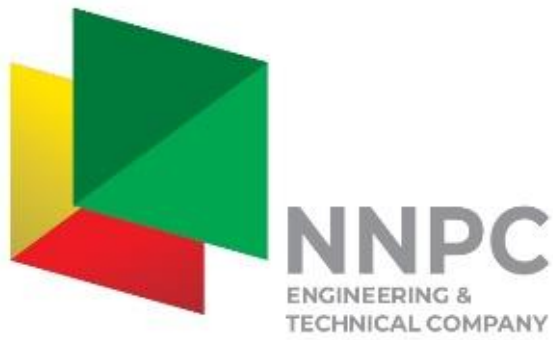


3rd & 4th Quarter, 2022



NETCO NEWS

The In-House Journal of NNPC Engineering & Technical Company Limited

NNPC LIMITED REFORMS: NETCO GETS SIX NEW EXECUTIVE DIRECTORS



NETCO SET TO DELIVER
SOUTH AND NORTH
OFFSHORE AREA PWD
PROJECT TO CHEVRON



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**All Correspondences to
The Editor**
NETCO News
Feyide House, 23 Engineering Close,
Off Idowu Taylor Street, P.O. Box 74173
Victoria Island, Lagos.
E-mail: djoseph@netco.com.ng

Design+Production
2DM Creative Services
+234 803 326 6320
Email: 2dmcreative360@gmail.com

NNPC LIMITED REFORMS: NETCO GETS SIX NEW EXECUTIVE DIRECTORS

By Joseph Daniel

The Nigerian National Petroleum Company Ltd (NNPC Ltd) as part of its ongoing reforms aimed at competing effectively globally, recently announced the appointments of five Executive Vice-Presidents as it transformed to a CAMA Company following the implementation of the Petroleum Industry Act.

In the latest structural appointments, the Group Executive Director, Upstream, Adokiye Tombomiyeye has been named the Executive Vice-President (Upstream); while the Group Executive Director, Downstream, Engr. Adeyemi Adetunji is the Executive Vice-President

(Downstream).

Similarly, the Group Executive Director, Gas and Power, Abdulkabir Ahmed now takes charge as the Executive Vice-President (Gas, Power and New Energies), while Inuwa Danladi, former GGM ITD was named the Executive Vice-President (Business Services).

It also named Mrs Oritsemeyiwa Eyesan as the Executive Vice-President Corporate Strategy and Sustainability) while Chidi Momah becomes the General Counsel for the company.

In this regard, the NNPC Engineering and Technical Company (NETCO) received six

Executive Directors to its fold as the reorganisation, restructuring and rebranding gathers steam across other subsidiaries.

The six Directors on boarded in NETCO are; Abdullahi A. Yuguda Chief Operating Officer (COO), Wari Daisy Mamadokiye (Mrs), Executive Director Business Services (EDBS), Aminu Umar Gbobe, Executive Director, Commercial and Business Development (EDCBD), Asaolu O. Bamidele, Executive Director Finance (EDF), Jarma Asheikh Ibrahim, Executive Director, Project Management (EDPM), and Osinaike Titilola (Mrs), General Counsel.

MEET NETCO NEW EXECUTIVE DIRECTORS



Engr. Abdullahi A. Yuguda, COO NETCO

ENGR. ABDULLAHI A. YUGUDA
 MNSE, PMP, CIPM, MNIMechE
Chief Operating Officer, NETCO

An alumnus of the Bayero University Kano, with a Bachelor's Degree in Mechanical Engineering. Engr. Abdullahi A. Yuguda recently assumed office in October 2022 as the Chief Operating Officer, NETCO. He is responsible for designing and implementing NETCO's business operations and establishing policies that ensure profitability and promote the company's culture and vision.

Prior to his appointment, he was the Manager Project Controls, NETCO. A Certified Project Management Professional with over two decades of work experience in Maintenance and Rehabilitation of Crude Oil Refinery Process Plant, Utilities, Tank Farm and Piping Systems. He is a member of Council for the Regulation of Engineering in Nigeria (COREN), a Mechanical Engineer with proven capabilities in Project Cost Estimating, Planning & Scheduling as well as Monitoring and Control.

