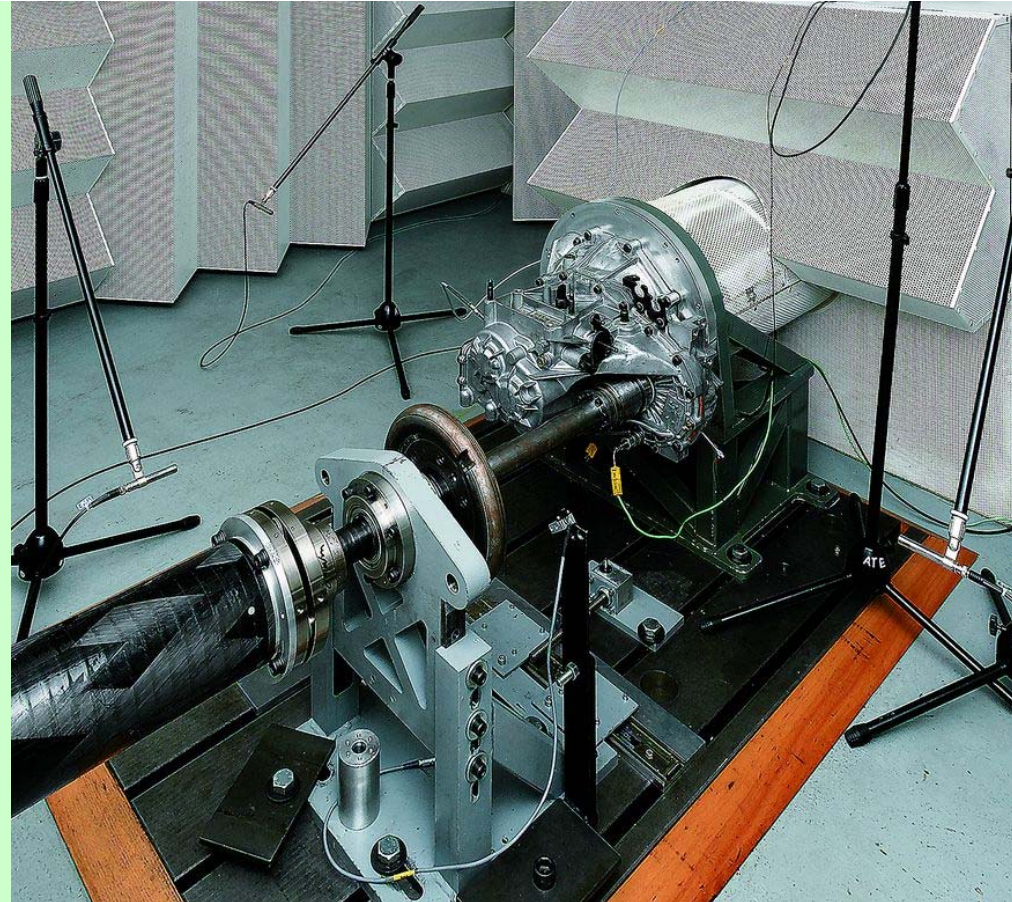
High-Speed Machines

Test Benches:

