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Rotating equipment training proposal for Company

This proposal Rotating Equipment Academy will offer four training courses for Company in

- 1 Centrifugal Compressor (and pump) for front-end/concept engineers.
- 2 Centrifugal Compressor (and pump) for asset service engineers and maintenance support engineers.
- 3 Centrifugal Compressor (and pump) for operators.
- 4 Basic drivers training for rotating equipment.

Rotating Equipment Academy can provide several training courses with a wide variety of topics and modules of rotating equipment. The courses are designed to instruct personnel in subjects that range from the fundamentals of operation, performance, instrumentation to specific maintenance. The content, level and duration of the training courses can be tailor made to the customer's needs and equipment.

The Rotating Equipment Academy believes strongly in the added value of interactive simulation software and case studies. With an interactive compressor simulation program, the start-up sequence and optimal compressor operation will be trained.

During the case study a compressor will be designed, and an optimal station configuration must be selected. These sessions are highly interactive and will challenge the attendees to think about the what, why, how and when.

During "basic drivers: drivers are explored with demo software with 3D pictures, cross section pictures, animations and videos of the main parts and their properties.

All trainees will get a software copy of the Interactive Compressor Training Program.

This course example runs with an interpreter and is therefore stretched to 5 days.

Centrifugal compressor (and pump) course

The centrifugal compressor (and pump) training course provides the trainee with a good understanding of compressors and pumps. The trainee will be instructed on the selection, types, basic design of the equipment, the auxiliaries, service, maintenance, operation, performance and control.

The delegates will review a rotating package with coverage of all existing support systems such as lube oil, seal oil and dry gas seal systems as well as the instrumentation systems required to keep these units in efficient operation.

The structure of the course for the different target groups are alike, as the course lay-out has proven to be the right order of topics for the best possible learning efficiency. However, the highlight for each group will be different:

Front-end/concept engineers will focus on compressor and pump application, compressor and pump types and compressor and pump selection. Also, they will spend time on a compressor selection case and find a matching driver in a second case.

Upon completion of the front-end and concept training course, the trainee will be able to:

- demonstrate an understanding of principles of the equipment
- identify the main support systems and describe their function and operational characteristics
- identify and locate the components of the equipment
- describe the operation and design of the equipment and the associated support systems
- understand compressor and pump applications and types
- demonstrate compressor and driver selection

Asset service engineers and maintenance support engineers will focus in more detail on the different machine components and their function. Fault scenarios, fault finding and maintenance will be discussed. During the simulation they will use the troubleshoot simulation where alarms are introduced randomly in the compressor simulation software.

Upon completion of the maintenance training course, the trainee will be able to:

- demonstrate an understanding of principles of the equipment
- identify and describe the main support systems and describe their function and operational characteristics
- identify, describe and locate the components of the equipment
- understand the operation and construction of the equipment and the associated support systems
- demonstrate basic troubleshooting
- give fault and diagnostic indications and describe how to response on it
- demonstrate familiarity with the standard maintenance and trouble shoot procedures

Operators will focus on P&ID, performance including surge, capacity control and surge control. With the simulation software they will learn how to start a rotating equipment package and interactively find out how the input parameters (suction pressure, suction temperature and molecular weight) will influence compressor performance.

Upon completion of the operation training course, the trainee will be able to:

- demonstrate an understanding of principles of the equipment
- identify the main support systems and describe their function and operational characteristics
- demonstrate an understanding of the principles of operation
- describe the operation and design of the equipment and the associated support systems
- demonstrate an understanding of safe and proper operating procedures
- demonstrate basic troubleshooting
- understand fault and diagnostic indications and describe how to response on it

The enclosed schedules contain the topics of the course, the content of the topics and the duration.