NNPC Industry Experience:

Engr. Abdullahi A. Yuguda has over 20 years' experience in the oil, gas, and energy industry. He started his career in NNPC as Maintenance Planning Engineer in Port Harcourt Refining Company (PHRC) in 1994. And he moved to Department of Petroleum Resources (DPR) Kano Field Office between 2001 to 2003 as a Senior Technical Officer.

His technical acumen, and ability to drive the process ensured he was redeployed to the Maintenance Department of PHRC, where he worked as the Planning and Costing Engineer (Turn Around Maintenance). In October 2009, Engr. Yuguda, an astute Engineer, rose to the position of Supervisor, Planning and Budget Monitoring Department of PHRC, and that same year, he became

Superintendent, Planning & Costing (TAM), PHRC where he served from 2009 to 2015. The veteran Engineer continued his growth through the ranks of NNPC. In 2015, he was appointed the Superintendent, Project Scheduling, CED, ETD. In 2018, he was promoted to the position of Deputy Manager, Monitoring and Control CED, ETD, a position he held until January 2020 when he was promoted to the Manager Project Control, NETCO.

Some of his exceptional contributions and accomplishments that gained him recognitions are as follows:

- Best Overall Performance in the NNPC Chief Officers, Management Development Programme (COMDP), Course 077 – September 2015.
- 1st Runner up - New Trends in Oil and Gas in the COMDP Course 077 – September 2015.
- 2nd Runner up - Oil and Gas Fundamentals in the COMDP Course 077 – September 2015
- NNPC Management commendation letter for contributions to the development of Project Sanction & Approval Procedure (PSAP). – February 2015.
- PHRC letter of appreciation for sterling quality and singular display of courage, sacrifice, commitment & dedication to duty during protest and blockage of the road that leads to PHRC on 13 January 2014.
- MD, PHRC commendation for commitment, dedication and determination during the successful repair of NPHR Flare System - October 2010.
- PHRC Management letter of

appreciation for the role played in ensuring the safety of PHRC operations, lives, and properties during a Host Community crisis of 17th May 2005 – June 2005.

Engr. Abdullahi A. Yuguda is a COREN registered Engineer, and a certified Project Management Professional (PMP), he is a member of some professional bodies like the Chartered Institute of Project Managers of Nigeria (CIPM). He is also a member of some professional bodies like Nigerian Society of Engineers (NSE), Project Management Institutes (PMI) Association for the Advancement of Cost Engineering (AACEI) International, Nigerian Institution of mechanical Engineers (NIMechE; Member, and Project Management Institute (PMI) – International and Nigerian Chapter, Member.

The Chief Operating Officer, NETCO, Engr. Abdullahi Abubakar Yuguda is an indigene of Katsina State. He is happily married with children.



DAISY M. WARI (MRS.)
Executive Director, Business Services

Mrs. Daisy M. Wari is the current Executive Director Business Services, NETCO. She is responsible for providing business services. This responsibility includes human capital management, information technology, and procurement of materials, as well as ensuring a safe

and healthy environment, and last but not least, maintaining and promoting the company's brand image.

Until her appointment, she was the Executive Director, Support Services NNPC Retail Ltd, Abuja, 2020, to October 2022.

A graduate of the University of Maiduguri, Mrs. Wari had a Bachelor's Degree in Political Science and Public Administration in 1986. She attended Obafemi Awolowo University, Ile-Ife, for her Postgraduate studies in Public Administration in 1988.

Mrs. Daisy Wari joined NNPC in 1992 as Personnel Officer 1 in Port Harcourt Refining Company, Alesa-Eleme, Rivers State. She served in PHRC as an Industrial Relations Officer, Manpower Recruitment and Placement Officer, and Staff Disciplinary and Work Attendance Officer. She contributed immensely to maintaining industrial harmony between staff and management and ensured a good and cordial work environment. She introduced a rotational placement of casual staff from the neighbouring communities to minimize conflicts.