- Engines
- Gear boxes
- Power trains
- Rolling roads

Industrial Applications

- Compressors
- Pumps



High-Speed Machines

Industrial applications

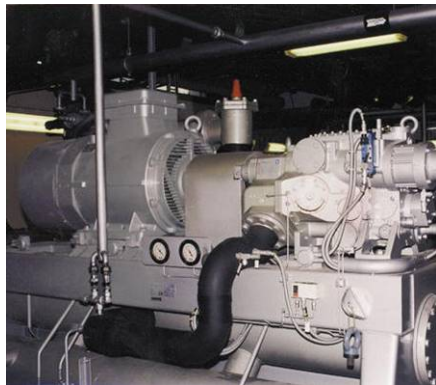
IP23

Type LN3

Frame sizes: 180-315

Power range: 100 up to 400 kW

Speed: up to 9,000 rpm



Test bench applications

IP23

Type LN7/8

Frame sizes: 180-400

Power range: 50 up to 1,000 kW

Speed: up to 15,000 rpm



High-Speed Machines – Selected References

Customer	Country	Application	Enduser	Power kW	Max. speed rpm	Torque Nm
AVL List	Austria	Test Bench	Audi	570 kW	5000	3185
AVL List	Austria	Test Bench	BMW	640 kW	4800	3500
AVL List	Austria	Test Bench	DDC	695 kW	4000	6050
Bombardier GmbH	Germany	Test Bench		570 kW	5000	3200
Converteam	Germany	Test Bench	BMW, VW	340 kW	8000	720
Converteam	Germany	Test Bench	Rolls Royce,	800 kW	4000	4600
Converteam	Germany	Test Bench	VOITH Turbo,	4500 kW	2000	28800
D2T Group	France	Test Bench		540 kW	4500	3070
DaimlerChrysler AG	Germany	Test Bench	DaimlerChrysler	430 kW	7200	900
Ford AG	Germany	Test Bench	Ford	340 kW	8000	720
Horiba	Germany	Test Bench	Bosch, Ford	400 kW	4000	2000
Horiba	Germany	Test Bench	Honda, Renault	570 kW	7500	2500
Horiba	Germany	Test Bench	Jaguar, Peugeot	570 kW	4000	3200
Horiba	Germany	Test Bench	MAN, OPEL, VW	615 kW	4000	3200
Kristl Seibt & Co	Austria	Test Bench	MAN, MAGNA	330 kW	10000	810
Kristl Seibt & Co	Austria	Test Bench	Steyer	335 kW	9000	970
Siemens AG	Germany	Test Bench	Audi, BMW,	640 kW	4000	3500
Siemens AG	Germany	Test Bench	Bosch Rexroth,	800 kW	4000	4600
Siemens AG	Germany	Test Bench	Daimler-Chrysler,	1000 kW	3650	5000
Siemens AG	Germany	Test Bench	IVECO, VW, ZF	880 kW	2330	10075
Siemens AG	Germany	Test Bench	Porsche,	1830 kW	2300	25250
Siemens AG	Germany	Test Bench	Renault, Scania	1415 kW	1200	40500
Transrech Antriebssysteme GmbH	Germany	Test Bench	John Deere	471 kW	4000	9000
ZF Passau	Germany	Test Bench	Audi,	290 kW	3000	2600
ZF Passau	Germany	Test Bench	ZF	272 kW	1400	4000

Tunnel

Areas of experience:

- Tunnel Ventilation
- Wind Tunnel
- Tunnel Drilling Machines



Tunnel

Tunnel ventilation

Drive: Tunnel ventilation

Customer: Turbo Lufttechnik

End user: Tunnelgesellschaft Landeck (Austria)

Technical Data:

Type:	DA2 500X-CZ73L-Z
Protection:	IP55
Construction:	IM B5 with feet
Insulation:	Temperature Class H
Output:	720 kW
Voltage:	690 V
Speed:	996 rpm
Frequency Range:	19-50 Hz

Special Features:

Fan impeller directly mounted on motor shaft

Special cable glands for shielded cables (Roxtec-Module)

Connecting cables (halogen-free)

