

Motors / Drives / Soft Starts / Transformers / Current Reactors

MATRIX GROUP
YOUR PARTNER TO ROTATE INDUSTRY



GLOBALLY CONNECTED TO SUPPORT YOUR BUSINESS

MISSION STATEMENT

We strive to be the best independent supplier of large electric motors, drives, soft starts and transformers. Our aim is to give a high level of professional service and support, to be dedicated to the needs of our clients; exceeding their expectations and delivering the best value solutions.



We appreciate how important the human element in business is. We ensure we get to know our customers and understand their needs, so we can provide them with the best value solution.



WHO WE ARE

Matrix is a global engineering solutions company, with over 14 years of experience in focusing on projects in Oil & Gas, Power Generation, Utilities and Infrastructure.

We have offices in strategic locations in Europe, North America Middle East and Asia. This ensures we are close to our customers and suppliers and helps us execute the management of projects with a local focus, whilst keeping globally connected.



We offer a specialist range of electro/mechanical products that are used with rotating equipment.

WHAT WE DO

Our scope includes electric motors, variable speed drives, soft starts and transformers for use in a variety of industries for; air movement, compressors and fluid handling equipment.

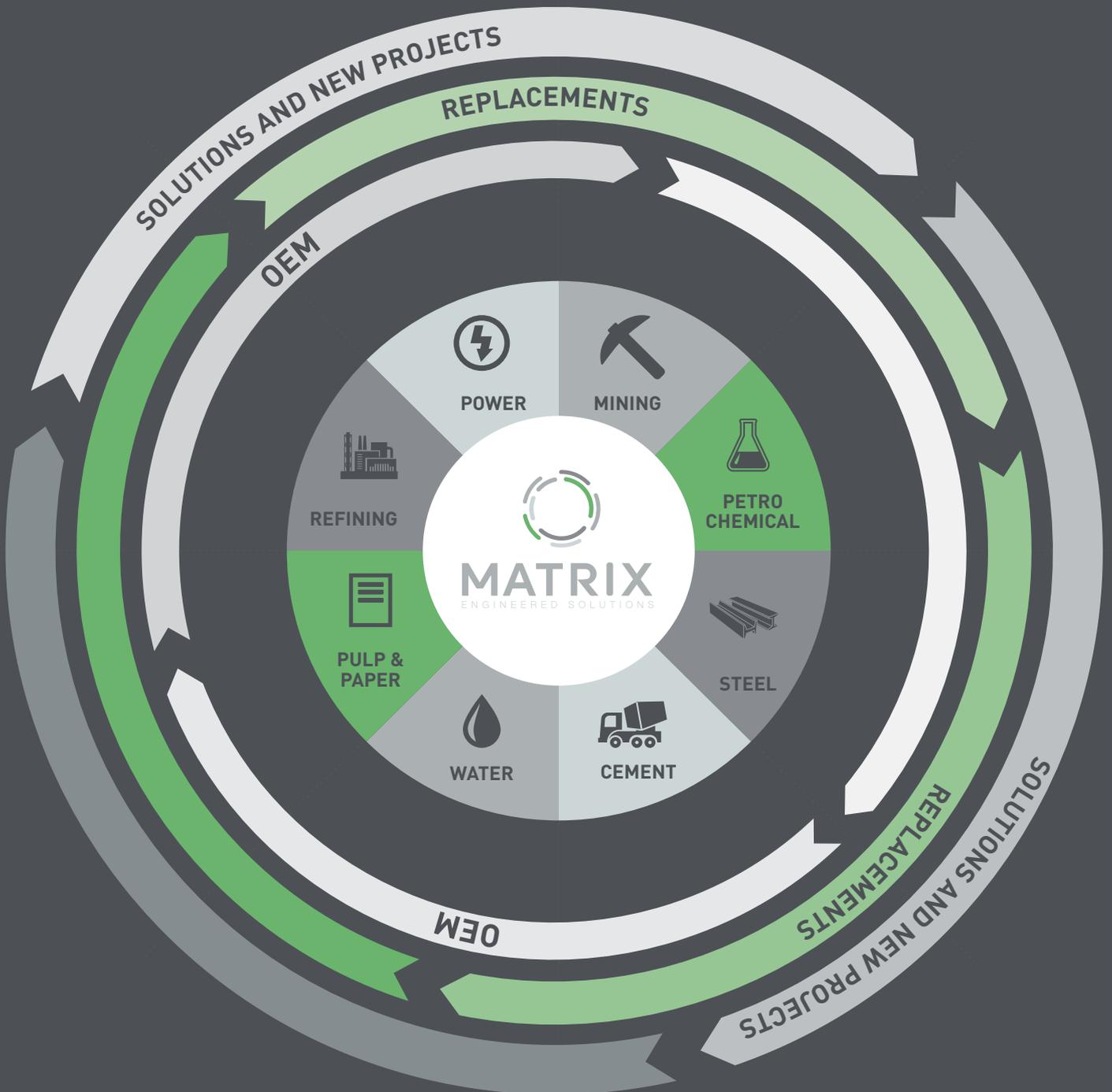
- Motors** ←
- Drives** ←
- Soft Starts** ←
- Transformers** ←
- Current Reactors** ←

