ELIN Motoren
A Traxys Company

We Keep the World in Motion.

Power Plants
www.elinmotoren.at

2018

Your motor will be manufactured in..

AUSTRIA … in one of Europe's most modern motor- and generator manufacturing sites! A certified quality production!

- Founded in 1892
- Headquarter in Weiz/Preding/Austria
- Yearly turnover > 100 Million Euro
- Employs around 700 people
- Service Worldwide

A Global Player for Electrical Drives…

TRASYS
Beteiligungs- und Management GmbH

ELIN Motoren
A Trasys Company

- Generators for wind energy and decentralized energy systems
- Motors for industrial plant applications, marine, oil & gas, power plants, plastics & tunneling

TSA TRAKTIONSSYSTEME AUSTRIA

- AC traction motors air and liquid cooled
- Traction drives (motor and gear)
- Traction generators, synchronous and asynchronous

ELIN Motors Bosnia
A Trasys Company

ELIN Motors Bosnia d.o.o.
(Živinice, BiH)

SUZLON
POWERING A GREENER TOMORROW

Suzlon Generators Ltd.
(Pune, India)

MEDHA TRACTION EQUIPMENT PVT. LTD.
(A Joint Venture between Traktionssysteme Austria and Medha Servo Drives Pvt. Ltd.)

Medha Traction Equipment Ltd.
(Hyderabad, India)

TSA TRAKTIONSSYSTEME BOSNIA D.O.O.
A Traktionssysteme Company

Traktionssysteme Bosnia d.o.o.
(Tuzla, BiH)

ELIN Metal
A Trasys Company

ELIN Metal Kft.
(Bátonyterenye, Ungarn)

TSA TRACTIONS SYSTEMS
A Traktionssysteme Company

Traction Systems Inc.
(Somerville, NJ / USA)

Profit from our experience in the following sectors:

Industrial Plant Applications

Asynchronous motors with squirrel cage and slip ring rotor, motors IP68 and motors for operation with frequency converters for cement plants, opencast mining, steel plants, chemical plants, water & environment, seawater desalination plants, pulp & paper, test rig motors, applications for industrial plants

Decentralized Energy Systems

Synchronous generators for steam turbines (industrial turbines)
Hydro power (small and medium power), gas turbines, gas motors
Asynchronous generators for Hydro power (small power)

Power Plants

Three-phase short circuit motors for operation on mains as well as operation on mechanically or electrically speed regulated **drive systems for all forms of large thermal power plants**.

Profit from our experience in the following sectors:

Plastics & Tunneling

Water jacket cooled low voltage motors for
tunnel boring, vertical and shaft drill units, underground mining, extruder and compounder, mixer and kneader, injection moulding machines, roller mills, metallurgy, pumps and presses