In case of fire, motor will operate at 250 °C for 1 hour

Special shaft extension

Special paint system (PUR) with DFT > 200 µm

Special design up to 400 °C (F400) for 2 hours

Surface-cooled converter-fed
three-phase low-voltage motor

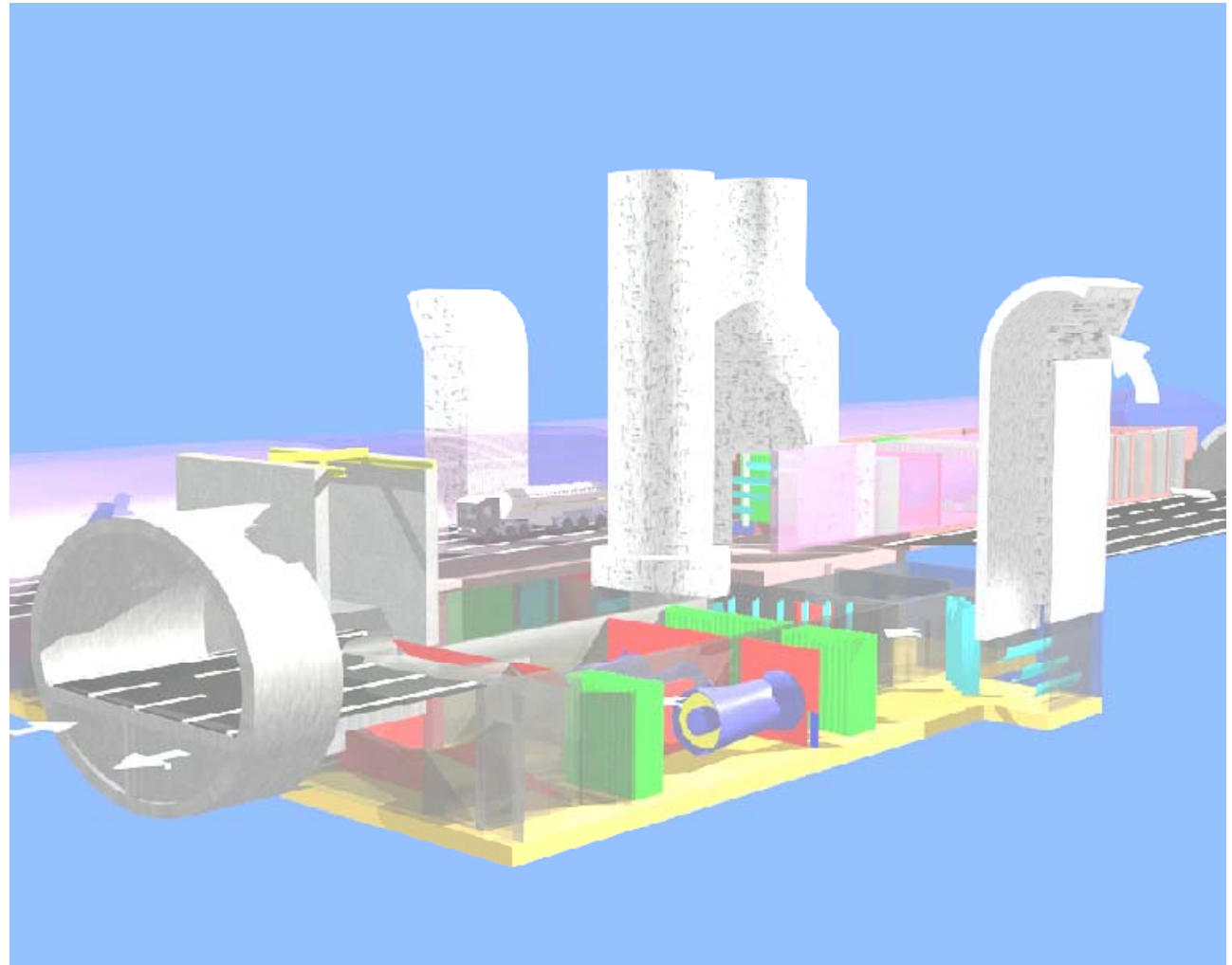


Tunnel

Customer: ASI Robicon
Project: Voest-Alpine Tunnel
Location: Austria
Drive: Blower
Type: KY6538B-AC06
Output: 2,600 kW
Voltage : 6,000 V
Speed: 1,200 rpm
Protection: IP55
Construction: IM B3

Customer: Zitron S.A.
Project: Rennsteig Tunnel
Location: Germany
Drive: Ventilator
Type: KA4355S-KZ72YZ
Output: 70/140 kW
Voltage : 690 V
Speed: 750/1,000 rpm
Protection: IP55
Construction: IM B5