Proposed 5-day course schedule for Front-end/concept engineers:

Compressor and pump training Front-end and concept engineers Day 1	Compressor and pump training Front-end and concept engineers Day 2	Compressor and pump training Front-end and concept engineers Day 3
<p>Introduction and HSE (1 hour) <i>HSE</i> <i>Introduction trainer</i> <i>Introduction trainees</i></p> <p>Process applications (1.5 hour) Introduction to different compressor and pump applications: <ul style="list-style-type: none"> Fluid Catalytic Cracking Polyethylene Recycle Gas Gas Injection Gas Lift Gas depletion Gas transmission FPSO Etc. </p> <p>Compressor and pump types (2.5 hour) Introduction to compressor and pump types High level selection criteria between types Properties of compressor and pump types</p> <p>Compressor and pump design part 1 (1 hours) <i>Casing(s)</i> <i>Inner assembly</i> <i>Rotor</i></p>	<p>Compressor and pump design part 2 (4 hours) <i>Impellers</i> <i>Axial thrust compensation</i> <i>Internal seals</i> <i>Barrier seals</i> <i>Dry gas seals</i> <i>Bearings incl. AMB</i> <i>Couplings</i> <i>Shaft monitoring devices</i></p> <p>P & I diagram (2 hours) <i>Instrumentation</i> <i>Operational aspects</i> <i>Diagram explanation</i> <i>Protection system</i></p>	<p>Performance (4 hours) <i>Compressor curve</i> <i>Operating vs. Design point</i> <i>Fixed speed vs. variable</i> <i>Operating envelope</i> <i>Limits of the curve (choke, surge)</i> <i>Curves: m-p vs. Q-H</i> <i>Influence of suction conditions</i></p> <p>Practical training supported by ICTP (2 hour) <i>Normal running with Interactive Compressor Training Program. Influences of suction parameters on the performance curves: head vs volume flow and discharge pressure vs mass flow.</i></p>

Compressor and pump training Front-end and concept engineers Day 4	Compressor and pump training Front-end and concept engineers Day 5
<p>Case: Compressor Selection (3 hours) <i>Case introduction</i> <i>Compressor selection considerations</i> <i>Explanation calculation tool</i> <i>Execution of case study in teams</i> <i>Fill in sheets</i> <i>Team presentation of results</i> <i>Evaluation and discussion</i></p> <p>Compressor Control (2 hour) <i>Discharge throttle</i> <i>Suction throttle</i> <i>Recycle</i> <i>Guide vanes</i> <i>Speed variation</i> <i>Anti-surge</i> <i>Load Sharing</i></p> <p>Practical training supported by ICTP (1 hour) <i>Normal running with Interactive Compressor Training Program. Simulation of capacity control with speed, suction throttle and recycle.</i></p>	<p>Case: Optimal compressor station configuration (4 hours) <i>Practical training with case study to select compressor and match a driver. Training will be supported by a compressor selection calculation sheet and driver characteristics.</i></p> <p><i>Case introduction</i> <i>Selection considerations</i> <i>Explanation calculation tool</i> <i>Execution of case study in teams</i> <i>Fill in sheets</i> <i>Team presentation of results</i> <i>Evaluation and discussion</i></p> <p><i>Close out (1 hour)</i> <i>Evaluation</i> <i>Final discussions</i></p>

Proposed 5-day course schedule for asset service engineers and maintenance support engineers:

Compressor and pump training Asset service and maintenance engineers Day 1	Compressor and pump training Asset service and maintenance engineers Day 2	Compressor and pump training Asset service and maintenance engineers Day 3
<p>Introduction and HSE (1 hour) <i>HSE</i> <i>Introduction trainer</i> <i>Introduction trainees</i></p> <p>Compressor and pump types (2.5 hours) Introduction to compressor and pump types High level selection criteria between types Properties of compressor and pump types</p> <p>Compressor and pump design part 1 (2.5 hours) <i>Casing(s)</i> <i>Inner assembly</i> <i>Rotor</i> <i>Impellers</i> <i>Axial thrust compensation</i></p>	<p>Compressor and pump design part 2 (3 hours) <i>Internal seals function</i> <i>Barrier seals function</i> <i>Dry gas seals function</i> <i>Bearings incl. AMB</i> <i>Couplings</i> <i>Shaft monitoring devices</i></p> <p>P & I diagram (3 hours) <i>Instrumentation</i> <i>Operational aspects</i> <i>Diagram explanation</i> <i>Protection system</i></p>	<p>Performance (4 hours) <i>Compressor curve</i> <i>Operating vs. Design point</i> <i>Fixed speed vs. variable</i> <i>Operating envelope</i> <i>Limits of the curve (choke, surge)</i> <i>Curves: m-p vs. Q-H</i> <i>Influence of suction conditions</i></p> <p>Practical training supported by ICTP (2 hour) Influences of Suction parameters <i>Normal running with Interactive Compressor Training Program. Influences of suction parameters on the performance curves: head vs volume flow and discharge pressure vs mass flow.</i></p>