HOW WE DO IT

We feel that our strength in the market comes from our close relationship with our customers, OEM factories and the depth of experience that our team has.

We endeavor strive to understand our client's needs and requirements and try to put forward the best value solution.

MATRIX MARKET COVERAGE



MARKET APPROACH



NEW PROJECTS

We work directly with OEM's and EPC's to offer solutions for projects across the globe.

Our approach is always co-ordinated and geo-specific, involving our factory support and local offices to ensure we clearly understand the needs of all parties from consultant, end user, EPC & OEM so that we offer the right solution at the right place at the right price.

This strategic approach, alongside our high level of technical competence and close factory support, allows us to meet the expectations of our international high calibre customer base.

Key Points

- Selecting the right solution to match the project requirements
- Detailed Technical offer with good back-up and support
- Commercially focused to meet the client's expectation and budget
- Global Location for Order placement
- Experienced Project Management Team for order execution.



MOTOR REPLACEMENT

We have a strong pedigree to be able to replace any existing motor of any brand or type and give an enhanced/upgraded solution which provides better performance and longer life.

Paying for existing OEM replacement can be costly and pre-existing problems can quickly re-occur.

Our highly qualified engineers have acquired valuable experience from executing unique projects around the world. This allows us to upgrade any existing large motor with a more up-to-date, improved design with the same key dimensions, to give longer life solutions and enhanced performance.

Key Points

- Working directly with the factory engineering design team
- Full site survey of existing equipment carried out
- Upgraded performance in same package size can often be achieved.
- All mounting options available
- New motor can be designed to work on existing VFD without needing to change the drive settings
- Wide range of cooling options available
- Low starting current and low noise designs available
- Full load testing available at the factory

OUR PARTNERS



TECO's position as a World Leader in the design and manufacturing of large induction motors is secured by an unfailing commitment to engineering excellence and technological innovation.

For half a century TECO motors have been recognised as industry leaders in dependability and quality.

We have worked with Teco from the very start and they are a key strategic partner for both retro-fit and project business. With their wide range of products, global acceptance and high level of engineering experience, they give us the ability to deliver a high quality engineered solution to our clients.

MOTORS

Low Voltage:

- Output Power 1/4HP – 500HP
- Voltage Range 200-690V
- Poles 2-16
- Types – Safe Area, ATEX Exn, Exd IEC & NEMA
- Eff – IE2, IE3 & IE4
- Cast Iron and Aluminium Frames
- Special Designs Available

Medium & High Voltage

- Output Power 75HP – 30,000HP (up to 60,000.00 Synchronous)
- Voltage Range 1000- 14,500V
- Poles 2 - 42
- Enclosures- TEFC, TEAAC, TEWAC, ODP, WPI WP11
- Available in Both IEC & NEMA Frames and Specification
- Vertical & Horizontal Mountings
- Available in Safe, Area, EXD, EXE, EXP Types ATEX IEC & CSA UL Certification
- VFD Compatible
- Full range of bearing types available
- All branded hardware and accessories.



OUR PARTNERS



Fortune Electric is a world class manufacturer of oil filled distribution and power transformers, up to 345 KV/500 MVA. Fortune also builds Cast Coil transformers up to 10,000 KVA/24KV, Gas Insulated Switches up to 24 KVA/161 KV, and low voltage and medium voltage switchgears and MCC.

Fortune has over 30 years of experience in the power transmission and distribution field, and are an ISO 9001 certified company. Their affiliation with local and nationwide engineering service companies helps them to fulfil their customers' service needs.