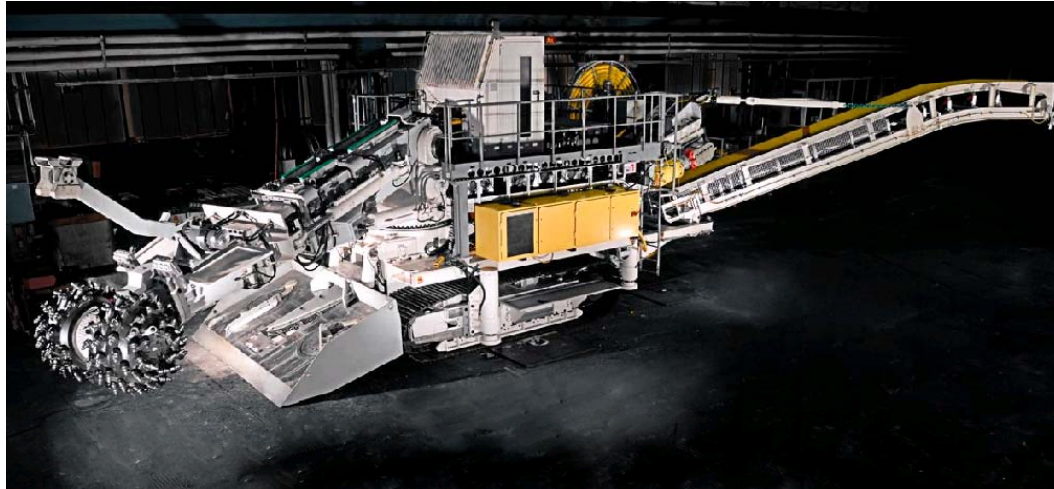
Tunnel ventilation



Tunnel

Customer:

Wirth, Germany



Road Heading Machine
