EPROM
Scope of Services 2017
Contents

1. OPERATION ........................................................................................................................................3
   • NORMAL OPERATION ....................................................................................................................3
   • PRE-COMMISSIONING ..................................................................................................................4
   • COMMISSIONING & START-UP .....................................................................................................5
   • TEST RUN EVALUATION ...............................................................................................................6
2. MAINTENANCE ..................................................................................................................................7
   • GLOBAL MAINTENANCE ..............................................................................................................7
   • MECHANICAL MAINTENANCE .....................................................................................................8
   • ELECTRICAL MAINTENANCE ......................................................................................................9
   • INSTRUMENTS & CONTROL .........................................................................................................10
   • CONTINUOUS SERVICE AGREEMENT (CSA) ..............................................................................11
3. INSPECTION .....................................................................................................................................14
   • NON DESTRUCTIVE TESTING - NDT ............................................................................................16
   • ADVANCED NDT ..........................................................................................................................19
   • OTHER SERVICES .......................................................................................................................26
4. TECHNICAL SUPPORT ....................................................................................................................27
   • TECHNOLOGY & DEVELOPMENT ...............................................................................................27
   • CONSULTATION SERVICES .........................................................................................................27
   • COMMISSIONING & START-UP MANAGEMENT .........................................................................28
   • DE-SLUDGING SERVICES ...........................................................................................................28
   • CATALYST HANDLING ................................................................................................................29
   • TENDERS PREPARATION AND MANAGEMENT SERVICES .......................................................30
5. POWER STATIONS & SOLAR ENERGY ............................................................................................31
   • ELECTRICAL POWER GENERATION STATIONS ........................................................................31
   • SOLAR ENERGY ..........................................................................................................................32
6. MARINE TERMINAL SERVICES ..........................................................................................................33
   MIDTAP (Middle East Tankage & Storage Pipeline) ......................................................................34
MIDOR (Middle East Oil Refinery) ........................................................................................................34
UGDC United Gas Derivative Company ..................................................................................................34

7. INTEGRATED INFORMATION SERVICES .........................................................................................35
   • HARDWARE .......................................................................................................................................35
   • NETWORK INFRASTRUCTURE AND SECURITY ...............................................................................36
   • INFRASTRUCTURE .............................................................................................................................36
   • SOFTWARE ..........................................................................................................................................37
   • ORACLE APPLICATIONS ...................................................................................................................37
   • SOFTWARE DEVELOPMENT ...............................................................................................................38
   • OUR PRODUCTS .................................................................................................................................38
     - Time Management System (TMS) .....................................................................................................38
     - Medical Information System (MIS) ....................................................................................................39
     - EPROM End of Service System (EOS) ............................................................................................40

8. HSEQ ..................................................................................................................................................41

9. TRAINING ..........................................................................................................................................42
   • TRAINING COURSES .........................................................................................................................42
   • TRAINING SCHOOLS .........................................................................................................................43
1. OPERATION

• NORMAL OPERATION

EPROM has valued experience in plants’ start-up and operations within gas plants, oil refineries, petrochemical, fertilizers plants and power stations. It repeatedly proved its excellence in the field of plants operations and management and its reputation for fulfilling design capacity has therefore been a wide spread word in the business world.

It’s our hard worked-for right to announce EPROM success in maximizing plant productivity and exceeding design capacity in many of our contracted sites. These achievements have been honored and rewarded by our clients in multiple occasions. We are proud to excel in this field of service which is known to demand a considerable extent for innovation and numerous technical approaches.

Our operational staff comprising of engineers, chemists, panel operators, technicians and outside operators ....etc. is backed up with up-to-date knowledge in the operations field, continual academic and practical training as well as intermittent exposure to international work experience when employed by partner licensors for limited mission-specific contracts in various plants.

EPROM highly skilled operational team has reliable experience and capability to manage and operate all sorts of process units, plant facilities and utilities, waste water units, oil movement activities as well as off sites and marine terminals. They formed and practiced their experience in phases of pre-commissioning, commissioning, start-up, troubleshooting, shutdowns ...etc.

Values
Throughout all its operation contracts EPROM is keen to ingrain and maintain its operational values and targets aiming for maximum client satisfaction and good will. These include the following efforts:

• Compliance with company integrated health and safety management system.
• Compliance with environmental Policies and standards.
• Compliance with production requirements and capacities.
• Limit operational costs within agreed budgets and reduce operating costs where possible.
• Maximize Client Productivity and satisfy Client.
• Exceed Design production capacity.
• **PRE-COMMISSIONING**

EPROM executes a planned, safe pre commissioning services to expedite and accelerate the project completion and transfer to the operational "commercial phase".

EPROM based on the previous experiences with international companies undertakes the Pre-commissioning & Commissioning activities on behalf of owner with the licensors (UOP, KTI, TTIL, CONOCO PHILLIPS, AKZONOBLE, LATON RYTHON, HALDOR TOPOSE, IFP, and BECHTEL).

EPROM provides the pre commissioning execution, planning, procedures and evaluation services, in accordance with specifications including cleaning of pipes, blowing, flushing, mechanical cleaning of vessels, tanks and apply the no load test runs of rotating equipment motors.
• COMMISSIONING & START-UP

Managing Commissioning and Completions projects on behalf of our clients

EPROM provides a comprehensive service for the management and delivery of projects through the Mechanical Completion, Pre-Commissioning, Commissioning, Start-up Assist and Handover phases of projects.

Supporting our clients to manage the transfer from Completions, Commissioning through to Start-up”.

EPROM provides a support team of Completions and Commissioning Engineers as well as other support functions to assist our clients during the Start-up phase of a project.

Provision of Engineers and specialists to deliver and support our client’s new and existing project Completions and commissioning activities
• TEST RUN EVALUATION

EPROM has the capability to evaluate plant, processor equipment performance test runs.

EPROM conduct the process or plant performance test run to evaluate the plant capacity, equipment performance and efficiency, products yield and specifications, utility (Steam, Electricity, fuel, and cooling water) consumption furthermore environmental impacts.