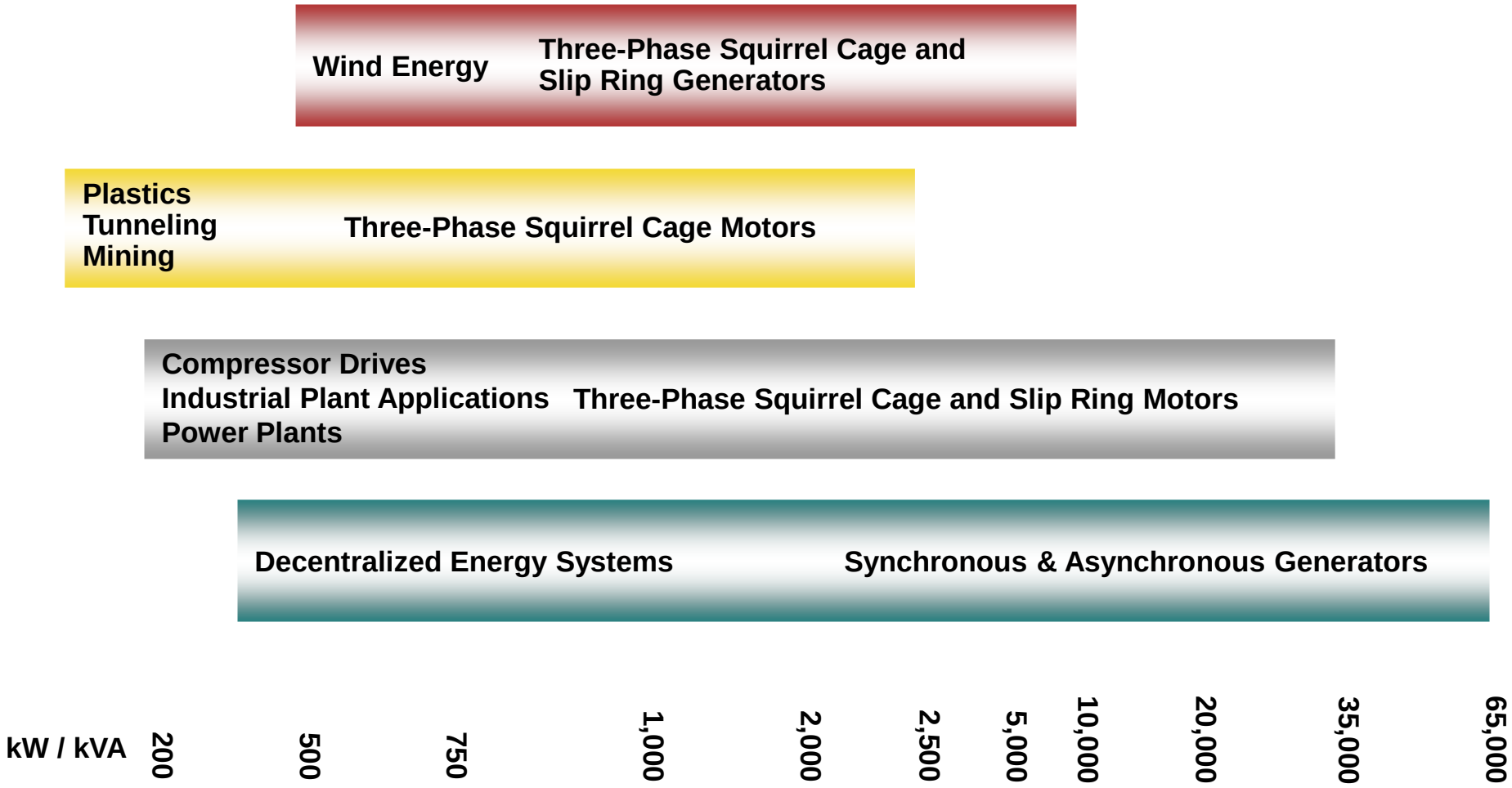
Marine, Oil & Gas

Asynchronous and slip ring motors for up-, mid- & downstream solutions, petrochemistry, air separation, compressors and pumps as well as explosion proof applications (Ex n, e, p).
Certified solutions for marine applications requirements (ABS, Bureau Veritas, DNV, KR, LR,…)

Wind Energy

Asynchronous and synchronous generators
(conventional, DFIG‘s, PMG's),
On- und offshore

Power Ranges



Focus on Power Plants

Which kind of power plants and applications are our motors used for?

ELIN Motoren offers drive solutions for selected applications in all forms of thermal power plants:

- **Pumps**
  - Boiler feed water pumps
  - Main cooling water pumps
  - Absorber pumps
  - Condensate pumps
  - Circulation pumps
  - District heating pumps
  - Misc. auxiliary pumps
  - …
- **Mills**
- **Fans / Compressors**
  - ID Fan
  - FD Fan
  - PA Fan
  - Oxi Compressor
  - Applications for CCS
  - …

Power Plant Mannheim, Germany

Lignite Power Plant
Neurath (BoA 2&3), Germany

Why have leading companies in the power plant business been using our products?

- More than 125 years of experience

- ELIN provides very high quality motors:

  - Customized to comply with your requirements
  - Designed 100% in Austria
  - Very long lifetime and reliability
  - Robust design against external stresses and lower life cycle costs
  - High standard for documentation and testing

Development and Manufacturing Center

The development and manufacturing center is among the most modern worldwide and possesses one of the most advanced testing laboratories.

Which advantages do our solutions for drive systems offer?

- ELIN Motoren – complete drive systems supplier

  Motors with frequency converter

- Customized solutions mechanically and electrically optimized

- Development of the system solution in Austria

- Low maintenance due to coordinated life-cycle management
  - Commissioning
  - Storage concept
  - Revision
  - Strategic spare parts

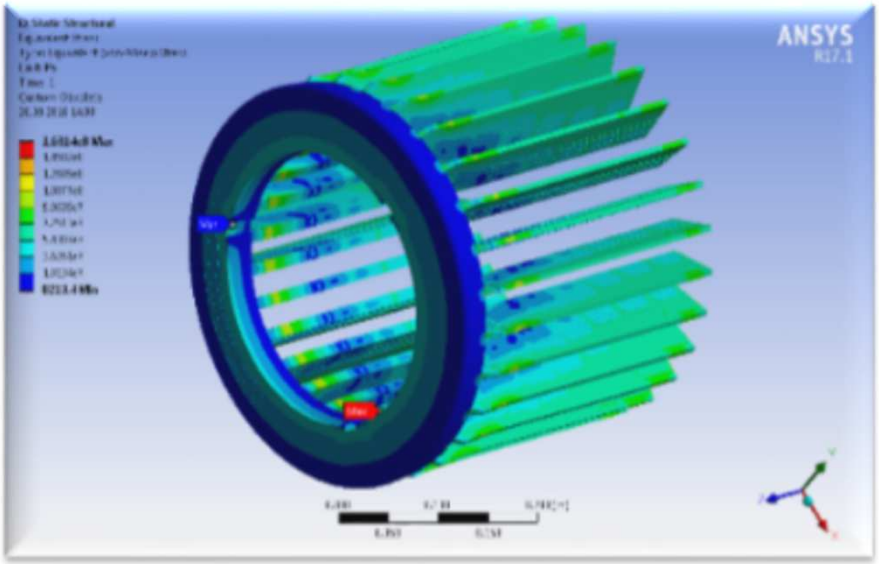
Which philosophy do we apply when handling variable-speed projects?