Installed power: 270 – 625 kW



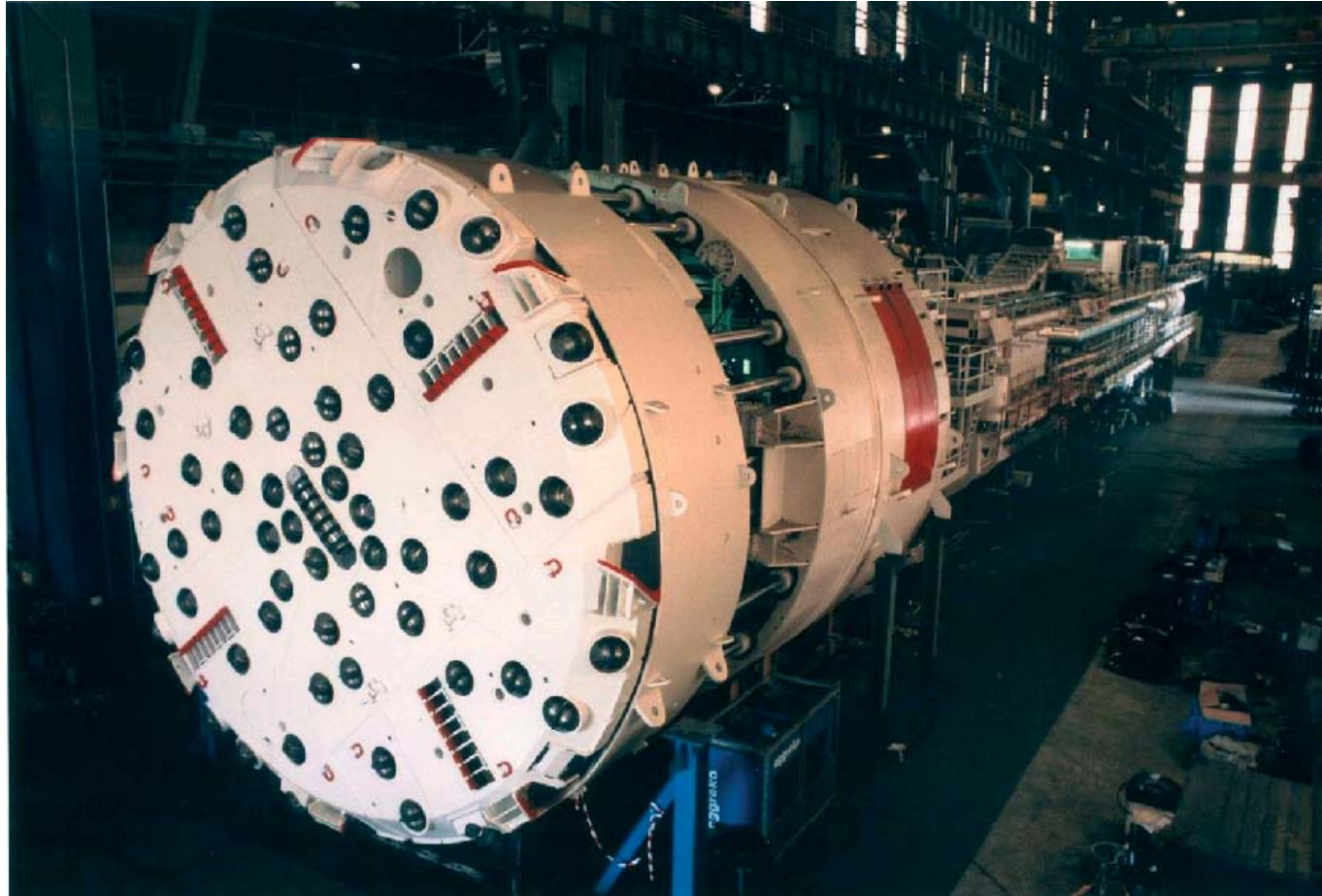
Mobile Tunnel Miner
Installed power: 240 – 1,390 kW