Compressor and pump training Asset service and maintenance engineers Day 4	Compressor and pump training Asset service and maintenance engineers Day 5
<p>Troubleshooting (1 hour) <i>Cause and effect</i> <i>Rectification</i></p> <p>Fault finding tools (2 hours) <i>Trending</i> <i>Data logging</i> <i>Error logging</i> <i>Controller fault finding</i> <i>Technical Documents</i></p> <p>Compressor Control (2 hour) <i>Discharge throttle</i> <i>Suction throttle</i> <i>Recycle</i> <i>Guide vanes</i> <i>Speed variation</i> <i>Anti-surge</i> <i>Load Sharing</i></p> <p>Practical training supported by ICTP (1 hour) Alarms and troubleshooting <i>Normal running with Interactive Compressor Training Program. Introduction of random alarms and faults. To be solved and cured by the trainee.</i></p>	<p>Bundle removal (1 hour) <i>Special tooling</i> <i>Explanation and examples of bundle removal</i></p> <p>Coupling (1 hour) <i>Misalignment</i> <i>Types of flexible couplings</i> <i>Principles</i> <i>Advances / disadvantages</i> <i>Guards & Windage</i></p> <p>Maintenance (1 hours) <i>Basic aspects</i> <i>Inspections</i> <i>Maintenance schedules</i> <i>Service intervals</i> <i>Cleaning and preservation</i> <i>Possible repairs</i> <i>Balancing</i> <i>Alignment</i> <i>Spare parts requirements</i> <i>Spare parts storage</i></p> <p>Revamping benefits and possibilities (1 hour) <i>Bundle</i> <i>Aero</i> <i>Seals</i> <i>Control System</i></p> <p><i>Close out (1 hour)</i> <i>Evaluation</i> <i>Final discussions</i></p>

Proposed 5-day course schedule for operators:

Compressor and pump training Operators Day 1	Compressor and pump training Operators Day 2	Compressor and pump training Operators Day 3
<p>Introduction and HSE (1 hour) <i>HSE</i> <i>Introduction trainer</i> <i>Introduction trainees</i></p> <p>Compressor and pump types (2.5 hours) Introduction to compressor and pump types High level selection criteria between types Properties of compressor and pump types</p> <p>Compressor and pump design part 1 (2.5 hours) <i>Casing(s)</i> <i>Inner assembly</i> <i>Rotor</i> <i>Impellers</i> <i>Axial thrust compensation</i></p>	<p>Compressor and pump design part 2 (2 hours) <i>Internal seals function</i> <i>Barrier seals function</i> <i>Dry gas seals function</i> <i>Bearings incl. AMB</i> <i>Couplings</i> <i>Shaft monitoring devices</i></p> <p>Sealing Elements (2 hours) <i>Location of SE in the compressor</i> <i>O-rings, Cup-rings</i> <i>Labyrinth design and types</i> <i>Dry gas seal design and types</i> <i>Barrier seal design and types</i></p> <p>P & I diagram (2 hours) <i>Instrumentation</i> <i>Operational aspects</i> <i>Diagram explanation</i> <i>Protection system</i></p>	<p>Performance (3 hours) <i>Compressor curve</i> <i>Operating vs. Design point</i> <i>Fixed speed vs. variable</i> <i>Operating envelope</i> <i>Limits of the curve (choke, surge)</i> <i>Curves: m-p vs. Q-H</i> <i>Influence of suction conditions</i></p> <p>Practical training supported by ICTP (1 hour) Start up and shut down. <i>Compressor train start up and shut down with Interactive Compressor Training Program and questionnaire.</i></p> <p>Practical training supported by ICTP (2 hour) Influences of Suction parameters. <i>Normal running with Interactive Compressor Training Program. Influences of suction parameters on the performance curves: head vs volume flow and discharge pressure vs mass flow.</i></p>