EPROM provides the highly experienced manpower, procedures, reporting and planning schemes to manage and execute the performance test run different activities as follow:

• Managing and planning plant catalyst and chemicals provisioning as test run specification.
• Managing and insuring that feedstock, raw material and utilities meet the design specification.
• Preceding the test run according to the operation manual.
• Providing test data sheets/logs.
• Adjusting the operating conditions.
• Perform product sampling and laboratory test schedules.
2. MAINTENANCE

Global Maintenance.

Mechanical Maintenance.

Electrical Maintenance.

Instruments & Control.

Continuous Service Agreement (CSA).

Turnarounds & Revamps.

Reliability & Asset Integrity.

• GLOBAL MAINTENANCE

EPROM Maintenance Services can protect clients’ investments by extending the life of process plants, facilities and equipment while at the same time reducing operating costs and offering maintenance solutions adapted to client operations problems.

EPROM maintenance services are based on two main patterns: long term comprehensive maintenance contracts and maintenance engineering & inspection services.

In the context of multi-technical maintenance contracts (mechanics, electricity, instrumentation, systems...), our teams provide the maintenance of our clients’ offshore and onshore site equipment.

On the other hand, we provide maintenance engineering and inspection services which allow us to offer to our clients a global maintenance solution throughout all of the execution phases of their projects.

Our global maintenance solutions integrate training services for client staff, through a specific programs, EPROM provides flexible maintenance programs for planning, supervision, and execution of routine, scheduled, preventive major and minor breakdown maintenance and overhauls that can help to:

• Minimize breakdowns and costly emergency repairs.
• Ensure reliable service and optimum performance.
• Provide more consistent comfort conditions.
• Improve energy efficiency and reduce energy consumption.
• Provide financing options for upgrades and retrofits.
• **MECHANICAL MAINTENANCE**

The most important aspect for EPROM is making sure that all EPROM projects, equipment and other assets keep working effectively, as they’re supposed to through planned preventive maintenance, while keeping reactive requirements as minimum as possible.

EPROM provides an integrated maintenance services through a professional team of work proficient in using the latest maintenance techniques and best practice. We apply integrated maintenance services for all EPROM projects through long term contracts controlled by pre-set KPI’s.

EPROM provides maintenance services in different branches:

**STATIC-EQUIPMENT:**
Utilizing the latest maintenance techniques and best management systems to maintain the common static equipment as:

- Towers
- Heat exchangers
- Heaters
- Piping systems
- Vessels
- Steam Traps

**ROTATING EQUIPMENT**
EPROM provides comprehensive repair, refurbishment, and maintenance of rotating equipment in better value for service budgets by utilizing repair opportunities and minimizing spare parts replacements.

Our wide range of maintenance services is available on site or in the workshops for all types of rotating equipment such as turbines, pumps, compressors, generators, etc.
• **ELECTRICAL MAINTENANCE**

EPROM is highly experienced in power and automation technologies for installation and maintenance applications. We excel in improving the efficiency, productivity and quality of our customers’ operations while minimizing environmental impact.

EPROM business is defined by using expertise backed up with the latest technologies to achieve modern and stable electrical system check awaited targets including power generation, transmission and distribution utilities. EPROM provides electrical services for process industries such as oil and gas, petrochemicals, mining, metals production, marine, fertilizers, cement, power generation, transmission and distribution utilities, other infrastructure utilities.

Electrical department implements maintenance programs for projects a highly experienced work team who has proven its ability to maintain the equipment in the same condition received from stage fixtures, and even managed to improve equipment performance. It’s continuous Study of equipment conditions and latest maintenance programs.

Repair operations are conducted in accordance with international codes and standards and by a dedicated team in the reform processes. For that special reason, EPROM has partnered with international vendors of reliable experience/output.

Electrical Scope of Work includes but is not limited to the following:

- Engineering/design of all electrical systems.
- Installation/pre-commissioning/commissioning of all electrical equipment/systems.
- Maintenance (PM/CM) of all electrical equipment.
- Overhaul maintenance of electrical equipment/systems.
- Testing/calibration the protection relays.
- Testing the switchgears/PMCC included circuit breakers testing.
- Repair of Motors/generators/transformers included supplying the spare parts in cooperation with our international partners.
- Repair of all electrical equipment included supplying the spare parts in cooperation with our international partners.
- Supply Experts for electrical installation/pre-commissioning/commissioning/operation.
- Technical support for Engineering/installation/operation.
- Applications of the solar energy systems.
**INSTRUMENTS & CONTROL**

Provision of technical expertise for the specification, design, purchase, installation, commissioning and maintenance of instrument and Control systems that include, but not limited to, electronic and pneumatic instrumentation, control valves, analyzers, and control systems including distributed control system (DCS), programmable logic controllers (PLC) and safety instrumented systems (SIS).

Provide ongoing technical support to operations and maintenance departments, in accordance with internationals codes and standards (ISA, IEC, etc.), for instrumentation, control valve, analyzer and DCS/PLC system problems. Analyze data, troubleshoot performance, conduct root cause analysis, and make recommendations to improve instrument, control valve, analyzer and control system reliability.

Instruments & control tasks include but not limited to the following:

- Assist with securing engineering and Projects business including preparation of associated quotes & studying proposals and tenders.
- Ensure provision of appropriate technical response to client.
- Generation of engineering solutions to meet customer requirements with respect to industry codes and standards.
- Approve engineering changes within defined controls.
- Interface with Customer with respect to industry safety/reliability initiatives.
- Prepare, participate in, and approve, Factory Acceptance Tests.
- Carry out offshore assignments, typically survey activity, when required.
- Responsible for providing guidance and support in resolving technical queries for Instrument & control systems.
- Conduct evaluation and repair for instruments and ensure that all technical issues are properly logged, tracked and well-documented in the Service Management System.
- Provide accurate specifications for instrument, electrical and control systems.
- Review and approve design drawings for construction.
- Evaluate and select instrument, control valve and analyzer solutions.
• CONTINUOUS SERVICE AGREEMENT (CSA)

WORKSHOP:
EEPROM provides workshops services meeting the highest quality levels for the maintenance requirements of the provision of spare parts, fabrication and overhaul activities in EEPROM projects through the following:

- Piping fabrication and welding activities.
- All lathe and milling machines activities turning, boring, drilling and threading etc...
- Valves rehabilitation and testing.
- Heat exchangers re-tubing and fabrication.
- Overhauling pumps, compressors, etc...