TRANSFORMERS

Distribution:

- Zhong-Li Plant
- Up to 69KV
- Amorphous Metal Core Transformer
- Cast REsin up to 10 MVA
- Mini Substations

Medium & High Voltage

- Guan-Yin Second Plant
- Up to 345kv
- Wuhan China Plant
- Up to 230kv
- Taichung HFT Plant
- Up to 500kv



OUR PARTNERS



Allis Electric

AEC's transformers provide power distribution to industrial, commercial, residential markets safely and effectively.

For the high demands for safety for power distribution equipment, dry type transformer with fire resistant, non-polluting and humidity resistant designs are required. AEC's cast resin transformer provides high quality and meet all safety requirements required to for all power distribution system applications.

Allis Electric is an experienced manufacturer of switchgear and has been specializing in transmission & distribution equipment, UPS and switching mode rectifiers for over 40 years. Their products are sold to many countries around the world. They offer high quality design solutions to meet high demands of their client's applications.

TRANSFORMERS

- Oil-immersed Transformer, Up to 36kV, 25000kVA
- Cast Resin Transformer, Up to 36kV, 15,000 kVA
- Dry type Transformer, Up to 6.6kV, 2,000kVA
- Reactor, Voltage up to 36kV

Types;

Hollow reactor

Core reactor Shunt reactor for Capacitor

Starting reactor for motor starting

Current limited reactor

Distribution reactor



OUR PARTNERS



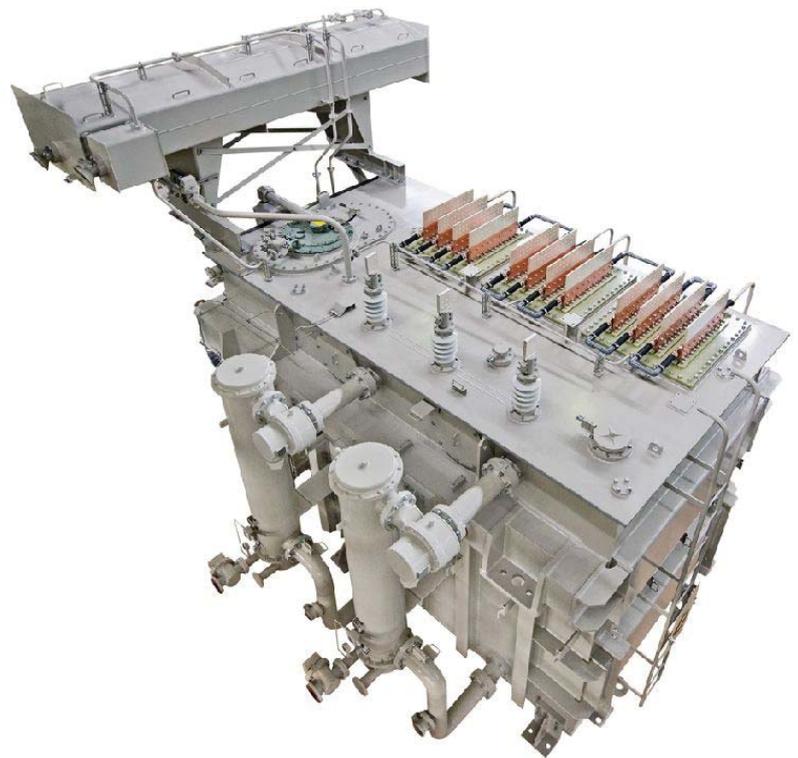
KITASHIBA

Main stockholders: Toshiba Energy Systems & Solutions Corporation
Founded in 1950 in Matsukawa-machi, Fukushima-shi, Fukushima, Kitashiba has contributed to the progress of society by offering excellent products and services for electricity and other social infrastructure, while being closely connected to local communities in Fukushima and other prefectures in Tohoku.

Kitashiba's transformers are highly valued by many customers because Kitashiba employs a unique design technology, including cutting-edge design and analysis tools, manufacturing technology cultivated through our extensive experience and a stringent quality control system. Kitashiba's transformers are utilized at power plants, substations, buildings, factories, and other facilities to provide stable electricity supply to workplaces and homes.

TRANSFORMERS

- Rapeseed Oil Immersed Transformers (UL Trans)
- Utility Transformer
- Intermediate Transformer
- Furnace & Rectified Transformer
- Instrument Voltage Current Transformer



OUR PARTNERS



A global player in the soft start market for the last 38 Years, AuCom has a dedicated division for their Medium Voltage solutions.