Compressor and pump training Operators Day 4	Compressor and pump training Operators Day 5
<p>Compressor Control (4 hour) <i>Discharge throttle</i> <i>Suction throttle</i> <i>Recycle</i> <i>Guide vanes</i> <i>Speed variation</i> <i>Anti-surge</i> <i>Load Sharing</i></p> <p>Practical training supported by ICTP (1 hour) Capacity control <i>Normal running with Interactive Compressor Training Program. Simulation of capacity control with speed, suction throttle and recycle.</i></p> <p>Practical training supported by ICTP (1 hour) Alarms and troubleshooting <i>Normal running with Interactive Compressor Training Program. Introduction of random alarms and faults. To be solved and cured by the trainee.</i></p>	<p>Case: Optimal compressor station configuration (3 hours) <i>Practical training with case study to select compressor and match a driver. Training will be supported by a compressor selection calculation sheet and driver characteristics.</i></p> <p><i>Case introduction</i> <i>Selection considerations</i> <i>Explanation calculation tool</i> <i>Execution of case study in teams</i> <i>Fill in sheets</i> <i>Team presentation of results</i> <i>Evaluation and discussion</i></p> <p>Revamping benefits and possibilities (1 hour) <i>Bundle</i> <i>Aero</i> <i>Seals</i> <i>Control System</i></p> <p><i>Close out (1 hour)</i> <i>Evaluation</i> <i>Final discussions</i></p>

Basic drivers training for rotating equipment

The basic drivers training course provides the trainee with an understanding of drivers used for rotating equipment. The course covers fundamental working principles, basic design and types.

The drivers are explored with demo software with 3D pictures, cross section pictures, animations and videos of the main parts and their properties.

Upon completion of the basic drivers training course, the trainee will be able to:

- understand the fundamentals of the drivers
- understand driver types, differences and similarities.
- identify and locate the components of the drivers
- identify the main support systems and describe their function

The enclosed schedule contains the topics of the course, the content of the topics and the duration.

Rotating equipment training Drivers Day 1	Rotating equipment training Drivers Day 2	Rotating equipment training Drivers Day 3
Introduction and HSE (1 hour) <i>HSE</i> <i>Introduction trainer</i> <i>Introduction trainees</i>	Fundamentals of electricity (2 hours) <i>Electromagnetism</i> <i>AC current</i> <i>Real, reactive and apparent power</i> <i>3 phase ac current</i> <i>Line, phase, star and delta voltage and power</i> <i>Sinus and 3 phase animations</i>	Variable Frequency Drives (2 hour) <i>VSDS principle</i> <i>VSDS parts</i>
Gas turbines fundamentals (2 hours) <i>Principals of a gas turbine</i> <i>Turbine Ranges</i>	Electrical motors (2 hours) <i>Working principle of a motor</i> <i>Motors types and design and compare</i> <i>Enclosures and cooling</i> <i>Torque curves</i> <i>Construction and operation animations</i>	Steam turbine fundamentals (2 hours) <i>Principals of a steam turbine</i> <i>Types of steam turbines</i> <i>Design of steam turbines</i> <i>Condensing, non-condensing</i>
Core engine systems (2 hours) <i>Core engine</i> <i>Compressor</i> <i>Fuel system</i> <i>Lube oil system</i> <i>Starter system</i> <i>Interactive session with the turbine explorer</i>	Starting methods (1 hours) <i>DOL</i> <i>DOL with current limiter</i> <i>Auto transformer</i> <i>Softs starter</i> <i>Static Frequency Convertor</i>	<i>Close out (1 hour)</i> <i>Evaluation</i> <i>Final discussions</i>
Auxiliary systems (1 hour) <i>Filters</i> <i>Exhaust</i> <i>Ducting</i> <i>Coolers</i> <i>Demister</i>	.	

Price Basis

Pricing of the Rotating Equipment Academy is based on the following:

- Provision of rotating equipment training.
- Preparation of the rotating equipment training and training manuals.
- Software copy of the Interactive Compressor Training Program is included Training duration: 3 or 5 days.
- Delegate numbers: maximum of 12 per training.
- Training, presentation, manual and all documentation will be in the English language.
- Electronic training manuals are provided: one per delegate on usb-stick.
- Certification on attaining a suitable pass level on the course.
- Evaluation report summary from the training feedback forms.

Video- and audio recording shall not be made during the course.

Any changes to the training content or duration will form the basis of a variation and may have a cost effect.

Training dates are subject to prior sales and based on the Rotating Equipment Academy's present workload.

The price is firm if the training-course is completed before 31.12.2020. Should the training-course be postponed after the 31.12.2020 for reason beyond the control of Rotating Equipment Academy, then Rotating Equipment Academy has the right to correct the price accordingly.