MANPOWER PROVISION:
- Oil and Gas as one of the major industry supported by EPROM, we provide our clients Oil and Gas recruitment services with all their staffing needs under a single roof.
- We have a proven track record of successful placements of manpower across different profiles, ranging from experienced Project Managers to skilled labour in the Oil and Gas Industry.
- The opportune intervention of experienced oil and gas EPROM engineers is crucial for maximizing productivity, time, safety and cost-efficiency.

EQUIPMENT & MATERIAL SUPPLY:
EEPROM also can provide different types of equipment and tools to complete work and to get client’s satisfaction.

This equipment includes but not limited to the following:
Lifting equipment, cranes, fork lift, pneumatic equipment, hydraulic wrenches, bundle puller, jet pumps....etc.
• **TURNAROUNDS & REVAMPS**

Our clients require safe and fast turnarounds. We aim to deliver the shortest possible, safe turnaround, either by managing an entire operation or working as part of an integrated team. Our extensive experience in planning and implementing these difficult operations and our ability to react quickly and manage emergent work allows our clients to meet the toughest schedules and budgets while never compromising on safety. We have extensive experience in undertaking associated revamp work for turnarounds from study through to EPC.

Our experience of refinery turnarounds allows our clients to meet the tough requirements of planning refinery capital investment and maintenance. We deliver a high quality product with engineering experts who design with an eye on costs, constructability, operability and safety that are able to follow the job through to site construction and commissioning. Our track record for completing projects on time, on schedule, while meeting aggressive costs targets is second to none.

With our value engineering skills, state-of-the-art tools and constructability expertise, we deliver practical innovative solutions to meet our clients’ objectives – shorter turnarounds, lower cost, lower risk, plus world-class safety and start-up performance.

EPROM offer complete study, revamp definition and implementation to upgrade to the latest standards of safety operability and maintainability, our tasks can be summarized as follows:

- **Scope Determination.**
  - Turnaround/Shutdown Maintenance Indicator.
  - Operational Requirements.
  - Scope Compilation.

- **Turnaround/Shutdown Team (Organization).**

- **Planning:**
  - Preparation of Work Specification.
  - Manpower.
  - Contractor’s involvement.
  - Equipment & Tools.
  - Materials / Spare Parts.

- **Monitor & Control.**

- **General Maintenance Shutdown Work:**
  - Safety Precautions during Turnarounds.
  - Parts to be replaced during Shutdown.
  - Disassembly & Re-assembly.
  - Inspection & Tests.
  - Insulation Replacement.
  - Etc.

- **Completion & Acceptance of Work.**

- **Preparation for Start-up.**
  - Work Prior to Start-up.
  - Work to be done at the time of start-up.
  - Bolt Tightening at Operating Conditions.
• RELIABILITY & ASSET INTEGRITY

The power industry worldwide has been the subject of major reviews and reforms in recent years, which have resulted in changing demands in respect of enhanced safety, reliability, environmental safeguards and commercial competition. In such an environment it is essential that the personnel, the plant and the equipment involved, perform to their optimum levels of capability. Plant & Equipment Reliability System is a maintenance Optimization tool which has a role in providing an effective response to such demands on the industry, by enhancing the effectiveness of operations and maintenance programmes.

EPROM Reliability Team is leading experts in the oil & Gas field to ensure that plant systems and equipment achieves a consistent and appropriate reliability level to meet the available targets for safe production of all products in line with business objectives.

Reliability and Asset Integrity scope of work can be summarized as follows but not limited to:

- Identification of Potential (High/Medium/Low) Equipment and predict effects on Plant Operations and Production Schedules.
- Development and Implementation of Reliability Strategy for the Plants.
- To liaise with vendors and other parties to develop Strategy and solutions to reliability Problems.
- Contribution in preparation of annual Plans and budgets and monitor cost.
- Contribution in the preparation and management of shutdowns & any other specials activities.

EPROM - Reliability Techniques Experience:

- Criticality Analysis (CA).
- Root Cause Analysis (RCA).
- Failure Mode & Effect Analysis (FMEA).
- Reliability Centered Maintenance (RCM).
- Risk Based Inspection (RBI).
- Key Performance Indicators (KPIs).
3. INSPECTION

Non Destructive Testing - NDT

- X-Ray Gamma & Radiography
- Magnetic Particle Testing
- Liquid Penetrant Testing
- Hardness Testing
- Heat Treatment

Advanced NDT

- Magnetic Flux Leakage (MFL)
- Corrosion Mapping (UT C-Scan & B-scan)
- Remote UT Inspection (Crawler System)
- Phased Array Ultrasonic Testing (P.A.U.T)
- Time of Flight Diffraction Ultrasonic Testing (T.O.F.D)
- Alternative Current Field Measurement (A.C.F.M)
- Surface Eddy Current Testing (E.C.T)
- Internal Rotary Inspection System (I.R.I.S)
- Remote Field Eddy Current Testing (R.F.E.C.T)
- Remote Visual Inspection (R.V.I)
- Long-Range Ultrasonic Testing (LRUT)
- Positive Material Identification (P.M.I)

QA & QC Services:

- Integrity Management:

Third Party Inspection:
Our goal is to be a significant global player in the area of Oil/Gas & Petrochemical industries inspection services and continually provide quality and excellence in every service rendered to each client's satisfaction.