Tunnel

Customer:

Wirth, Germany

**Tunnel Boring
Machine**

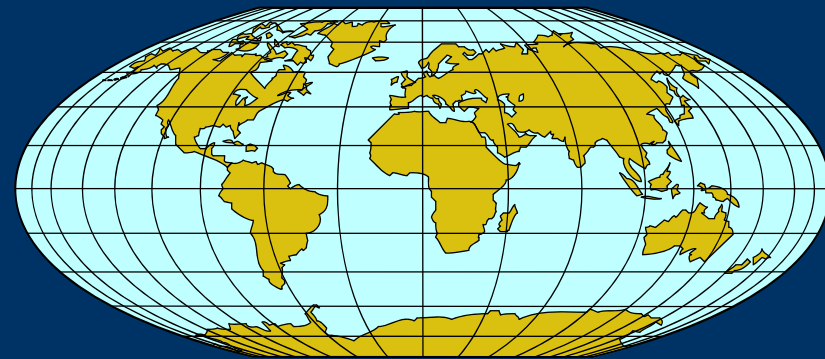


Tunnel – Selected References

Customer	Country	Application	Location	Enduser/Project	Type of Motor	Power kW	Speed rpm	Voltage V	Qty
ASI Robicon	Germany	Blower	Austria	Voest-Alpine/Tunnel	KY6538BAC06	2600	1195	6000	1
Howden Systems BV	The Netherlands	Tunnel ventilation	Austria	Klamm Tunnel	DA2355XCZ72PZ	325	1000	400	1
Howden Systems BV	The Netherlands	Tunnel ventilation	Norway	Aurland Laerdal Tunnel	DA2457XCZ72PZ	510	1000	400	2
Howden Systems BV	The Netherlands	Tunnel ventilation	Switzerland	Dumont Sagne Tunnel	KA2509XZZ72YZ	85/650	500/1000	690	1
TLT Turbo Lufttechnik	Germany	Tunnel ventilation	Usbekistan	Metro Taschkent	KA7250MCZ02NZ	37	1000	380	19
Ventilat.Sirocco Howden	The Netherlands	Tunnel ventilation	Germany	Farchant Tunnel	DA7315LCP75PZ	160	1000	400	4
Ventilat.Sirocco Howden	The Netherlands	Tunnel ventilation	Germany	Farchant Tunnel	DA2355XDP75PZ	250	750	400	2
Ventilat.Sirocco Howden	The Netherlands	Tunnel ventilation	Germany	Hofberg Tunnel	KA7315LZZ72TZ	11/87	500/1000	400	1
Ventilat.Sirocco Howden	The Netherlands	Tunnel ventilation	Germany	Hofberg Tunnel	KA4355LZZ72TZ	21/166	375/750	400	2
Ventilat.Sirocco Howden	The Netherlands	Tunnel ventilation	Germany	Saukopf Tunnel	KA7315MZZ72TZ	11/80	375/750	400	1
Ventilat.Sirocco Howden	The Netherlands	Tunnel ventilation	Germany	Saukopf Tunnel	KA4355LZZ72TZ	22/170	375/750	400	1
Ventilat.Sirocco Howden	The Netherlands	Tunnel ventilation	Germany	Saukopf Tunnel	KA4355LZZ72TZ	25/196	375/750	400	1
Ventilat.Sirocco Howden	The Netherlands	Tunnel ventilation	Germany	Saukopf Tunnel	KA2457XZZ72TZ	45/345	375/750	400	2
Ventilat.Sirocco Howden	The Netherlands	Tunnel ventilation	Germany	Saukopf Tunnel	KA7315MZZ72TZ	9/66	375/750	400	1
Wirth GmbH	Germany	Tunnel Drilling Machine	Italy	several	HB7289MHB82YZ	130 - 250	750 - 1500	690	10
Wirth GmbH	Germany	Tunnel Drilling Machine	China	several	HB4355XHZ82YZ	220 - 430	750 - 1500	690	2
Witt & Sohn	Germany	Tunnel ventilation	Germany	Schlossberg Tunnel	DJ2456XDZ71PZ	500	750	400	1
Witt & Sohn	Germany	Tunnel ventilation	Germany	Prag Tunnel Stuttgart	KJ2319LKZ73TZ	75/160	750/1000	400	2
Zitron Nederland BV	The Netherlands	Tunnel ventilation	Belgium	Waasland Tunnel	DA7315MCQ75PZ	90	1000	400	9
Zitron S.A	Spain	Tunnel ventilation	Spain	Tunnel Mallorca	DJ2319LBB72PZ	250	1500	400	8
Zitron S.A	Spain	Tunnel ventilation	Portugal	Metro Lisbon	KB7315SZZ72SZ	7,5/75	500/1000	380	2
Zitron S.A	Spain	Tunnel ventilation	Germany	Rennsteig Tunnel	KA4355SKZ72YZ	70/140	750/1000	690	18

MAINTENANCE AND REPAIR SERVICE

- Round- the- clock service
- Qualified staff
- State-of-the-art production processes
- Accurate inspection reports
- Modern measuring methods
- Internationally available
- Short spare parts delivery time