The products are of the highest quality and are at the forefront of modern design. They are accepted around the world and their expansive network of offices ensures they provide the very highest level of service and support to their customer base.

AuCom provide 24 Hr support and a promise that an engineer can be on site anywhere in the world, in less than a day!

SOFT STARTS

- Motor Voltage – 2.3kV , 3.3kV, 4.16kV, 5kV,6.6kV, 7.2kV, 10k, 11kV, 13.8kV
- Test Voltage – 7.2kV , 12kV, 15kV
- Control Voltages – 120VAC /230VAC
- Frequency 45Hz – 66Hz (Auto trigger)
- Start Current 50A ...6000A
- Motor Current (Max) 20A...2000A
- Starting Time (Max) 1 Sec30 Sec
- Ambient Temp 0-50 Deg C (80 Deg C)
- Max Altitude 1000 M Above Sea Level (3000M De-rated)
- IP Rating – IP32 Standard – IP56 Special POA
- Full Range of Factory testing available.



OUR PARTNERS



**Rockwell
Automation**

Rockwell Automation is the world's largest company dedicated to industrial automation and information.

Since 1989, Rockwell Automation has been one of the world's leading suppliers of medium voltage motor control solutions. A solution for applications ranging from 2.3 to 10 kV. Ideal for centrifugal fan and pump applications, these drives are easy-to-use, maintain and include a variety of communication options to integrate into any control system.

Their global infrastructure of support centres and experts help ensure they are able to help you protect your automation investment now and in the future. The comprehensive suite of offerings provide you flexible solutions for today and tomorrow. Whether it is meeting your everyday technical needs and gaining value-add maintenance through to asset management and system optimization solutions, their expertise can help maximize the return on your automation investment.

DRIVES ROCKWELL

Medium Voltage

- Broad range of 200...34,000 Hp (150 kW to 25,400 kW)
- 2400...6600V Input Supply Voltage
- Air-cooled design for 200...8000 Hp drives
- Liquid-cooled design for 3000... 8500 Hp drives
- Digital sensorless control, direct vector control or full vector control with tachometer feedback (optional)
- DPI™ communication interface
- Optional interfaces for RI/O DeviceNet™, ControlNet™, Ethernet, Profibus, Modbus©, Modbus Plus, Interbus™, LonWorks®, CanOpen, RS485 HVAC, RS485 DF1, RS232 DF1, RS232 C
- Integral multi-language operator interface terminal
- Direct-to-Drive™, AFE rectifier, and 18-pulse rectifier configuration
- Soft starting and variable speed control for high power applications
- Delivers virtually perfect current and voltage waveforms allowing use of standard motors
- PowerCage™ inverter and rectifier modules allow SGCT replacement in under ten minutes
- Configuration and programming via integral LCD keypad, DriveTools™ SP software, or Drive Explorer™ software
- Premier Integration with PowerFlex® AC drives uses the Logix control platform to simplify parameter and tag programming and reduces development time



OUR PARTNERS



COIL INNOVATION
POWER INDUCTORS

Coil Innovation specialises in the design, manufacture and sales of power inductors for electrical power systems, especially of air-core dry-type reactors.

The company was founded in July 2004 as a private limited company by a team with a wealth of experience in this branch of business and a high degree of product knowledge. The founders form the core operational team of the company and hold the majority of the shares. They are supported by a young, motivated and highly-qualified team of employees. The rest of the shares are held by strategic partners, for example by the Haase Company, located in Graz, Austria, which is a key supplier, providing the aluminum conductor material for the manufacture of air-core dry-type reactor windings.

For the manufacture of power inductors, modern production facilities, were built in Eferding, in the heart of Upper-Austria, consisting of approximately 5.000 m² of production area and 1.000 m² of office area. As well as innovative production equipment, Coil Innovation disposes of a state of the art high voltage testing laboratory.

Innovation and quality are key elements of the strategic alignment of Coil Innovation.