CAPABILITY
The capabilities of EPROM Inspection Services are founded in the combination of:

- Specialist professionals with expertise, qualifications and experience. We have highly experienced people with international qualifications such as API, NACE, CSWIP and AWS.
- State of the art testing equipment utilizing advanced proven technology.
- Flexibility within the organisation to respond and meet client requirements.

PEOPLE, COMMITMENT & QUALITY

- The strength of EPROM Inspection Services is its technical team which has extensive experience and practical qualifications.
- The company firmly believes in commitment and quality leadership as its management approach. This provides effective direction to improve services to Customers.
• NON DESTRUCTIVE TESTING - NDT

- X-Ray Gamma & Radiography

Radiography is used to examine parts for internal imperfections using penetrating Gamma or X-ray. An X-ray generator or a radioactive isotope is used as the source of radiation. Radiation is directed through a test area and onto a film, through which an imperfection is indicated by a change in density on the film. These results in the clear detection of imperfections as they are more visible when compared to the results of the Ultrasonic Flaw Detection.

Technique capability:

- All types of materials can be inspected
- Produces the permanent evidence (radiography film)
- Length of the defect can be sized
- **Magnetic Particle Testing**

Magnetic Particle Inspection is used to examine surface and near-surface defects. Magnetic particle inspection uses magnetic field and small ferrous particles (iron filings) to detect flaws in the test object. By inducing a magnetic field in a Ferro-magnetic material and then dusting the surface with iron fillings, any surface/near surface flaws will be visibly shown by an accumulation of iron filings.

**Technique capability:**
- Only ferromagnetic materials can be inspected.
- Detects Surface & near Surface defects.

- **Liquid Penetrant Testing**

Liquid Penetrant Testing is used to check for surface defects of a component. Test objects are coated with dye, the excess dye is removed after penetration time is out then a developer is applied onto it. The developer acts as a blotter. Any imperfections/cracks are made visible by the “Bleed out”.

**Technique capability:**
- All types of Non Porous materials can be inspected.
- Detects open surface defects.
- **Hardness Testing**

The Hardness Testing is used to check the effectiveness of any Heat Treatment process by measuring material hardness. We are able to assist our clients for measuring the hardness of material by

- Brinell (HB)
- Vicker (HV)
- Rockwell B & C (HRB & HRC)

- **Heat Treatment**

This is an operation or combination of operations where metals are heated then cooled by specific process to enhance and strengthen the physical properties of the material. There are 4 basic types of Heat Treatment method which are Annealing, Normalizing, Hardening and Tampering. We are able to assist you in enhancing the strength of your metals.
• ADVANCED NDT

- Magnetic Flux Leakage (MFL)

Magnetic flux leakage (MFL) is a magnetic method of non-destructive testing that is used to detect corrosion and pitting in steel structures, most commonly pipelines and storage tanks. The basic principle is that a powerful magnet is used to magnetize the steel. At areas where there is corrosion or missing metal, the magnetic field "leaks" from the steel. In an MFL tool, a magnetic detector is placed between the poles of the magnet to detect the leakage field. Analysts interpret the chart recording of the leakage field to identify damaged areas and hopefully to estimate the depth of metal loss. MFL is widely used for tank floor inspection.

Technique capability:

• Experienced with inspection up to 35mm wall thickness.
• Experienced with inspection of coating up to 6mm.
• Experienced with inspection with temperature up to 150 °C.
• Differentiation of top and underside defects in tank floors through separate mapping.
• Computer Aided Mapping with high speed results.
- **Corrosion Mapping (UT C-Scan & B-scan)**

Corrosion Mapping provides precise thickness measurement and a virtual picture of the damage. It produces repeatable images displaying in plan views (C-Scan) and sectional views (B-scan). Corrosion mapping surveys are useful both for an initial assessment and long-term monitoring of damage.

**Technique capability:**
- Ferrous & non-ferrous materials can be inspected.
- Accuracy of measurement is ± 0.2mm.
- Scan speed of 10 cm per second.

- **Remote UT Inspection (Crawler System)**

Remotely operated crawler system used to conduct ultrasonic thickness survey on above ground Ferromagnetic structures without the need of costly scaffolding or rope access. It provides effective inspection solutions for difficult-to-access tank walls and roofs and other remote locations. The (semi) motorised tank wall scanner can climb carbon steel tank wall with magnetic wheels.

**Technique capability:**
- Only ferrous Structures can be inspected.
- Produces B-Scan images of thickness.
- Works at different heights.
- **Phased Array Ultrasonic Testing (P.A.U.T)**

PA is an advanced method of ultrasonic testing. Instead of a single transducer and beam, phased array uses multiple ultrasonic elements and electronic time delays to create beams by constructive and destructive interference. As such, PA offers significant technical advantages for weld testing and plant monitoring over conventional ultrasonic as the phased array beams can be steered, scanned, swept and focused electronically from a fixed probe position. Beam steering permits the selected beam angles to be optimized ultrasonically by orienting or focusing them perpendicular to the predicted discontinuities, for example lack of fusion in automated weld inspections. This can greatly simplify the inspection of components with complex geometry. The ability to test welds with multiple angles from a single probe greatly increases the probability of detection of defects.

**Technique capability:**

- Ferrous & non-ferrous materials can be inspected.
- Can be used in limited access area.
- Inspection speed – In a linear scanning.
- Whole weld area will be inspected, which tremendously reduces the inspection time.
- High probability of defect detection.
- Alternative to Radiographic imaging.

- **Time of Flight Diffraction Ultrasonic Testing (T.O.F.D)**

TOFD technique is rapidly gaining importance as a stand-alone inspection method and an advanced ultrasonic inspection technique that fulfils a need for reliable inspection. Defects are detected by the diffracted ultrasound wave occurring at the edges of defects. Due to its sensitivity and sizing accuracy, TOFD is an excellent tool for monitoring root erosion, stress corrosion cracking, vessel cladding and Hydrogen Attack.