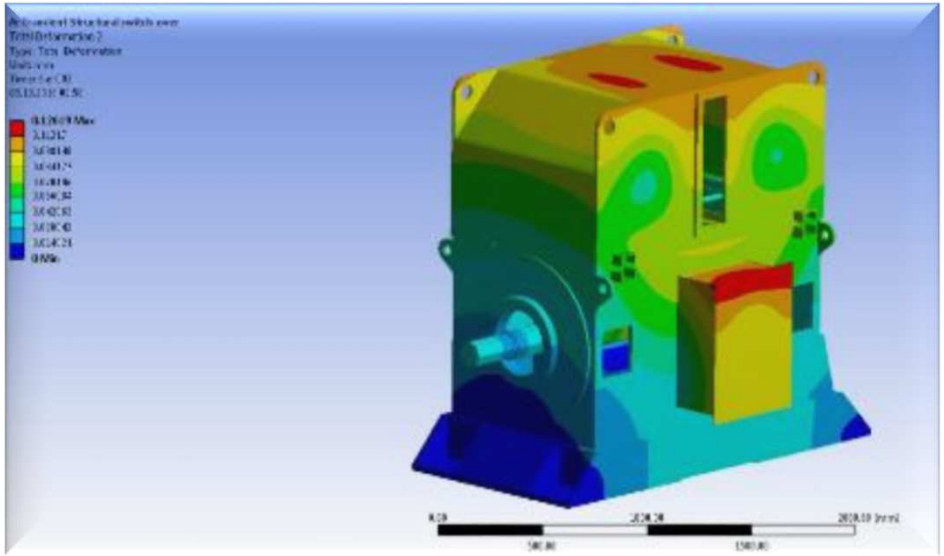
- Cooperation with all leading manufacturers of frequency inverters - ELIN Motoren integrates your preferred equipment into the drive system
- Determination of operating-efficiency together with the customer
- Flexible and quick customer support during the project planning
- Solution of mechanical and electrical topics in one hand - providing a „carefree“ package for the customer

Mechanically controlled ELIN motor

State-of-the-Art Design Tools & Calculations

- Our Designers are **experienced specialists** in usage of state-of-the-art design tools
- We are able to perform all **necessary seismic- and strength calculations** of MV- and LV-Motors
- The whole range of **critical parts calculation** can be covered by our company
- State-of-the-art commercial tools, enable us to **perform a wide range of calculations** and thus project the **behaviour of our machines** during their life cycle as well as potential **t**echnical irregularities well **in advance**.





Impulse Voltage Test for the MV Insulation System

An impulse voltage test for medium voltage insulation systems has been performed at one of the reliable partner companies of ELIN.

A proven insulation technology ensures overcompliance with the requirements resulting out of the relevant standards and therefore offers best possible security for our customers.

Example values for 4 kV system (single conductor insulation):

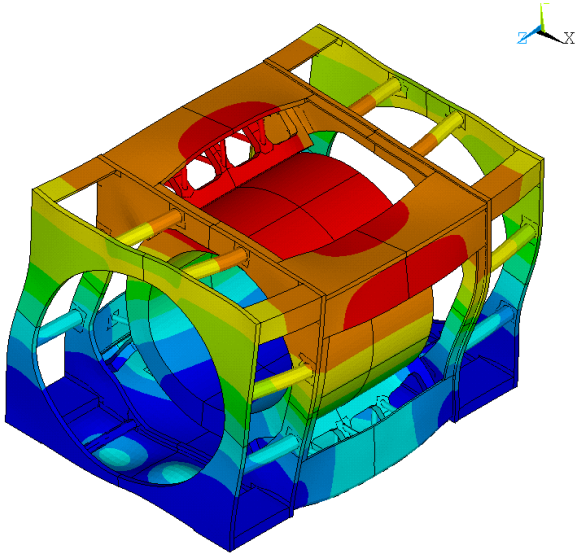
- 14 kV necessary acc. to EN-60034-15
- Insulation breakdown at 112 kV

Reinforced Stator Design

The reinforced stator design of ELIN products enables DOL quickstarts and offers protection against electrical accidents during switch overs with residual voltage.

Winding overhang supports and stator-housing connections are designed to guarantee best-possible avoidance of exciting frequencies, which could cause potential harm.
In addition, bump tests can be performed on request.

The specific know-how leadership of ELIN concerning this topic results from vast experience and countless references for machines being operated in state-of-the-art thermal power plants and under today's grid-conditions.



Motor Types & Cooling Methods

Air cooled Motors

Surface cooled
IC411
200 – 2500 kW

Tube cooled
IC511
200 – 8000 kW

Air cooled
IC611
500 – 12000 kW

Water cooled Motors

Water jacket cooled
IC 7A0W7
50 – 2500 kW

Water cooled +
heat exchanger
IC81W
600 – 30000 kW

Why to use ELIN Motoren?