Mrs. Daisy Wari was transferred to Corporate Headquarters Abuja as a pioneer staff of NNPC Retail Ltd in 2005. She worked as a Depot Representative at PPMC PH Depot, Head of Port Harcourt Mega Station, and Regional Manager, South South and South East regions from 2005 to 2010. She championed and participated significantly in the pre-commissioning and commissioning activities in all the stations in the two regions.

In 2010, she became the Manager, Human Capital Management and Services at NNPC Retail Ltd and later Manager, Bulk Sales, where

she introduced several businesses and partners to the company.

She was transferred to the Business Development department as Manager, Gas Business Development in the Corporate Headquarters, Abuja, in 2015. She was engaged in analyzing several business proposals as a member of the committees.

She was later moved to Renewable Energy Division (RED) as Manager, Sales & Marketing in 2016. As a Team Lead, she was involved in committees which were saddled with the responsibilities of engaging communities to assess suitable lands for farming and siting of ethanol businesses.

She later rose to become the Executive Director, Support Services NNPC Retail Ltd, where she ensured effective and efficient human and material resources management, which added immensely to the overall positive growth of the company's bottom line.

Mrs. Daisy Wari, a God-fearing woman, was born on 24th November 1964 and is happily married with four children.



OLAJIDE BAMIDELE ASAOLU
Executive Director, Finance

Olajide Bamidele Asaolu, the Executive Director, Finance, is responsible for NETCO's long-term financial health, and oversees the

judicious use of the Company financial resources and promotes cost efficiency.

A graduate of Finance and Banking from the University of Lagos in 1986, Asaolu, also holds an MBA in Finance and Banking from the Ambrose Ali University, Ekpoma.

He is a Fellow of the Association of Chartered Certified System Accountants of the United States of America.

He joined the services of the Nigerian National Petroleum Corporation (NNPC) in 1991 as an Accountant in the Treasury Department of Pipelines and Product Marketing Company Limited (PPMC), Mosimi Area Office. He then moved to the Planning and Business Development Department of PPMC in 1999, he also served as the PPMC Depot Accountant in the Port Harcourt Area office till 2007.

He rose through the ranks and served in various capacities within NNPC as Regulatory Compliance and Monitoring at NNPC Corporate Headquarters from 2013 to 2015, Nigeria Pipelines and Storage Company Limited (NPSC) from 2015 to 2017 and Manager Treasury, Nigeria Gas Company Limited Warri (NGC) from 2017 to 2018, Manager Operations Storage, Manager Treasury, Nigeria Gas Marketing Company Limited Warri (NGMC) from 2018 to 2020.

Olajide also served as Deputy Manager, Payroll Loans and Advances in Nigeria Petroleum Development Company Limited Benin (NPDC) between January 2008 to February 2013.

As a seasoned accountant and Finance Manager, Olajide Bamidele Asaolu embodies NNPC Limited's high-performance

culture and upholds her Corporate values while ensuring the attainment of business objectives. He possesses deep domain knowledge and expertise across NNPC Ltd business operations and the industry.

He is happily married with children and his hobbies include internet surfing and farming.



OSINAIKE, TITILOLA MULKAT MOTUNDE (MRS.)

General Counsel, NETCO

Titilola M. Osinaike (Mrs.) is the newly appointed General Counsel (GC) of NNPC Engineering and Technical Company (NETCO), whose role transcends provision of legal support services, but is a business partner/adviser to the Board and Management. In addition, she is to ensure compliance with corporate governance principles, internal policies and applicable laws and regulations.

She obtained LLB (Hons.) from the University of Ibadan in 1987, BL (Hons.) from the Nigerian Law School, Victoria Island, Lagos in 1988, bagged a masters' degree in law (LLM (Hons.)) from the University of Lagos in 1997 and Masters in Business Administration (General Management) (Executive) from Obafemi Awolowo University in 2006. She is also an Associate of the Chartered Institute of Arbitrators (UK) Nigeria.