**Technique capability:**

- Ferrous & non-ferrous materials can be inspected.
- Precise defect sizing.
- High probability of defect detection.
- High speed welds inspection.
- High speed cladding surface corrosion.
- Screening.
- **Alternative Current Field Measurement (A.C.F.M)**

ACFM is an electromagnetic testing used for detecting and sizing surface – breaking cracks in metals. The basis of the technique is that an alternating locally uniform current is induced to flow in the component being tested. The current is undisturbed if the area is free of surface breaking cracks. A surface breaking crack will redirect the current around the ends and faces of the crack.

**Technique capability:**
- Length & depth of the defect can be measured accurately.
- No surface preparation is needed for a test.
- All data can be stored.

- **Surface Eddy Current Testing (E.C.T)**

Surface Eddy Current testing is for detecting and sizing surface defects in ferrous welds and steel structures. The defect detection & sizing is based on the principle of measuring changes in the impedance of an electromagnetic coil as it is scanned over a surface of conductive material.

**Technique capability:**
- Ferrous materials can be inspected.
- Capable of inspecting through surface coatings.
- Rapid Surface inspection.
- **Internal Rotary Inspection System (I.R.I.S)**

Internal rotary inspection system (IRIS) is an ultrasonic method for the nondestructive testing of pipes and tubes. The IRIS probe is inserted into a tube that is flooded with water, and the probe is pulled out slowly as the data is displayed and recorded. The ultrasonic beam allows detection of metal loss from the inside and outside of the tube wall. This advanced inspection uses ultrasonic technology to measure wall thinning and pitting due to corrosion and erosion in the tubes.

**Technique capability:**
- Both ferrous & non-ferrous materials can be inspected.
- Detects general wall thinning such as corrosion, erosion and localized defects such as pitting and wear scars. Measures the absolute wall thickness of the tube.
- Inspection speed 2inch/s.
- Productivity 80 tubes per shift (may differ based on site condition).


Remote field testing (RFT) is an electromagnetic method of non-destructive testing whose main application is finding defects in steel pipes and tubes. The basic RFT probe consists of a transmit coil which sends a signal AC current and emits magnetic field to the detector (or receive coil). The field travels through the pipe wall, and along the pipe. The detector is placed inside the pipe two to three pipe diameters away from the sender and detects the magnetic field that has travelled back in from the outside of the pipe wall (for a total of two through-wall transits). In areas of metal loss, the field arrives at the detector with a faster travel time (greater phase) and greater signal strength (amplitude) due to the reduced path through the steel. Hence the dominant mechanism of RFT is through-transmission.

**Technique capability:**
- Only ferrous tubes can be inspected.
- Detects discontinuities such as corrosion, erosion, wear, pitting and baffles cuts.
- Inspection speed 0.3m/s.
- Productivity 400 tubes per shift (may differ based on site condition).
- Remote Visual Inspection (R.V.I)

RVI is an enhanced visual examination method that facilitates acquisition of visual data by means of visual aids including but not limited to video bore scopes, push cameras, pan/tilt/zoom cameras and robotic crawlers. It is commonly used where distance, angle of view and limited lighting may impair direct visual examination or where access is limited by time financial constraints or atmospheric hazards. RVI is commonly used as a predictive maintenance or regularly scheduled maintenance tool to assess the "health" and operability of fixed and portable assets. RVI/RDVI enables greater inspection coverage, inspection repeatability and data comparison. RVI tool is sent through the small opening of the remote places and the internal images are sent back to the inspector’s observation screen, where the inspector can inspect & record the images. Test report is given with cd of recoded inspection video.

Technique capability:
- RVI tool is designed in a way that can be rotated at 90°.
- Minimum accessible opening for RVI tool is 10mm.
- **Long-Range Ultrasonic Testing (LRUT)**

Long-Range Ultrasonic Testing (LRUT) is an advanced Non-Destructive Testing. It is one of the fast inspection tools for carrying out pipeline survey for corrosion and other degradation using ultrasonic guided waves. LRUT has been developed to detect metal loss in piping. It is a pulse-echo system, aimed at testing large volumes of material from a single test point. The technique was initially developed for detecting Corrosion under Insulation (CUI) for piping in petrochemical plant. Subsequently, it has found widespread use in other inspection situations where pipes or tubes are normally not accessible. Pipes buried in soil, encased in a sleeve or located at high elevation and heater tubes. The aim of LRUT is to test long lengths of pipe rapidly with 100% coverage of pipe wall and to identify areas of corrosion or erosion for further evaluation using other NDT techniques such as radiography or conventional ultrasonic inspection. The technique is equally sensitive to metal loss on both outside and inside surfaces of pipe.

**Technique capability:**

- Low cost screening with 100% coverage.
- Focussing capability to evaluate corrosion distribution around pipe circumference.
- Testing of pipes up to 48 inches diameter.
- Ideal where conventional testing is impossible or very costly e.g. clamped, insulated, elevated, underwater, sleeved or buried pipes.

- **Positive Material Identification (P.M.I)**

Positive Material Identification (PMI) is one of the more specialised non-destructive testing methods. With positive material identification the alloy composition of materials can be determined. If a material certificate is missing or it is not clear what the composition of a material is, then PMI offers the solution. Because specifications for materials used in industry are increasingly more specific, the need for PMI testing has been on an increase for the past several years. The XRF principle (x ray fluorescence) is one of the methods for PMI. Equipment used contains low radioactive sources (isotopes) or x-ray tubes. The exposed material reflects the radiation, generating energy. As every element has its own atomic structure, this reflection will generate a different energy level for every element. This energy is measured and detected, thus identifying the alloy elements.
• OTHER SERVICES

- QA & QC Services:

Our QA/QC services help control quality through the life of a project from pre-construction through design, construction, and start – up, pre-commissioning and commissioning. We have a highly qualified QA/QC team who could be seconded to various clients worldwide. This covers a range of QA/QC activities including shop inspection, material fabrication, construction, installations and commissioning of all onshore and offshore industrial projects.