CURRENT LIMITING REACTOR

Impulse voltage generator:

max. charging voltage 2000 kV
max. impulse test voltage 1700 kV
energy at max. charging voltage 200 kJ
Turn-to-turn overvoltage test set-up:
repeatedly charging/discharging capacitor
max. charging voltage 200 kVAC

Test transformer:

max. AC test voltage 250 kV / 400 kV
max. secondary current 0,5A cont. duty / 1,0A 15min
Capacitor bank for reactive power compensation:
power supply 300 kVA 3-phase / 3 x 100 kVA 1-phase
rated voltage 1,5 / 3 / 6 / 9 / 12 / 15 / 18 / 24 / 30 / 36 kV
max. current 4000 A / total reactive power 60 MVar

Winding temperature measurement:

by fibre-optic sensors (during energization)
by DC resistance method
by thermovision camera

DC power supply:

power supply 275 kW via 6-pulse rectifier
rated voltage 55 / 110 / 220 V
max. current 5000 / 2500 / 1250 A

Sound & vibration measurement:

Laser Vibrometer
Acoustic laboratory with harmonic current excitation



TECO-WESTINGHOUSE INSTALLATION EXPERIENCE

District Cooling

Application: Pump
Motor Type: Squirrel Cage
Power: 1563 kW
Voltage: 3300 V
Poles: 6
Cooling: IC 611
Location: UAE
End User: PAL Group



RO Plant

Application: Pump
Motor Type: Squirrel Cage
Power: 1100kW
Voltage: 11000V
Poles: 2
Cooling: IC611
Location: UAE
End User: DEWA-Palm Jumeirah



District Cooling

Application: Compressor
Motor Type: Squirrel Cage
Power: 1200 HP
Voltage: 11000V
Poles: 2
Location: UAE
End User: Dubai Airport



Gas Compressor Station

Application: Compressor
Motor Type: Squirrel Cage
Power: 8400 kW
Voltage: 11000 V
Poles: 4
Cooling: IC 81W
Hazard Protection: Exe px IIA T3 Gc
Location: Middle East



Direct Reduction Plant

Application: Process Compressor
Motor Type: Squirrel Cage
Power: 3650kW
Voltage: 6600V
Poles: 4
Cooling: IC611
Location: Middle East



Petrochemical Plant

Application: Water Intake Pump
Motor Type: Squirrel Cage
Power: 5450kW
Voltage: 11000V
Poles: 14
Cooling: IC 611
Location: Middle East



COIL INNOVATION INSTALLATION REFERENCE

Petrochemical Plant

Rated voltage 5.5 kV
Highest voltage for equipment 5.5 kV
Rated frequency 50 Hz
insulation level:
- BIL across reactor coil 75 kV
- BIL to ground 75 kV
Measured rated inductance / phase 0.733** mH
Coils per phase / number of phases 1 / 1
Thermal class of insulation system F
Type of cooling AN
Made by total mass 620 kg
Rated Current 600A
Rated Short - time current
- thermal, 1 s 12.6 kA
- mechanical 32.13 kA
Year of manufacture: 2016



TRANSFORMER REFERENCES

Power Plant

Replacment of GE Transformer
7500/9375 kVA, 13.2/2.4kV
Location: Middle East



Power Plant

OMA UYA Development Multi Purpose Project
76MVA, 138/10.5KV, OFWF, Qty:2
Location: Sri Lanka



REPLACEMENT

Electric Motor Replacement

Matrix takes motor replacement seriously and views it as complex process and takes full ownership of giving the customer the right solution with zero risk, we understand we are dealing with critical plant equipment and thus ensure we follow strict procedures evolved from the experience of replacing motors of different manufacturers around the globe what ever the application or standards.