She joined the Nigeria National Petroleum Corporation (NNPC) in 2007, as a Chief Officer and was initially posted to the Commercial Law Department, six (6) months after, the erstwhile Secretary to the Corporation identified her qualities and professionalism and selected her to join her office as the Technical Assistant to the Corporation Secretary/Legal Adviser, a position she held till 2010.

The amiable Solicitor, after her Chief Officers Programme in 2010, joined the Corporate Law Department in April 2010, was promoted a Deputy Manager and served in the department from April 2010-January 2013.

She was redeployed to NNPC Pension Fund Limited as Company Secretary/ Legal Adviser in January 2013 and rose to become a Manager in 2015. She was responsible for the management and administration of the Legal Department. She rendered Company Secretarial Services to the Board Committees and Management of NNPC Pension, provided legal support services to all departments, and was part of the Team that developed strategies for the sustainability of the NNPC Pension Scheme.

She has good understanding of financial matters having started her career in the banking industry. In her sixteen (16) years sojourn in the bank before joining NNPC, she worked in various facets of the bank.

She started her early years in banking as a Credit officer/analyst in the Credit & Marketing Department, as well as the Capital Market and Investment Department. She also worked in the Legal, Business Development,

Special Products Departments.

Additionally, she nurtured a subsidiary company of the bank, EIB Trustees Limited, as a start-up, which became a full-fledged and profitable company in the industry.

Mrs. Titilola M. Osinaike has a calm disposition and exhibits professionalism, enterprising spirit, passion and productivity in the discharge of her duties.

She is married with children. She belongs to various charitable groups helping to empower people in the community.



ENGR. IBRAHIM ASHEIKH JARMA, PMP

Executive Director, Project Management

The Executive Director, Project Management, Engr. Ibrahim Asheikh Jarma is a trained Civil Engineer with over 24 years practical and diverse work experience in Engineering and Technical Management Services in the oil and gas industry.

An alumnus of the University of Maiduguri, with a bachelor's degree in Civil Engineering and Cranfield University UK, with a Master of Science in Offshore & Ocean Technology, majoring in Subsea Engineering.

He started his career in NNPC as a Senior Civil Engineer in 1999 to

2009 with the Technical Services Department (TSD) in ETD and moved to be the Technical Assistant to the Group General Manager (GGM), ETD between 2009 to 2013. His leadership attributes and experience in managing five General Managers (GMs) of the Division, in addition to organizing and directing staff to deliver projects/tasks to strategic corporate goals/objectives, resulted in his recognition and deployment in 2013 as DM, Civil & Building (covering) to Capital Project Management (CPM) Department of ETD.

Prior to his current appointment as Executive Director, Project Management, Engr. Jarma having successfully participated in the 2020 NNPC Internal Open Resource (IOR) promotion exercise and got promoted to Manager, Oil & Gas Infrastructure in Capital Projects Management Department of ETD.

Engr. Ibrahim Asheikh Jarma experiences covers areas such Tender preparation & Evaluation, Cost Estimation, Negotiations, Contract Administration, Business Technical appraisals, Technical Audit/Assessment and Project Management. He was at different times was a Project Civil Engineer on a number of projects between 1999 and 2013 and took the role of Project Manager between 2014 to 2022. Among the projects for which he served as Project Manager, of note are, the upgrade of the five (5) NNPC jetties to ISPS Code project, NNPC Trading Office Rehabilitation works, Construction of 500-seater Theatre Complex for

University of Maiduguri, Atlas Cove landing jetty project, RTI Office complex Abuja, and Construction of Hospitals for Frontier Exploration Service (FES).

Some of his strategic accomplishments are.