- Integrity Management:

Through our activities we aim to assure the asset owners of the integrity of their plant and equipment so as to avoid unplanned maintenance and repair activities with subsequent loss of production. We provide teams comprising of experienced Inspection Engineers, Corrosion Engineers and NDT Specialists.

- Third Party Inspection:

We provide an extensive range of third party vendor inspection related services to engineering & procurement clients on a global basis. Qualified personnel offer experience in supplier assessments, inspection, expediting, project personnel outsourcing, destructive, non-destructive testing and coordination. These help customers to reduce costs whilst adhering to technical and commercial requirements.
4. TECHNICAL SUPPORT

• TECHNOLOGY & DEVELOPMENT

We study project-scale problems for local clients including EGPC sister-companies to present thorough solutions for boosting performance and productivity of our clients. Our services range between:

- Removing bottle necks and solving operational problems
- Conducting technical studies utilizing EPROM manpower and software resources
- Recommending performance and productivity improvement techniques
- Providing technical support service in oil and gas technology, engineering management to ensure quality control for individual unit operations as well as finished products
- Process Simulation software studies
- Monitoring and Assessing performance of Refinery/Plant manufacturing facilities
- Preparing process designs and data for economic evaluations of Refinery/Plant modifications
- Process Hydraulic calculations (sizing)
- Steady state flow assurance
- PFD / P&ID development
- Line Designation List (LDT)

We have on-going cooperation agreements with world-wide international business players to provide top-notch technologies to our clients in the above fields of technical support.

Another main service we are concerned with is the study and implementation of Zero Liquid Discharge projects (ZLD) within EGPC companies in an attempt to help preserve our water resources from loss and make maximum use of it.

• CONSULTATION SERVICES

- Prospect evaluation and field development strategies
- Environmental consulting:
  i. Alternative Fuels Services
  ii. Carbon Management.
  iii. Energy efficiency improvement.
- Project Management
- Flow assurance.
- Feasibility and Conceptual studies
- Economic modelling
- HSE services
- Quantitative risk assessments (QRA)
- Safety case preparation
- HAZOP/HAZID/HAZAN
- Risk analysis (Technical and Commercial)
- Reliability and maintainability studies (RAM)
• COMMISSIONING & START-UP MANAGEMENT

Comprehensive service for the management and delivery of projects through mechanical completion, pre-commissioning, commissioning, start-up to handover phases of projects.

• DE-SLUDGING SERVICES

EPROM tank Desludging/cleaning operation dramatically reduces the corrosion possibility of the tank floor and walls. Our operation brings the tank back to zero sludge condition and consequently maintain the tank full capacity.

The merits of our applied De-sludging technology include the following:

• No labor at any time inside the tank before and during the de-sludging operation.
• No pollution of air or soil.
• EPROM operates without opening the tank. Tank remains in normal operation throughout the de-sludging operation).
• No heating steam or chemicals added during the operation.

Our past experience in De-sludging technology has been applied in most Egyptian oil companies as: GUPCO, QARUN, SUCO, ZEITCO, ASSIUT Refinery, KHALDA, AGIBA, OIL PIPELINE and AMERIA.
• CATALYST HANDLING

Operating multiple Gas and Petroleum plants of latest technology has privileged EPROM technical staff with an uninterrupted and continually updated exposure with the world’s leading catalyst supplying and handling service providers and licensors. EPROM technical staff is proud to announce its current capability to effectively manage and follow up or catalyst related activities in a vast variety of units with diverse licensing international bodies. Our handling activities cover scopes of follow up for catalyst replacement, integrity checks, renewal, additives and disposal.

We are completely aware that the continual optimization processes required for production; together with the increased quality requirements for the finished product, demand improved loading and unloading techniques for catalytic reactors. Furthermore the good condition of reactor internals and exact catalyst loading according to specifications has a positive effect on production results in turn. We therefore ensure that our reactor specialists check the condition of all internal components prior to the loading operation and do not commence the loading process until the result is positive.

We have management and follow up experience in different loading methods, such as sock loading or dense loading techniques, depending on the reactor characteristics.
**TENDERS PREPARATION AND MANAGEMENT SERVICES**

EPROM offers its services to prepare technical and financial offers on behalf of its clients as required. Furthermore, our team of experts is qualified to evaluate coming tenders technically and financially on behalf of our clients. Managing/following-up awarded contracts from award day through to end of contract while handling all contract related activities through Contracts department.
5. POWER STATIONS & SOLAR ENERGY

• ELECTRICAL POWER GENERATION STATIONS:

EPROM will provide the following activities:

- Operation & Maintenance and related services under long terms contracts.
- Operation & Maintenance Systems and procedures.
- Maintenance planning and turn around planning.
- Scheduling and linear programming.
- Key technologies and engineering solutions.
- Supporting basic and detailed engineering.
- Pre-commissioning and commissioning activities.
- Inspection activities.
- Organize and provide technical trainings.
- Periodic quality/performance audits.
- Performance test run evaluation.
• **SOLAR ENERGY**

EPROM as a major project developer for solar systems Processes an expert engineering team and highly experienced construction team and undertake all stages of PV projects, offers “Turn-key” solutions from initial planning and design to equipment supply, implementation. And long term management. The type of PV installations covers the following:

- Off-grid solar and hybrid systems for remote location.
- Solar irrigation systems.
- Heating systems for domestic applications, swimming pools and industrial heating systems.
- Discrete central solar street lighting systems.

EPROM today acknowledged as one of the most qualified and successful project developers. We provide full “Turn-key” solutions to investors worldwide.

**Why choose us?**

- The energy yield of our plant are highest recorded in each location.
- Our engineering team has a high expertise and training.
- Our technician has a long experience even in installations with very particular requirements.
- We have established cooperation with all major equipment manufactures.
- Our solar plants are designed with no compromises regarding the quality of equipment, taking into account the individual challenges of each application.
6. MARINE TERMINAL SERVICES

EPROM Marine Services Department is capable of managing and handling of all activities and services related to gas, liquid and solid (bulk) petroleum product terminals as well as any other bulk terminals like grain and natural coke. The services extend to cover the terminal operations; both on and off shore.