Maintenance and repair service

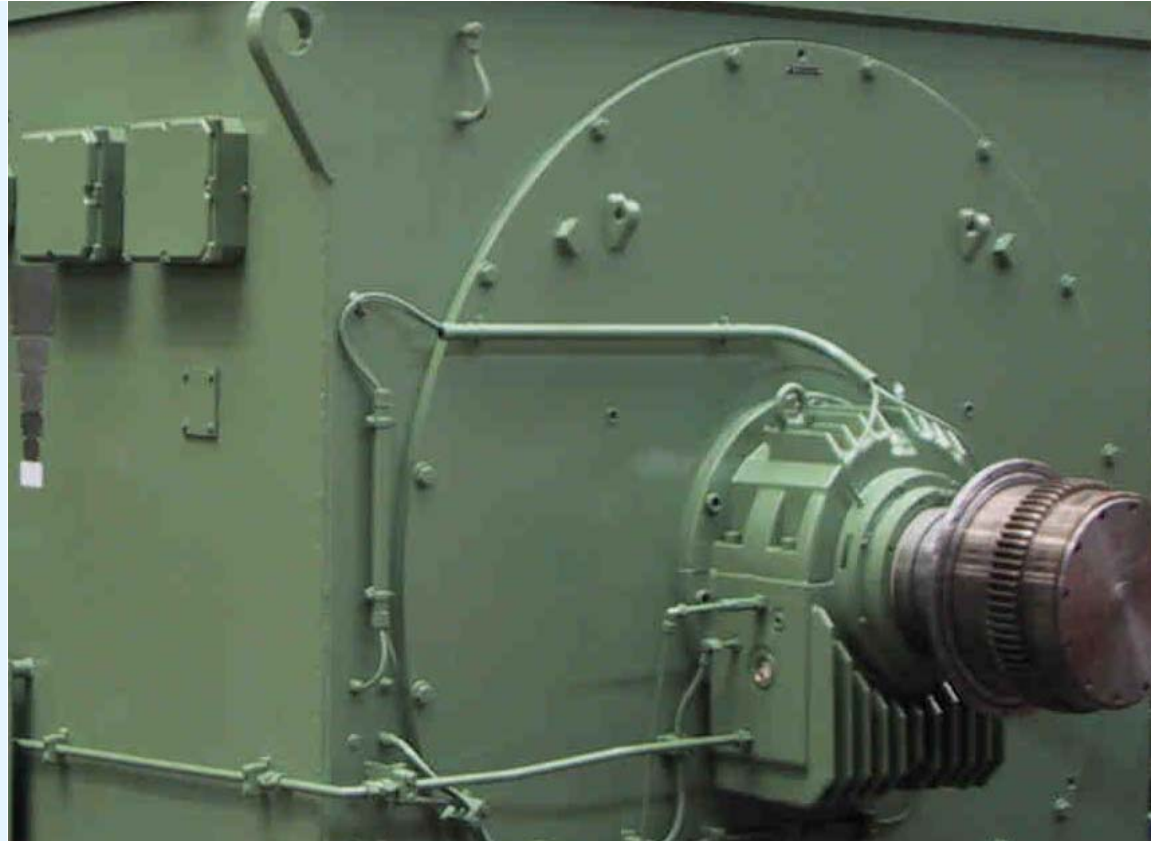
Range of services

- Commissioning of machines and equipment delivered by us
- Preventive maintenance
- Shut-down service
- Fault analysis and repair procedures
- Vibration measurements and remedial actions
- Inspection and determining of scope of repair work
- Retrofit of old machines
- Operator training



REFERENCES

- Enduser (Selected Clients)
- Contractors (Selected Clients)
- OEM (Selected Clients)



Enduser (Selected Clients)

**ADNOC
ARAMCO
BASELL
BASF
BAYER
BMW
BOROUGE
BP
DAIMLERCHRYSLER
DEGUSSA
DOW
E.ON
ENBW
ENEL
EXXONMOBIL
FORD**

**FORTUM
GASCO
HYDRO
MAERSK
NOVOZYMES
OMV
POSCO
RENAULT
RWE
SABIC
SHELL
STEAG
THYSSENKRUPP
TOTAL
VATTENFALL
VW**



Contractors (Selected clients)

**ABB LUMMUS
AKER KVAERNER
ALSTOM POWER
CEGELEC
CONVERTEAM
FOSTER WHEELER
HITACHI POWER
IMTECH
KOBELCO
KÜTTNER**

**LINDE
LURGI
OUTOKUMPO
SAM
SNAMPROGETTI
TECHNIP
TECNIMONT
TRACTEBEL
UHDE
VOEST-ALPINE**



OEM (Selected clients)

**ATELIERS FRANCOIS
ATLAS COPCO
AVL
BURCKHARDT
D2T
DEMAG DELAVAL
DRESSER
ENSIVAL
FLOWERVE
HOFFMANN
HOWDEN
HV TURBO
INGERSOLL RAND
KAESER
KLEEMANN
KSB
LEOBERSDORFER**

**MAN TURBO
METSO LINDEMANN
MÜLLER WEINGARTEN
NEUMAN & ESSER
NUOVO PIGNONE
ROLLS ROYCE
RUHRPUMPEN
SCHULER
SIEMENS
SMS MEER
SULZER
TECHNOFRIGO
THERMODYN
THOMASSEN
TLT TURBO
WIRTH
YORK**