Flexible Order Processing

High RELIABILITY

High EFFICIENCIES

High QUALITY

ISO 9001 Certification

Low Life Cycle Cost

ATEX Certification

SUSTAINABLE Development

Extensive POWER PLANT References

Modern Test Field

Worldwide Services

Skilled Technical Staff

Over 125 Years of Experience

Continuous INNOVATION

CUSTOMER focused

Global Player

Reputable Companies of the Power Industry Rely on Products Manufactured by ELIN

ELIN Motoren
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Project: Boxberg Power Plant Block R - BFP

Location: Germany

Year: 2009

Copyright: Vattenfall Europe

- Type: HKM110D04
- Power: 13500 kW
- Voltage: 10 kV
- Frequency: 50 Hz
- Speed: 1478 rpm
- Cooling: Air / water cooled
- Quantity: 1 piece

- Application: Pump

- Highlight: Start-up at 75 % of the nominal voltage against full resisting moment of the pump.

  Best efficiency (>97 %) at 75 % of the nominal power (usual operation point of this application)

Project: Zeran - District Heating

Location: Poland

Year: 2018

- Type: HKM150D06
- Power: 1700 kW
- Voltage: 6.3 kV
- Frequency: 61,3 Hz
- Speed: 1219 rpm
- Cooling: Air / water cooled
- Quantity: 3 pieces

- Application: District Heating Pump

Project: CHP Vilnius – BFW - Pump

Location: Lithuania

Year: 2018

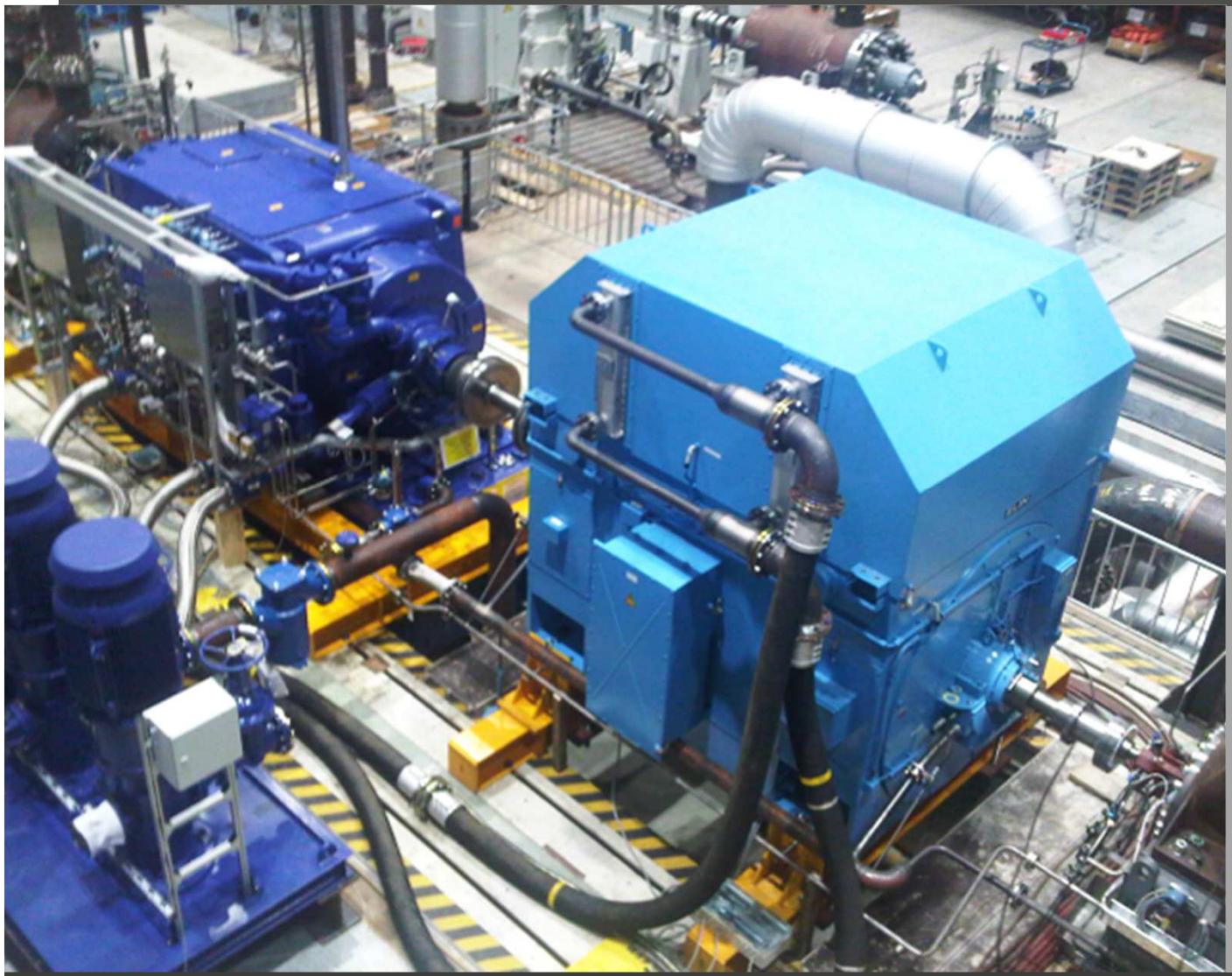
- Type: HCZ545Z02
- Power: 1000 kW
- Voltage: 10.5 kV
- Frequency: 58,5 Hz
- Speed: 3500 rpm
- Cooling: water jacket coooled
- Quantity: 4 pieces

