



09

**MECHANICAL
EQUIPMENT &
PARTS**

**INVESTMENT
OPPORTUNITIES**

MECHANICAL EQUIPMENT & PARTS

THE FOLLOWING NINE PRODUCT CATEGORIES WITHIN MECHANICAL AND EQUIPMENT & PARTS OFFER LOCAL MANUFACTURING POTENTIAL

Casting Products

Pumps

Forging Products

Compressors

Turbines (Steam & Gas) Parts & Control Systems

Mechanical Seal and Seal Plan

Gearbox

Pressure Vessels & Heat Exchanger

Internals for Separators

CASTING PRODUCTS

Overview



Opportunity

- Process in which **metal is heated in a furnace (over 1500°C) until molten**
- While in the **liquid state, the metal** is poured in a die, or mold, to create a component shape
- There are two metal casting techniques – **investment casting and sand casting**
- The established foundries in the UAE partially cover the local demand



Applications

- Oil & Gas (e.g., pressure-containing parts, valves, pumps casings)
- Manufacturing and Machinery (e.g., valve body)
- Mining and Metallurgy
- Transportation (e.g., automobile parts, railways)
- Construction & Infrastructure (e.g., bridges)



ADNOC Standards / Specifications Requirements

- As per ADNOC Requirements



FORGING PRODUCTS

Overview



Opportunity

- **Metal is heated to various temperatures** depending on the recrystallization temperature
- Process to **form and shape metals using compressive forces**
- Four primary tools are used in metal forging process depending on the method used: **Hammers, Presses, Upsetters, and Ring Rollers**
- local forges are fully utilized and only partially cover the local demand



Applications

- Oil & Gas (turbines, electric motors, wellhead equipment, pumps, ball valves, gas compressors, blowout preventers, etc.)
- Manufacturing and Machinery (e.g., aircraft landing gear)
- Mining and Metallurgy
- Construction & Infrastructure



ADNOC Standards / Specifications Requirements

- As per ADNOC Requirements



TURBINE (STEAM & GAS), PARTS & CONTROL SYSTEMS

Overview



Opportunity

- Currently there is limited local manufacturing of Turbine Parts & Control Systems within the UAE
- Being part of the Long-Term Service Agreement for the Gas Turbine installed in the AGCs
- Better position in delivering the spare part and enhance the total Major overhaul Duration



Applications

- Spare part for Power Generation Turbine repair and Major overhaul
- Spare part for Mechanical Driver Turbine repair and Major overhaul
- Reverse Engineering old Turbine obsolete parts



ADNOC Standards / Specifications Requirements

- **AGES-SP-05-005** Gas Turbines (API 616) Specification
- **AGES-SP-05-004** Mechanical (Rotating) General and Special Purpose Steam Turbines (API 611 and 612) Specification



COMPRESSORS

Overview



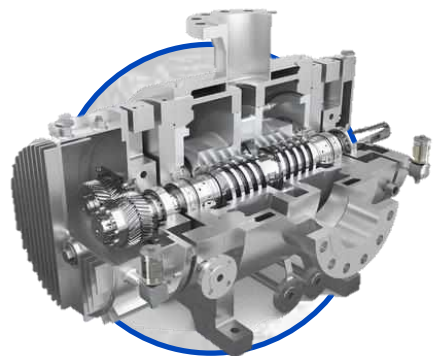
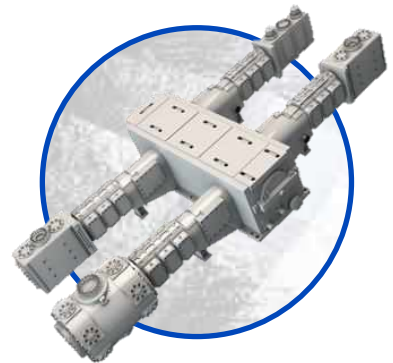
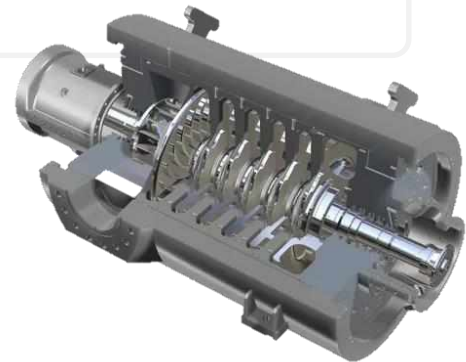
Opportunity

- Currently there is limited local manufacturing of Compressors within the UAE
- Good Position in potential future ADNOC Compressor Framework Agreement
- Ability to Brand with ADNOC the Inherently Intelligent Compressor Unit
- Attractive to regional purchasers from delivery and ICV perspectives



Applications

- Gas Export Compressor
- Gas Injection Compressor
- Instrument Air Compressor
- Vapor Recovery Compressor



ADNOC Standards / Specifications Requirements

- **AGES-SP-05-002** Centrifugal Compressors (API 617) Specification
- **AGES-SP-05-003** Reciprocating Compressors (API 618 and ISO 13631) Specification
- **AGES-SP-05-009** Packaged Integrally Geared Centrifugal Air Compressors (API 672) Specification

PUMPS

Overview



Opportunity

- Currently there is limited local manufacturing of Pumps within the UAE
- High demand of centrifugal pumps with different sizes for new projects targeting sustaining oil productions and increase to 5 million bbl
- UAE based supply chain for better quality assurance by purchaser and availability of top-class steel mills
- Easy modification or upgrade for any defects or anomalies are found in the site



Applications

- Main Oil Loading Pumps
- Water Injection Pumps
- Export Pumps
- Process & Utilites Pumps