We are profoundly experienced in the design review, construction and management of marine terminals (sea and/or river terminals) on behalf of our clients. We apply the latest, most optimum logistics internationally acknowledged and practised. As owner’s representative for our clients our service includes but is not limited to the following:

- Review of design documents of jetty or port, construction supervision and handover.
- Rehabilitation of existing ports and qualification to comply with international business standards and requirements.
- Assistance in acquiring the certificates mandated by the international marine law and issue terminals regulations in terms of port entering procedures, general services provided and restrictions.
- All administrative actions related to local water entering book, ship registrations at port control, waiting area logistics, channels curve, channel and jetty drafts.
- Utilize Eco-sounding to draft and issue electronic maps for safe manoeuvring.
- Prepare and upgrade ports to comply with and acquire the certificates for IOPP (International Oil Pollution Prevention) and ISPS (International Ship and Port Facility codes).
- Establish system for optimum port and cargo control to ensure safe handling and transportation practices including International Dangerous Cargo (IDC) during loading and discharging.
- Measure and determine cargo quality and quantity in comparison to C/P using the ASTM, IP and UOP applicable standards.
- Tailor robust port system that avoids possible demurrage and saves dispatch time.
- Represent a charter party in case of claim or demurrage.
- Prepare and apply emergency and contingency plans for terminals.
- Establish safety system for terminal and prepare persuaders that comply with International Safety Guide for Oil Tankers and Terminals (ISGOTT) and are accepted by Insurance Company.
- Establish environmental system to prevent pollutions and prepare persuaders that comply with International Oil Pollution Prevention (IOPP) to avoid and resist probable claims or penalties.
EPROM has been providing the Marine Terminal services for more than eleven years for a considerable number of terminals:

**MIDTAP (Middle East Tankage & Storage Pipeline)**
Export over 4,150,000 metric tons of green delayed petroleum coke by bulk carrier.

**MIDOR (Middle East Oil Refinery)**
Export more than 8,500,000 metric tons of JET A-I.
Export more than 6,250,000 of gasoline [octane number 95 & 98].
Export more than one million metric tons of gas oil.

**UGDC United Gas Derivative Company**
A Joint Venture between (AGP), British Petroleum (BP) and (GASCO)
EPROM as management and operation contractor for the terminal has exported more than 1,500,000 of liquefied propane, originally received to the terminal as pressured propane. EPROM operation was in charge of pressured gas liquefaction inside the terminal.
All quantity was exported by gas carriers (refrigerated gas carrier, semi refrigerated gas carrier and pressured gas carrier.)
7. INTEGRATED INFORMATION SERVICES

In the current variable world, organizations and departments try to be more flexible; computed and progressed information technology would have great influences on organizations through automating and computerizing organization procedures and proposing many objectives such as quality improvement, customer satisfaction, productivity, expense decreasing and etc. So IT has become a vital and integral part of every business plan and it is considered a critical component of modern government.

- HARDWARE

**Six Fundamentals for Aligning IT with Business:**

- Strategy: IT must understand the company vision and missions, driving force, major issues and major thrusts to develop its strategy.
- Organization: To get applications right, relationship managers and key application experts must be close to the business so they can readily identify its needs.
- Projects: IT projects must be solidly linked to, and indeed derived from, the business plan.
- Applications: Applications are IT’s core deliverable. Everything the IT organization does must support delivering them.
- Infrastructure: Hardware, software and networks must be designed to support business strategy and apps.
- Governance: Business leaders must set IT priorities, allocating scarce resources to the most important projects
• NETWORK INFRASTRUCTURE AND SECURITY

• EPROM offers a complete portfolio of vulnerability assessment and Penetration testing services that allow organizations to identify critical security vulnerabilities that attackers could exploit. These services help organizations improve their existing security posture to reduce the risk of a successful attack.

• EPROM delivers Maintenance and Support Services for Cisco Products and services through certified support engineers for Network and Security.

• EPROM offers integration services and strong experience in the following areas' of specialization: Network Designing, VPN, Security, Remote/Local Access, Switching, Routing and Wireless Access Points.

• EPROM offers Implementing ISO27001 ISMS (Information Security management system) and evaluates the strategy, policies, standards, procedures and related practices for the management.

• INFRASTRUCTURE

Regardless of the needs of your Infrastructure, System Engineers of EPROM is here to help. with a Professional Engineers at the highest level that are well trained, certified EPROM engineers are capable of solving most of the technical Infrastructure problems on the spot.

EPROM can Offer a Complete range of integrated Infrastructure including Pre-Design of Infrastructure, Supplying Hardware and Software implementation of the following Applications.
SOFTWARE:

System Administration
Our EPROM team can provide the following services:

- Design, Install, administrate and/or Troubleshoot the following:
  - Active directory services on all mentioned windows server services.
  - Infrastructure services "DNS, DHCP, WSUS, Microsoft Clusters, and NLB".
  - SCCM, SCOM, SCVMM, SCDPM
  - Microsoft Exchange Servers of all versions "2003, 2007, 2010 and 2013"
- Install and administrate MS SharePoint
- End point management solutions "Kaspersky"
- UTM solutions "Cyberoom, SOPHOS, Juniper firewall"

ORACLE APPLICATIONS

EPROM as Oracle Golden Partner provides:
- Implementations, Upgrading and maintenance for EBS systems.
- Full Functional consultation.
- Professional technical consultation.
- Administration for both database and applications.

Oracle R 12 Applications’ list:
- Oracle Payables.
- Oracle Receivables.
- Oracle Assets.
- Oracle Cash Management.
- Oracle General Ledger.
- Oracle Human Resources.
- Oracle Time and Labour.
- Oracle Payroll.
• SOFTWARE DEVELOPMENT

In addition to implementing and supporting readymade packages like Oracle’s EBS and MS SharePoint, We also developed fully tailored software packages that exclusively suit your business with the latest technologies in the field of software development.