- Development of Competency Job Profile (JCP) for subsea engineering under the Competency Management System (CMS) organized by GHR in 2013 thus resulting in recognition and appointed by GHR as Discipline Lead (DL) for Subsea Engineering in November 2015.
- Participated as NNPC shareholder representative Subject Matter Experts (SMEs) on offshore works leading to optimization of the Marine Facilities design and also in the final Project Technical Review (PTR) session to enable concluding the Final Investment Decision (FID) on the Brass-LNG project. (2011-2013).

Engr. Jarma is a COREN registered Engineer, and a certified Project Management Professional (PMP). He is also a member of some professional bodies like Nigerian Society of Engineers (NSE), Project Management Institutes (PMI) and Association for the Advancement of Cost Engineering (AACE) International.

Engr. Jarma assumes the role as the Executive Director in NETCO with the undertaking to ensure professional delivery of projects on schedule, and on-budget to the benefit of all shareholders. He will bring this to play with his wealth of experience in institutionalizing

Integrity, sustainability, and excellence.

Engr. Jarma is happily married and is blessed with children.



UMAR GBOBE AMINU, (MCIPR), UK.
Executive Director, Commercial & Business Development NETCO

Mr Aminu holds a master's degree in Business Administration with major in International Business Management, from the Royal Holloway School of Management, University of London, United Kingdom. He also holds a bachelor's degree in Mass Communication from the Bayero University, Kano, Nigeria.

Mr. Aminu joined the services of the Nigerian National Petroleum Corporation (NNPC) in 2007 from his previous employments at VON) and the Organization of Petroleum Exporting Countries, (OPEC), Vienna, Austria.

On assumption of duties in NNPC, he was deployed to the Nigerian Petroleum Development Company (NPDC) Benin, Edo State as Supervisor Media & Communications in 2007. Shortly after, he was redeployed to the Office of the Group Managing Director (GMD, NNPC), as Technical Assistant in 2009 to provide support in the implementation of the Federal Government's

Contd. on page 12

Petroleum Products Pricing Deregulation and the Petroleum Industry Bill (PIB) passage where he was also engaged in providing support on the PIB Communication Awareness Campaign.

Sequel to the completion of the mandatory NNPC Chief Officers Management Development Programme, (COMDP) and his success at the Management promotion interviews in 2010, he was elevated to the post of Deputy Manager and thereafter, deployed to the Nigerian Gas Company (NGC), Warri, Delta State as Deputy Manager Community Relations.

Mr. Aminu was returned to the NNPC Corporate Headquarters, Abuja to join the NNPC reform team in driving the Corporate Transformation and Change Management Process with focus on adoption.

On becoming a substantive Manager, Mr. Aminu was dutifully responsible in driving the Change Management Process Initiatives under the NNPC Transformation Office, Corporate Planning & Strategy Division.

He was the lead officer for the engagement of Top Management and Business Leaders at the level of implementation of the 12 Fixes initiatives on the NNPC repositioning efforts.

In 2016, he was promoted to the position of General Manager, Efficiency under the direct supervision of the GMD to provide the needed support on the entrenchment of cost and process efficiency as a performance culture across the businesses.

Upon Mr. President's approval in 2017, Mr. Aminu was reassigned to the post of General Manager, International Energy Relations/OPEC Matters (IER).

Given Aminu's pedigree as an Oil Market Analyst, his steer was to immediately understudy the then outgoing Group General Manager (IER), in advisory capacity and to

support the coordination of the meetings of the Governing Board of OPEC; Gas Exporting Countries Forum (GECF); International Energy Forum (IEF); and the Africa Petroleum Producers Organization (APPO) as well as ensuring Nigeria's full participation at the technical and administrative meetings of the Inter-Governmental bodies supporting the Office of the Minister of State for Petroleum Resources.

During the period, Mr. Aminu fully institutionalized the functionality of the International Energy Relation's role in NNPC, bringing prominence to the position and clearly defining its interplay at creating value proposition for growing the NNPC's international outreach and institutional collaborations as an National Oil Company (NOC).