- Application: Boiler Feed Water Pump

Project: Sostanj Block 6 - BFP

Location: Sostanj, Slovenia

Year: 2012



- Type: HKM110D04
- Power: 15500 kW
- Voltage: 10.5 kV
- Frequency: 50 Hz
- Speed: 1490 rpm
- Cooling: Air / water cooled
- Quantity: 1 piece

- Application: Pump

- Highlight: Efficienecy at 75 % load = 97.93 %

  Sound pressure level at no-load = 77.9 dB(A)

  Drive chain length = almost 18 m

  Run-out after voltage drop against open valve is possible

Project: Ptolemais Power Plant – Absorber Pump

Location: Greece

Year: 2017

- Type: HKL163F12
- Power: 1360 kW
- Voltage: 10 kV
- Frequency: 50 Hz
- Speed: 495 rpm
- Cooling: Air / Air cooled
- Quantity: 5 pieces

- Application: Absorber Pump

Project: Ptolemais Power Plant – Coal Mills

Location: Greece

Year: 2017

- Type: HKM180E12
- Power: 2200 kW
- Voltage: 3.3 kV
- Frequency: 42.5 Hz
- Speed: 420 rpm
- Cooling: Air / water cooled
- Quantity: 8 pieces

- Application: Coal Mill

Project: Gebze Adapazari Power Plant – Replica Motor

Location: Turkey

Year: 2016

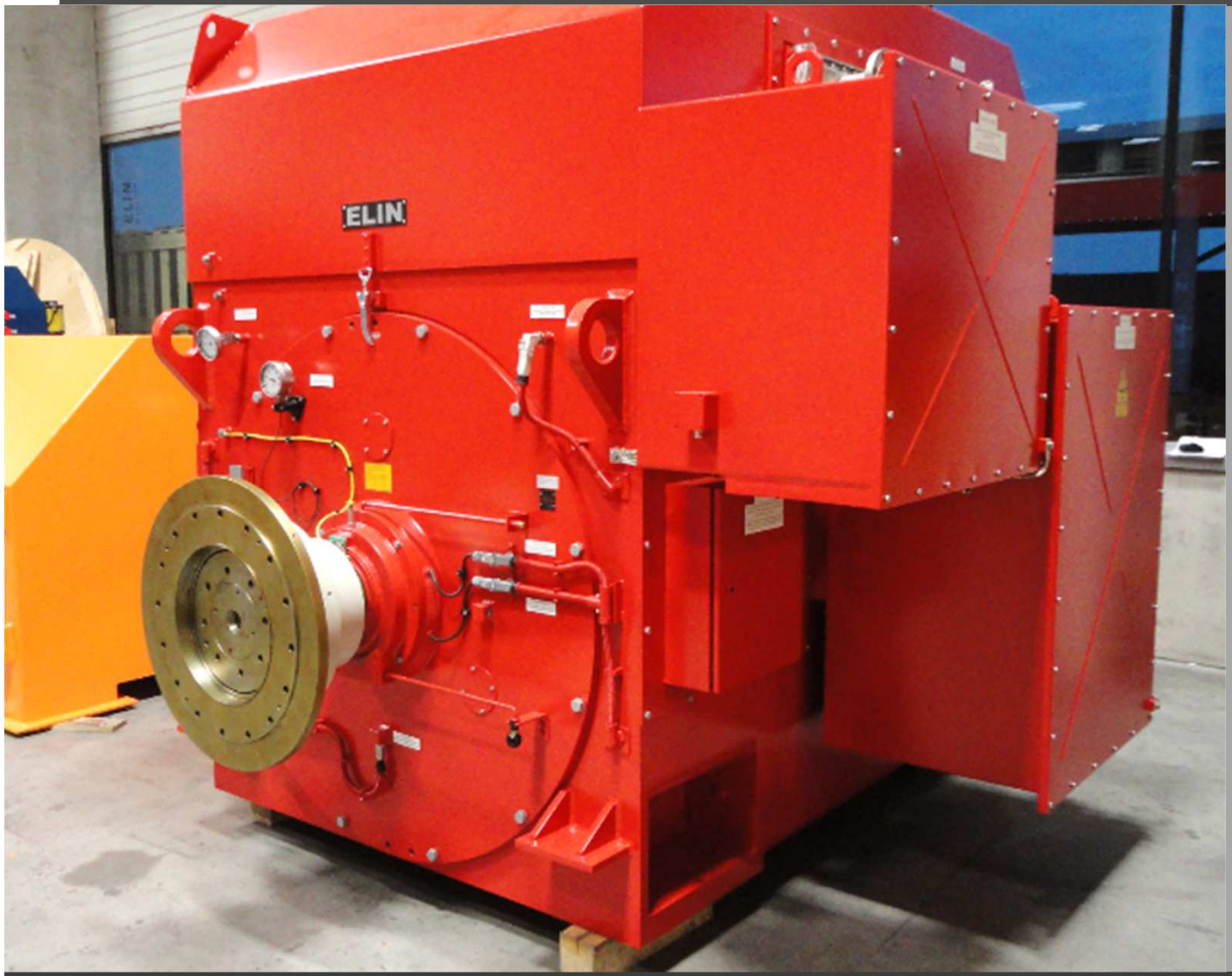
- Type: HKL171D14
- Power: 1600 kW
- Voltage: 6 kV
- Frequency: 50 Hz
- Speed: 423 rpm
- Cooling: Air-air cooled
- Quantity: 1 piece