We also work with the agile methodology so our customers can be involved in all the software development life cycle from Analysis & Design to Development & Testing.

Technologies we use:
- Microsoft .Net
- Java
- PHP
- WordPerss
- Android/IOS Development

• OUR PRODUCTS

- Time Management System (TMS)

The TMS is a designed combination of processes, methods, screens and reports. TMS provides integration solution for tracking time and attendance reducing manual administrative through generated time sheet, and guarantee payroll accuracy through overtime calculation and provides set of reports giving the users’ conscious control over the time that increasing effectiveness, efficiency and productivity.

Main objective is to automate the integration with fingerprint machines, calculate the overtime, and generate the accuracy of employee time sheet. In addition TMS provides the users monitoring and control through set of reports built on top of TMS centralized database that collect all employee attendance data (Transactions, Leaves, Permissions, and Missions) and keeps the history of attendance data. Also TMS provides all employees the capability to check their time sheets remotely through web interface of the system and provide the feature of registering all types of employee leaves (vacations, permissions, and missions).
- **Medical Information System (MIS)**

Medical Information System is an end-to-end solution designed for the management and administration of health insurance or medical aid business processes.

Medical Information System provides all major core health plan administration functions in a single, fully integrated solution. From relatives’ registration, to suppliers’ claims, and refund handling, the system is a complete end-to-end solution.

Main objective is to manage the health insurance business processes, providing all required features to control/manage the health insurance business processes and capability to generate all required reports from MIS database.

Keeping the historical data is one of the big benefits from MIS database. Historical data is considered as an asset for any enterprise helping in analyzing the history and considering future decision accordingly.

**Main Features:**

1. **Prescriptions:**
   - Register new Prescriptions
   - Merge Prescriptions
   - Monthly Prescriptions
   - In advance Prescriptions
   - Register new Medicines
   - Register new Diagnoses

2. **Claims:**
   - Register suppliers’ claims
   - Calculate discount value

3. **Refund:**
   - Register employee receipts
   - Calculate covering value

4. **Sick Leave:**
   - Register sick leaves
   - Integrate sick leaves with Oracle HR Core module

5. **Employee Relatives Subscriptions:**
   - Register Employee Relatives
   - Calculate subscription monthly fees
   - Integrate calculated feed to Oracle Payroll module

6. **Users Logins:**
   - Register new users
   - Grant/Revoke permissions for registered users

7. **KPIs:**
   - Set of KPIs for supported features displayed in dashboard

8. **Alerts:**
   - Set of Alerts notifying the users with specific actions (e.g. employees exceeds their limit)

9. **Reports:**
   - Set of reports covering supported features
EPROM End of Service System (EOS)

End of service financial benefits considered as one of the major benefits provided to permanent petroleum employees according to list of EGPC regulations.

EPROM End of service management system (EOS) is a software package designed to process all work functions for the below systems:

- End of service reward system
- Complementary Pension system
- Social care (death) system

Main features:

- Calculate employee benefits automatically through list of processes, screens and reports which limit manual activities and save time and effort.
- Provide integration with Oracle HR and Payroll to get required information for calculation which provides accurate and quick results.
- Keeping the historical data is one of the big benefits from EOS database, which help in analyzing the history and considering future decision accordingly.
- Provide screens for system setup data, which give the user high flexibility to change system parameters and get fast and accurate results.
- Provide high security through permissions and rules assigned to the users which guarantees the confidentiality of data.
HSEQ System Scope of Services includes the following:

- Establish, Implement, Organize and Review HSEQ System.
- Providing regular audit visits to ensure Compliance to the implemented HSEQ System, Control documentation, and check project’s facilities condition.
- Ensure adequate coverage for fire incidents, accidents, environmental pollution, security and other emergency situations.
- Design and provide HSEQ training modules to improve HSEQ awareness on-site.
- Follow up audits’ corrective and preventive actions ensuring their implementation.
9. TRAINING

EPROM Training Centre (ETC) is one of the best technical training companies in Egypt with curricula of over 185 short courses and 30 Training Schools.

Our mission to provide highly specialized technical training for Oil, Gas, Process, Power and Petrochemical industries bridges some of the gap in the engineering knowledge between the West and Middle Eastern countries. Our courses, seminars and workshops feature a balanced fusion of theory, practical application and industry best practice.

We bring together the world’s most brilliant engineers and highly experienced specialists, employing over 50 instructors and organizing over 185 training courses in various engineering disciplines.

Our instructors are authorities in their fields. Our courses, on the other hand, reflect the latest technologies and are oriented to practical and real-life approaches rather than theoretical ones.

- TRAINING COURSES
  - Safety & Environment
  - Quality Management System
  - Oil Movement
  - Laboratory
  - Utility
  - Operation
  - Mechanical Maintenance
  - Maintenance Planning
  - Operation Planning & Scheduling
  - Medicine & First Aid
  - Information Technology
  - General
  - Material/Supply Chain Management
  - Instrumentation
  - Electrical Maintenance
  - Marine
  - Petrochemical
• **TRAINING SCHOOLS:**

**REFINERY TRAINING SCHOOL**
- Crude Atmospheric & Vacuum Distillation
- Delayed Coker
- Hydrotreating
- Platforming & Catalyst Regeneration
- Light Naphtha Isomerization
- Vapour Recovery, LPG & Mercaptan Oxidation
- Steam Reforming
- Sulphur recovery, Amine & Sour water Stripper
- Utilities
- Off-Site

**Instrumentation Training School**
- Control Systems

**Marine Training School**
- Offshore Process Operation Schedule
- Onshore Operation Schedule
- Terminal Tanks Farm Process Operation
- Logistics Process

**HSEQ Training School**
- Health, Safety & fire fighting, Environmental and Quality

**Laboratory Training School**
- Catalyst, Coke, Elemental, Environmental, GC, Octane, Oil and Water

**Power Station Training School**
- Power Station