If the number of participants will be more than 12, Rotating Equipment Academy will charge 5% from the course price for each additional trainee.

Pricing for training at customers site

1	5-day centrifugal compressor (and pump) training for front-end/concept engineers	EURO	
2	5-day centrifugal compressor (and pump) training for Asset service engineers and maintenance support engineers	EURO	
3	5-day centrifugal compressor (and pump) training for Operators	EURO	
4	3-day basic drivers training for rotating equipment	EURO	

A classroom to be furnished by customer should have flip charts or whiteboard, a projection screen, projector (beamer) and computer speakers.

The costs for the training do not include travel expenses, travel days, board and lodging of our instructor. All travel, lodging costs and luggage charges incurred by our staff in connection with the outward journey to the job site from domicile and return journey from job site to domicile will be invoiced in account with a 10% surcharge (handling fee). The hourly rate for travel is EUR 275,00. For air travel business class is valid.

Pricing for training at Rotating Equipment Academy arranged site

1	5-day centrifugal compressor (and pump) training for front-end/concept engineers	EURO	
2	5-day centrifugal compressor (and pump) training for Asset service engineers and maintenance support engineers	EURO	
3	5-day centrifugal compressor (and pump) training for Operators	EURO	
4	3-day basic driver training for rotating equipment	EURO	

Included are:

- Training location
- Lunch on training-course days
- Refreshments during the course

Excluded are air tickets, hotel, breakfast, dinners and all other expenses made by delegates.

The costs for the training do not include travel expenses, travel days, board and lodging of our instructor. All travel, lodging costs and luggage charges incurred by our staff in connection with the outward journey to the job site from domicile and return journey from job site to domicile will be invoiced in account with a 10% surcharge (handling fee). The hourly rate for travel is EUR 275,00. For air travel business class is valid.

Rotating Equipment Academy requires, however, that staff to be trained shall be adequately insured against illness, accident and third-party liability; to ensure that, in the event of a claimable occurrence Rotating Equipment Academy shall be saved harmless from any liability.

Payment Terms

This quotation is based on the following payment terms:

- 30 % of contract value as down payment.
- 50 % of contract value two weeks ahead the agreed training dates.
- 20 % of contract value after the training.

All quoted prices are exclusive V.A.T., withholding tax or any other taxes, levies or import duties. VAT, if applicable, will be invoiced in accordance with the regulations of the Value Added Tax law currently in force.

Advance payment is due immediately.

All stage payments are to be made within 30 days after the date of invoice.

Payment is requested free and net to Rotating Equipment Academy's bank account within 30 days after receipt of invoice.

Payment shall only be deemed made if and as entered in the agreed currency to the unrestricted credit of the Rotating Equipment Academy's bank account.

Cancellation of the training-course by customer made thirty days or more before the actual training-course will be subject to a twenty-percent cancellation charge of the agreed price. Cancellation made less than thirty days prior to the training-course scheduled start date are subject to a one hundred percent charge.

Customized training

Beside the given training course above, a more customized training is also possible. The content and the duration of a customized training can be specified by the customer in consultation with Rotating Equipment Academy. The following topics are available. If the requested topic is not in the list, please contact Rotating Equipment Academy to discuss the possibilities.

Process applications

Introduction to different compressor and pump applications:

- Fluid Catalytic Cracking
- Polyethylene Recycle Gas
- Gas Injection
- Gas Lift
- Gas depletion
- Gas transmission
- FPSO
- Etc.

Compressor types & selection

Introduction to compressor and pump types

High level selection criteria between types

Properties of compressor and pump types

Practical training with case study to select compressor and driver. Training will be supported by a compressor selection calculation sheet.