SIEMENS

ABB



ELIN
Motoren



HITACHI

TOSHIBA

▲ HYUNDAI

▲ MITSUBISHI

SCHORCH

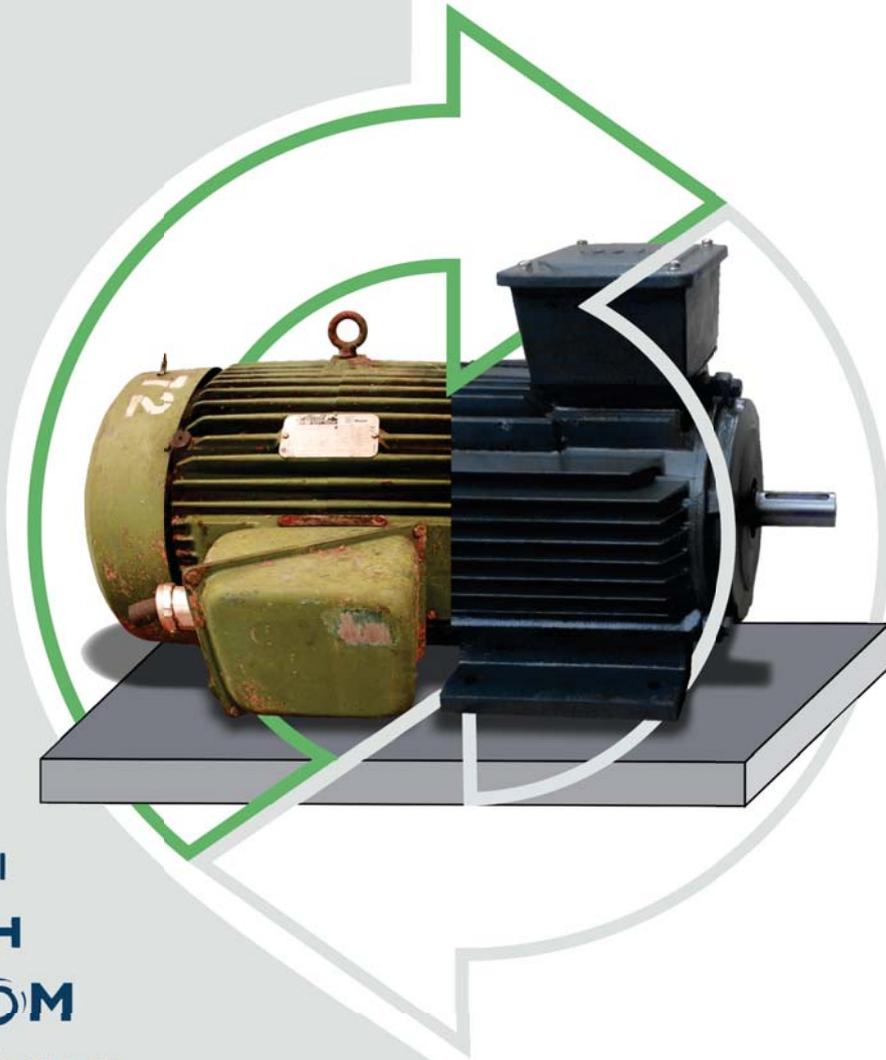
ALSTOM

Sabroe



FIMET

alconza

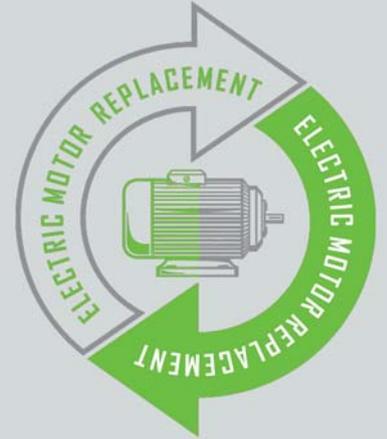


TECO  Westinghouse

MATRIX

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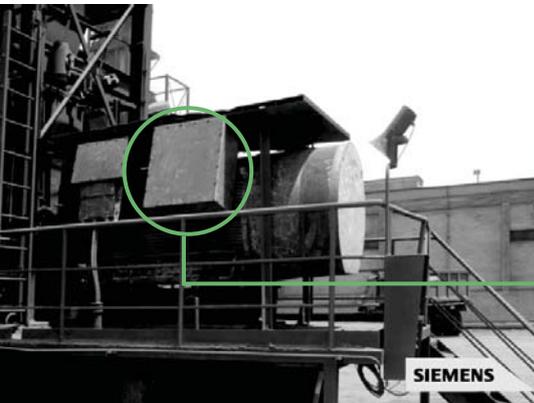
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Key Points

- Working Directly with the factory engineering design team
- Full site survey of existing equipment
- Upgraded performance in same package size can often be achieved.
- All mounting options are available.
- New Motor can be designed to work on existing VFD without changing drive setting.
- Wide range of cooling options available.
- Low starting current and low noise designs available.
- Full load testing available at the factory.