- Application: Pump

Project: Ptolemais Power Plant – FD-Fan

Location: Greece

Year: 2016



- Type: HKM180E06
- Power: 4200 kW
- Voltage: 15 kV
- Frequency: 50 Hz
- Speed: 989 rpm
- Cooling: Air / water cooled
- Quantity: 2 pieces

- Application: FD - Fan

Project: Talkha Power Plant – BFW-Pump

Location: Egypt

Year: 2016

- Type: HKM171C02
- Power: 3700 kW
- Voltage: 6 kV
- Frequency: 50 Hz
- Speed: 2982 rpm
- Cooling: Air / water cooled
- Quantity: 2 pieces

- Application: Boiler Feed Water Pump

Project: Turow Power Plant – BFP

Location: Poland

Year: 2016

- Type: HKM180E04
- Power: 6850 kW
- Voltage: 10 kV
- Frequency: 50 Hz
- Speed: 1488 rpm
- Cooling: Air / water cooled
- Quantity: 3 pieces

- Application: Boiler Feed Water Pump

Project: Boxberg – Coal Mill

Location: Berlin, Germany

Year: 2015

- Type: HKR190D12
- Power: 1830 kW
- Voltage: 0.85 kV
- Frequency: 50 Hz
- Speed: 495 rpm
- Cooling: Tube cooled
- Quantity: 1 piece

- Application: Coal Mill

Project: Kozienice Power Plant – CWP

Location: Kozienice, Poland

Year: 2014

- Type: HKM111R18
- Power: 5000 kW
- Voltage: 10 kV
- Frequency: 50 Hz
- Speed: 330 rpm
- Cooling: Air/water cooled
- Quantity: 2 pieces

- Application: Pump

- Highlight: IM3011 with flange adapter (mass~8000 kg)

  Motor mass: 52 tons

  Start against open discharge valve of the pump

  Start up voltage 75 % Un

  Starting current max. 5.9 x FLC

Project: Attaka Power Plant - FD-Fan

Location: Egypt

Year: 2013

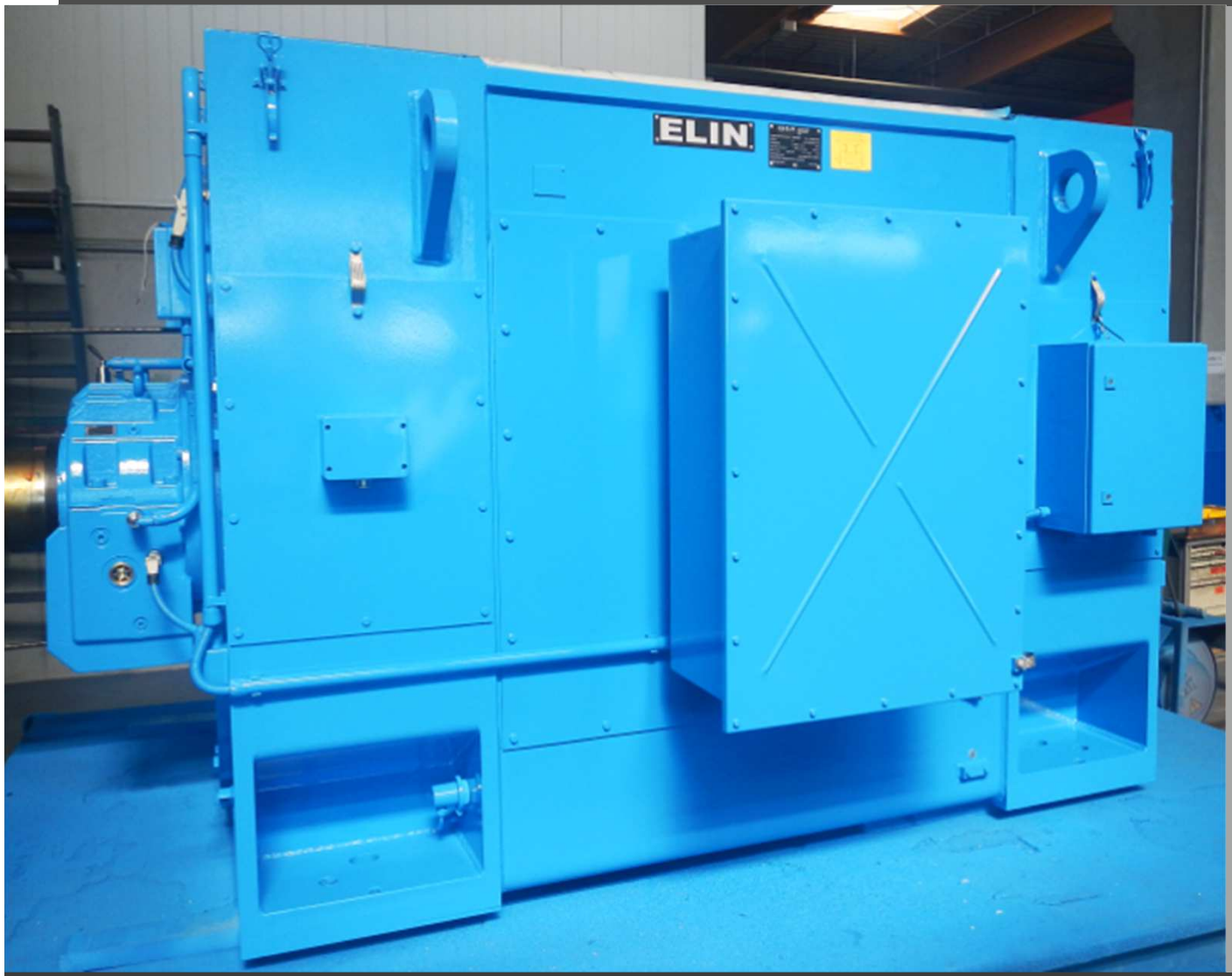
- Type: HKM063C04
- Power: 2000 kW
- Voltage: 6 kV
- Frequency: 50 Hz
- Speed: 1484 rpm
- Cooling: Air / water cooled
- Quantity: 2 pieces