Mechanical design

- Casing(s)
- Rotor(s)
- Impellers
- Axial thrust compensation
- Internal seals
- External seals
- Barrier seals
- Bearings
- Couplings
- Shaft monitoring devices

Manufacturing

- Impeller engineering
- Impeller production
- Assembly

Dry gas seals

- Development
- Gap controlling mechanism
- Dry gas seal improvements
- Gas seal / mechanical seal
- Groove patterns
- Pressure distributions
- Maintenance aspects

Sealing Elements

- Location of SE in the compressor
- O-rings, Cup-rings
- Labyrinth design and types
- Dry gas seal design and types
- Barrier seal design and types

P & I diagram

- Instrumentation
- Operational aspects
- Diagram explanation
- Protection system

Bearings

- Radial/thrust bearings
- Troubleshooting
- Maintenance aspects
- Active Magnetic Bearings

Active magnetic bearings

- AMB vs. oil bearings
- Magnetism
- Materials/Saturation/Forces
- Losses
- Auxiliary bearings
- Control system
- Sensors
- PID controller

Surge, stall and choke

- General
- Surge limit
- Rotating stall
- Choke limit
- Cause and effects

Anti-Surge Control

- Basic ASC
- Control systems
- Challenges
- Piping lay-out

Compressor Control

- Why compressor control
- Performance control
 - Discharge throttle
 - Suction throttle
 - Recycle
 - Guide vanes
 - Speed variation
 - Anti-surge
 - Load Sharing
- Load sharing
- Limiting control
- Override
- Execution time

Performance

- Compressor curve
- Operating vs. Design point
- Fixed speed vs. variable
- Operating envelope
- Limits of the curve (choke, surge)
- Curves: m-p vs. Q-H
- Influence of suction conditions

Revamping benefits and possibilities

- Bundle
- Aero
- Seals
- Control System

Start-up / shut down

- Basic safety aspects
- General starting preparations
- Normal running
- Logic drawings

Coupling

- Misalignment
- Types of flexible couplings
- Principles
- Advances / dis-advances
- Guards & Windage

Maintenance

- Basic aspects
- Inspections
- Maintenance schedules
- Service intervals
- Cleaning and preservation
- Possible repairs
- Balancing
- Alignment
- Spare parts requirements
- Spare parts storage

Fault finding tools (2 hours)

- Trending
- Data logging
- Error logging
- Controller fault finding
- Technical Documents

Troubleshooting

- Cause and effect
- Rectification

New developments

- LTSA
- Brush seals
- Sleeves
- Remote monitoring

Control System (UCP)

- System architecture
- Hardware overview
- Software overview
- Panel layout

HMI panels

- Configuration
- Control Mimics
- Navigating
- Control options
- Settings
- Alarming and trending

Case: Compressor Selection

*Case introduction
Compressor selection considerations
Explanation calculation tool
Execution of case study in teams
Fill in sheets
Team presentation of results
Evaluation and discussion*

Case: Optimal compressor station configuration

Practical training with case study to select compressor and match a driver. Training will be supported by a compressor selection calculation sheet and driver characteristics.

*Case introduction
Selection considerations
Explanation calculation tool
Execution of case study in teams
Fill in sheets
Team presentation of results
Evaluation and discussion*

Case: Basic Electricity

Case: E motor selection

Practical training supported by ICTP

*Influences of suction conditions
Normal running with Interactive Compressor Training Program. Influences of suction parameters on the performance curves: head vs volume flow and discharge pressure vs mass flow.*

Practical training supported by ICTP

*Capacity Control
Normal running with Interactive Compressor Training Program. Simulation of capacity control with speed, suction throttle and recycle.*

Practical training supported by ICT

*Alarms and troubleshooting
Normal running with Interactive Compressor Training Program. Introduction of random alarms and faults. To be solved and cured by the trainee.*

Practical training supported by ICTP

*Start up and shut down.
Compressor train start up and shut down with Interactive Compressor Training Program and questionnaire.*

Gas turbines

*Fundamentals
Principals of a gas turbine
Turbine Ranges*

Gas turbines

*Core engine systems
Core engine
Compressor
Fuel system
Lube oil system
Starter system
Interactive session with the turbine explorer*

Gas turbines

*Auxiliary systems
Filters
Exhaust
Ducting
Coolers
Demister*

Fundamentals of electricity

*Electromagnetism
AC current
Real, reactive and apparent power
3 phase ac current
Line, phase, star and delta voltage and power
Sinus and 3 phase animations*

Electrical motors

*Working principle of a motor
Motors types and design and compare
Enclosures and cooling
Torque curves
Construction and operation animations*

Electrical Starting methods

*DOL
DOL with current limiter
Auto transformer
Softs starter
Static Frequency Convertor*

Variable Frequency Drives

*VSDS principle
VSDS parts*

Steam turbine fundamentals

*Principals of a steam turbine
Types of steam turbines
Design of steam turbines
Condensing, non-condensing*