SUCCESS STORIES

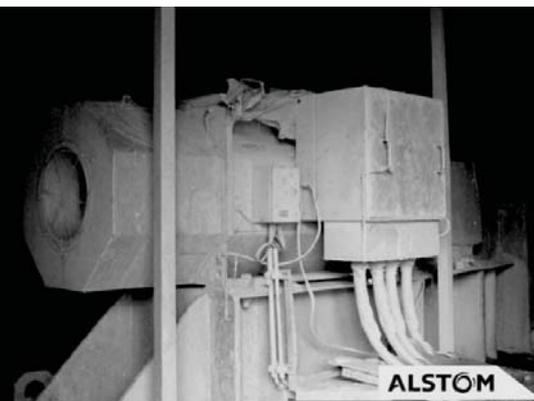


Replacement of Siemens
Direct Reduction Plant
1700 kW - 6600 V - 4 Pole



TECO Westinghouse Electric Motor 1700 Kw/ 6600 V
Steel Industry

We are able to design identical terminal boxes with the same dimensions, cable connections terminal locations as original unit preventing any changes or modifications to be required at site before commissioning.



Replacement of Alstom
Application : Slurry Pump
800 kW - 690 V - 8 Pole



TECO Westinghouse Electric Motor 800 Kw/ 690 V
Mining Industry

The motor was designed especially for VFD Compatibility and the motor now copes much better with bad harmonics coming from the VFD this came from a special design consideration for reinforced insulation and using high grade spike resistance insulation material for increasing the durability of winding insulation against the transient voltage, to increase the capacity of the insulation material in order to withstand the Voltage impact upto 3.1 times of the 690V.

SUCCESS STORIES



Replacement of ABB
Application : ID Fan
2460kW - 690 V - 6 Pole



Cement Industry

This case was a special because of the high power (2460KW) with low Voltage (690V). The client a cement company was using ABB motors for years and they were looking for a motor OEM who can supply a spare motor with improved performance, with a comparable price to the original brand and after log technical evaluation they chose TECO-Westinghouse. Since the application was an ID Fan and they needed to have full control of the process by with an ABB VFD , So matching the new motor with existing ABB VFD was a big concern for the client.

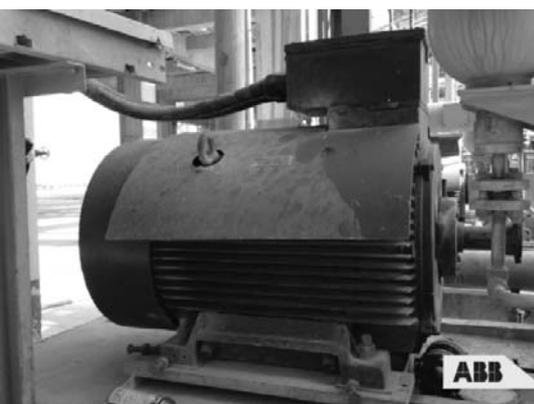


Replacement of TMEIC
Application : Fan
1400kW - 6000 V - 4 Pole



Petrochemical Industry

The design of the new motors were based on Japanese standard d-Ex-Proof certificate from ATEX. All special accessories provided were exactly same as the existing motor in order to facilitate the condition monitoring of the motors. Full Type test of all motors at TECO-Westinghouse factory. Competitive price in comparison with the original motor.