ADNOC Standards / Specifications Requirements

- **AGES-SP-05-001** Centrifugal Pumps (API 610) Specification
- **AGES-SP-05-008** Centrifugal Pumps for General (Utility) & Firewater Service Specification
- **AGES-SP-05-010** Rotary-Type Positive Displacement Compressors & Pumps (API 619 & API 681) Specification

GEAR BOXES

Overview



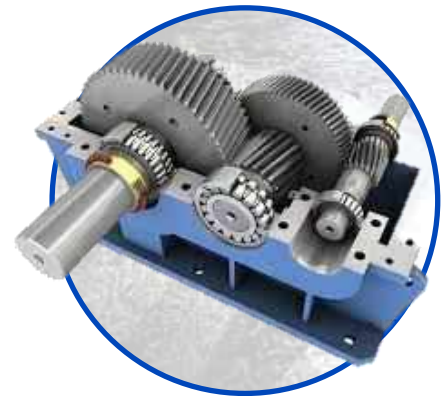
Opportunity

- Currently there is limited local manufacturing of Blowers & Draft Fans within the UAE
- Easy to design and manufacture
- Tendency to move to air cooled equipment due to shortage of water in the desert.
- Better position for case of delivery critical spares or packages



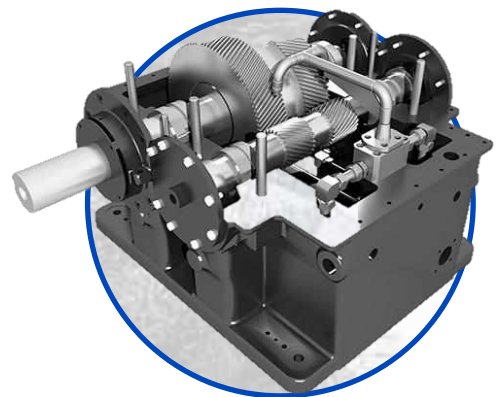
Applications

- Firewater pump angle gearbox
- Speed Step up gearbox
- Boilers Blowers



ADNOC Standards / Specifications Requirements

- **AGES-SP-05-016** Centrifugal Fans (API 613) Specification
- **AGES-SP-05-016** Centrifugal Fans (API 677) Specification



MECHANICAL SEALS

Overview



Opportunity

- It is considered that there is additional opportunity for manufacturing of Air Handling Units within the UAE
- Easy to assemble to and package such units
- High demand for customized air handling units for oil field conditions
- High maintenance and spare parts consumption for these units



Applications

- Substation air condition
- Control Room air conditioning system
- **Operation Accomodation and Reccuritation facilities air conditioning**



ADNOC Standards / Specifications Requirements

- **AGES-SP-14-001** HVAC Design Basis
- **AGES-SP-14-002** HVAC Equipment
- **AGES-SP-14-003** HVAC Ductwork, Pipework and Accessories



PRESSURE VESSELS & HEAT EXCHANGERS

Overview



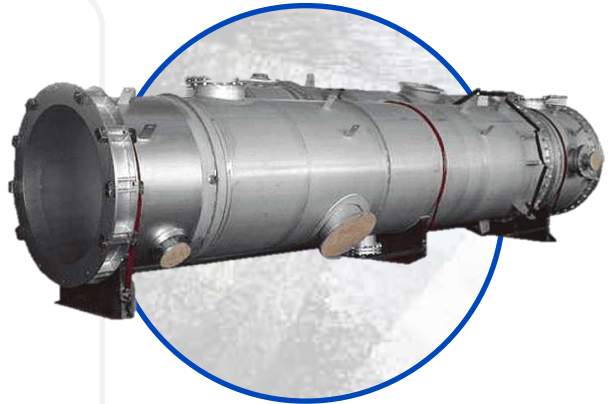
Opportunity

- It is considered that there is additional opportunity for manufacturing of Pressure Vessels and KO Drums within the UAE
- Easy to design and to fabrication
- Availability of a top-class plates manufacturer



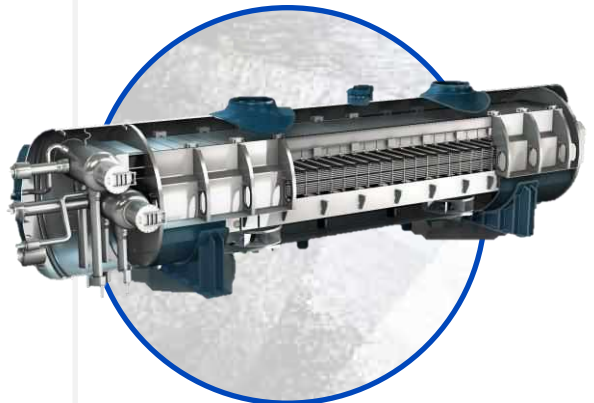
Applications

- Separator and Columns
- Knock Out Drums
- Scrubber
- Deaerators



ADNOC Standards / Specifications Requirements

- **AGES-SP-06-001** Design Criteria for Static Equipment
- **AGES-SP-06-002** Pressure Vessel Specification



INTERNALS FOR SEPARATORS

Overview



Opportunity

- Currently there is limited local manufacturing of Internals for Separators within the UAE
- Easy to design and manufacture
- Internal replacement performed during plant shutdown whereas the duration of the campaign is limited



Applications

- Improve separator efficiency and separation effectiveness with new internals
- Replacement of existing internals due to their wear or damage



ADNOC Standards / Specifications Requirements

- **AGES-SP-06-011** Vessel Trays and Internals Specification