- Application: FD-Fan

Project: Wai Gao Qiao – ID-Fan output extension

Location: Shanghai, China

Year: 2012



- Type: HKM190D08
- Power: 7600 kW
- Voltage: 10 kV
- Frequency: 50 Hz
- Speed: 745 rpm
- Cooling: Air / water cooled
- Quantity: 5 pieces

- Application: Fan

- Highlight: The driven fan has a high moment of inertia (7824 kgm2). Max. permissable start-up time 20 seconds at 77 % rated voltage.

Project: Wilhelmshaven – FD-Fan

Location: Wilhelmshaven, Germany

Year: 2012

- Type: HKM110D08
- Power: 4700 kW
- Voltage: 15 kV
- Frequency: 50 Hz
- Speed: 742 rpm
- Cooling: Air / water cooled
- Quantity: 1 piece

- Application: ID - Fan

Project: WaiGaoQiao Power Plant – ID-Fan

Location: Shanghai, China

Year: 2012

- Type: HKM190D08
- Power: 7600 kW
- Voltage: 10 kV
- Frequency: 50 Hz
- Speed: 745 rpm
- Cooling: Air/water cooled
- Quantity: 5 pieces

- Application: Fan

- Highlight: Efficiency:
  4/4: 97.3 %
  3/4: 97.55 %
  2/4: 97.4 %
  (Customer requirement: Best efficiency at 3/4 load)

  Starting current 5.5x FLC without positive tolerance

  Fan load moment of inertia = 7824 kgm2

Project: Wilhelmshaven - BFP

Location: Wilhelmshaven, Germany

Year: 2012

- Type: HKM111Z04
- Power: 15800 kW
- Voltage: 15 kV
- Frequency: 50 Hz
- Speed: 1488 rpm
- Cooling: Air / water cooled
- Quantity: 2 pieces

- Application: Pump

- Highlight: 15 kV design

Project: Altbach – FD-Fan

Location: Stuttgart, Germany

Year: 2011

- Type: HKM180Z99
- Power: 3100 / 3800 kW
- Voltage: 10 / 2.5 kV
- Frequency: 50 / 60 Hz
- Speed: 993 / 1191 rpm
- Cooling: Air / water cooled
- Quantity: 1 piece

- Application: FD-Fan

- Highlight: Design with 2 windings:

  Winding 1 = Operation on mains with 10 kV & 50 Hz

  Winding 2 = Operation with frequency inverter with 2.5 kV & 60 Hz

Project: Schwarze Pumpe Power Plant – Coal Mill

Location: Germany

Year: 2009

- Type: HKR190D12
- Power: 1830 kW
- Voltage: 10 kV
- Frequency: 50 Hz
- Speed: 495 rpm
- Cooling: Tube cooled
- Quantity: 8 pieces