Replacement of ABB
Application : Pump
255kW - 6600 V - 2Pole - Exe IIB T3

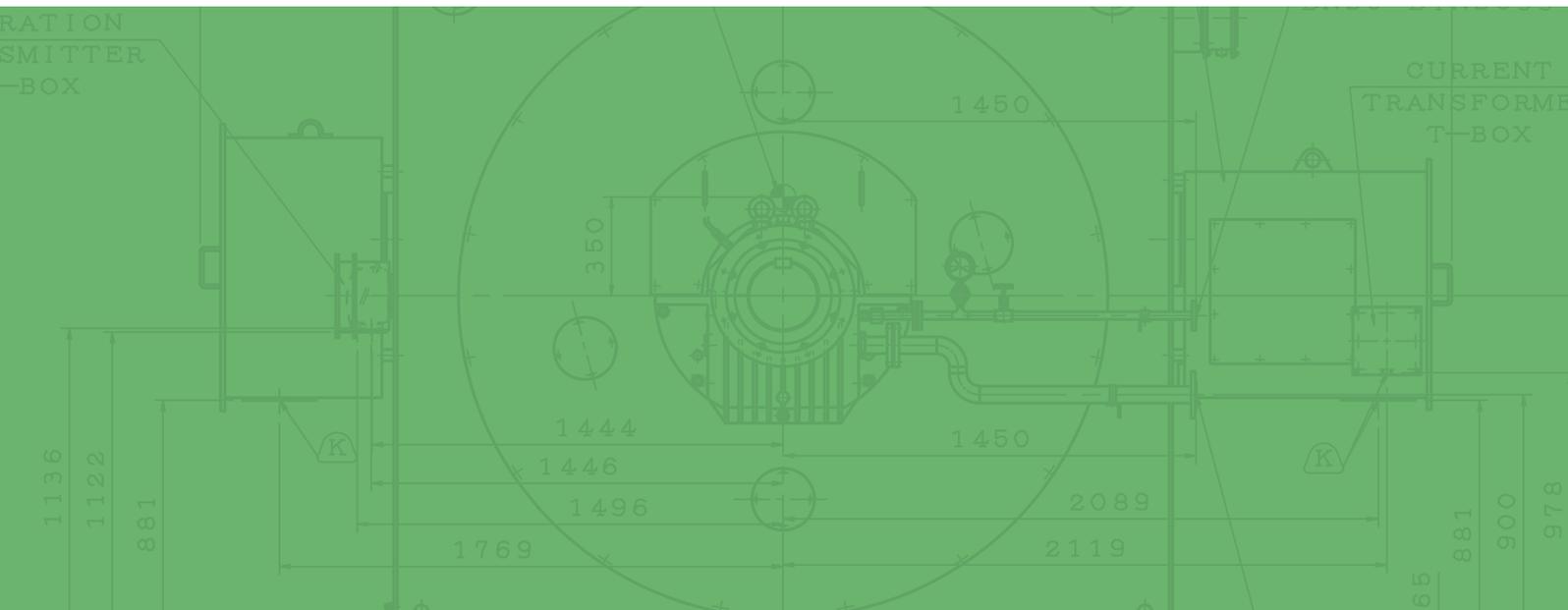
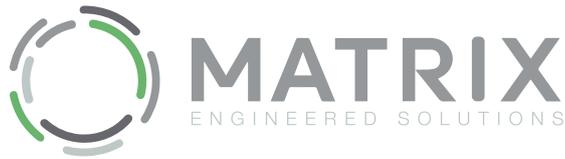
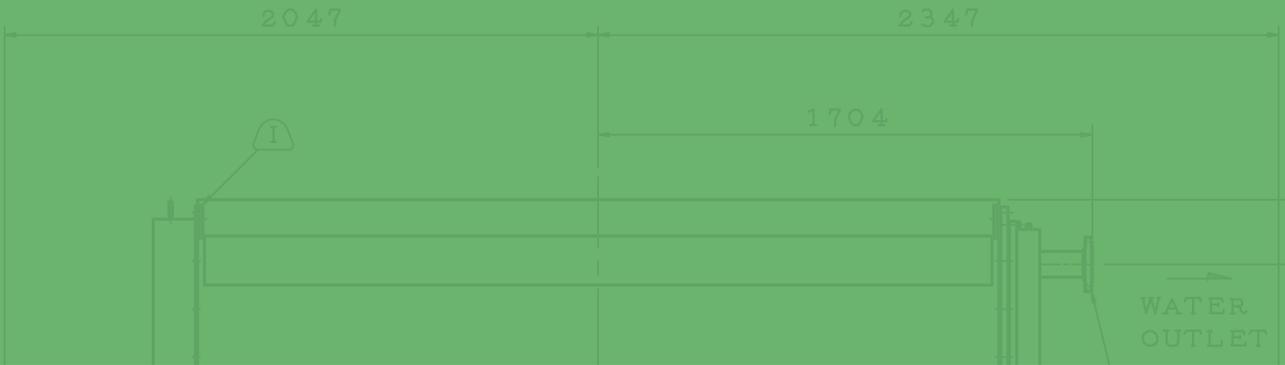


Petrochemical Industry

They have done some modifications on the pump impellers so the power on shafts has increased but the client insisted to make no change to the frame size although they needed more power from motor on top of this the specs were Exe IIB T3. Matrix team had several technical meetings with the engineering department of the client and after many clarifications from both sides, TECO factory team sized the motor very accurately & precisely based on the new pump Impeller design and considered the load curves with enough safety margin and the power has been increased from 185 KW to 255KW without changing the frame size, critical mounting dimensions and also the Terminal box sizes and locations all remained the same.

VALUABLE CUSTOMERS





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