- Application: Coal Mill

Project: Boxberg Block R – Absorber Pumps

Location: Germany

Year: 2009

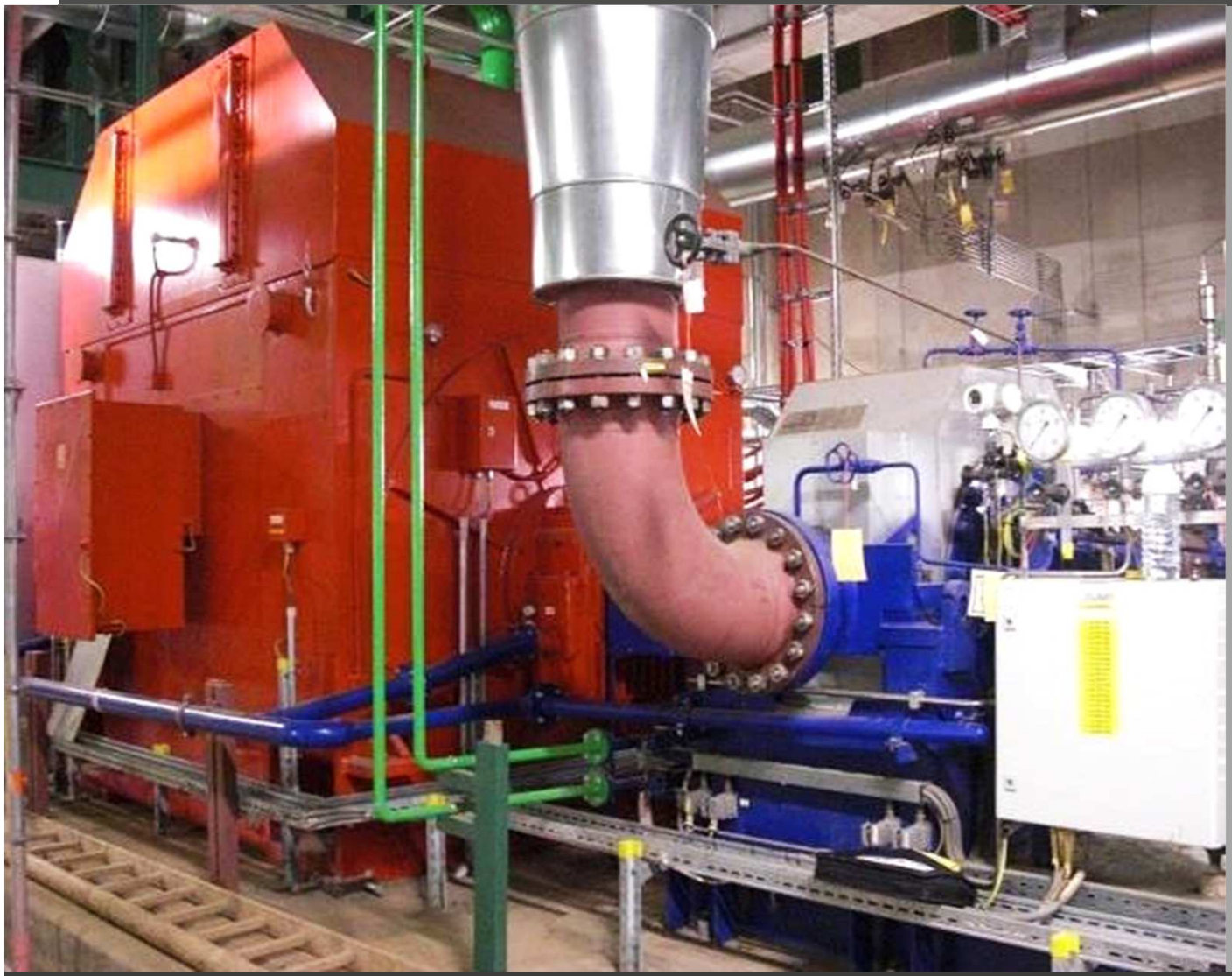
- Type: HKR110B14
- Power: 1300 kW
- Voltage: 10 kV
- Frequency: 50 Hz
- Speed: 422 rpm
- Cooling: Tube cooled
- Quantity: 5 pieces

- Application: Absorber Pump

Project: Walsum Block 10 - BFP

Location: Germany

Year: 2009



- Type: HKM111Z04
- Power: 15500 kW
- Voltage: 15 kV
- Frequency: 50 Hz
- Speed: 1490 rpm
- Cooling: Air / water cooled
- Quantity: 2 pieces

- Application: Pump

- Highlight: 15 kV ± 10 % / start-up current 4.4x without tolerance / sound pressure level 82 dB(A) at load without tolerance

Project: BoA2&3, Neurath Power Plant - Absorber

Location: Grevenbroich, Germany

Year: 2007

- Type: HKR110B14
- Power: 1400 kW
- Voltage: 10 kV
- Frequency: 50 Hz
- Speed: 424 rpm
- Cooling: Tube cooled
- Quantity: 13 pieces

- Application: Pump

- Highlight: Design according to power plant standard / noise level 77 dB(A) without tolerance at load

Project: BoA 2&3, Neurath Power Plant - MCWP

Location: Grevenbroich Germany

Year: 2007

- Type: HKM110Z18
- Power: 3500 kW
- Voltage: 10 kV
- Frequency: 50 Hz
- Speed: 329 rpm
- Cooling: Air / water cooled
- Quantity: 5 pieces

- Application: Pump

- Highlight: Low noise: 80 dB(A) at load / start-up current 4.8 (without tolerance)

Project: Schwedt Power Plant – ID-Fan

Location: Germany

Year: 2006

- Type: HKM180D06
- Power: 5700 kW
- Voltage: 6 kV
- Frequency: 50 Hz
- Speed: 995 rpm
- Cooling: Air / water cooled
- Quantity: 3 pieces

- Application: Fan

- Highlight: 80 dB at load without tolerance

Project: Termoli Power Plant – MCWP

Location: Italy

Year: 2005

- Type: HKR110D12
- Power: 1850 kW
- Voltage: 6.6 kV
  Frequency: 50 Hz
- Speed: 495 rpm
- Cooling: Tube cooled
- Quantity: 2 pieces

- Application: Pump

- Highlight: Design with double casing for noise reduction

All our efforts aim at our customers' success.

Selected Contacts

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