Further to this, Mr. Aminu was retrospectively assigned to double as GM, Communications, Policy and Strategy during a transition vacuum at the Group Public Affairs Division. He was fondly referred to as the (Double GM).

In March 2020, Mr. Aminu was again re-assigned to NNPC Trading (Duke Oil) as Executive Director, Shared Services given its peculiar administrative composition and global outlook. He served as Board member in the various NNPC Trading entities which includes:

- i. Duke Oil Company Incorporated (Panama)
- ii. Duke Global Energy Investment Limited (Nigeria)
- iii. Duke Oil Services Limited (UK)
- iv. Duke Oil /HYSON/ Carlson (Bermuda)
- v. Duke Oil (DMCC) Dubai, UAE.

Joining NNPC Trading/Duke Oil at the height of the Corona virus pandemic, Mr. Aminu assiduously created a sustainable roadmap to entrench Process Improvement and Professional Ethics in the company with drafts of key essential policies such as Health and Travel Policy, Business Risk Management Policy, Staff Training & Development Policy and a

proposed organizational structure for shared services that meets the unique disposition of the NNPC Trading Business that will upscale its potential as sole trading entity.

Umar Aminu having secured the key driver for the consolidation of NNPC Trading from the point of strategy and structure reform, was again reassigned to NNPC Retail, as Executive Director Sales & Marketing. He was mandated to upscale NNPC Retail to be the leading downstream player in the retailing of petroleum products and to support the drive to achieve the 30 percent market share aspiration of the GCEO's on NRL growth. He pursued aggressive marketing by strengthening sales, and broadening stations affiliation, leasing and acquisitions of stations to swell the asset base of NRL aimed at achieving a bigger market share for NRL in retailing of petroleum products and the transition fuel energies.

Lately in the year, Umar Aminu assumes the new role as the Executive Director, Commercial & Business Development, NETCO. He is forging to position NETCO as a fully Nigerian EPC engineering company from the point of strategy and commercial undertaken to secure key engineering projects in-country and beyond in his role as the lead commercial figurehead for the New NETCO.

Mr. Aminu is a Certified Change Management Professional with broad oil market development experience and has written several published articles and commentaries on the Oil Industry, OPEC internal workings and diplomacy.

Mr. Aminu is a member of the International Association of Energy Economics (IAEE), International Association of Change Management Practitioners (IACMP), Chartered Institute of Public Relations (IPR), London, Nigerian Union of Journalists (NUJ), Society of Nigerian Broadcasters (SNB) and member of the Financial Reporting Council of Nigeria (FRCN).

NETCO SET TO DELIVER SOUTH AND NORTH OFFSHORE AREA PWD PROJECTS TO CHEVRON

By Kingsley Umoh and Fidelis Okoroanyanwu

The NNPC Engineering and Technical Company (NETCO) Limited is set to complete the Front-End Engineering Design (FEED) works for the implementation of a suitable Produced Water Disposal (PWD) system for its North Offshore Area (NOA) platforms and Detailed Engineering Design (DED) for its South Offshore Area (SOA) PWD System for Chevron Nigeria Limited (CNL).

The engagement of NETCO by CNL is in its effort to develop and implement an optimal, reliable water injection solution for improved production, and a suitable Produced Water Disposal (PWD) systems on its SOA (Okan, Meji and PWD Platforms) and NOA (Meren 1, Meren 2 and Parabe Platforms).

These projects align with CNL's requirements of about 5 - 10ppm Oil-in-Water to comply with the directives of the Nigerian Government for the safe disposal of produced water to meet Chevron Produced Water Environmental Performance Standard (PW-EPS).

The Project Manager (PM) Aristobulus Tauna while speaking with NETCO NEWS correspondent explained that treated produced water (PW) from NOA and SOA platforms will be discharged overboard after treatment to CNL and Nigerian Upstream Regulatory Commission (NUPRC) acceptable threshold, or alternatively, the PW will be used to enhance production in candidate wells close to the platforms.

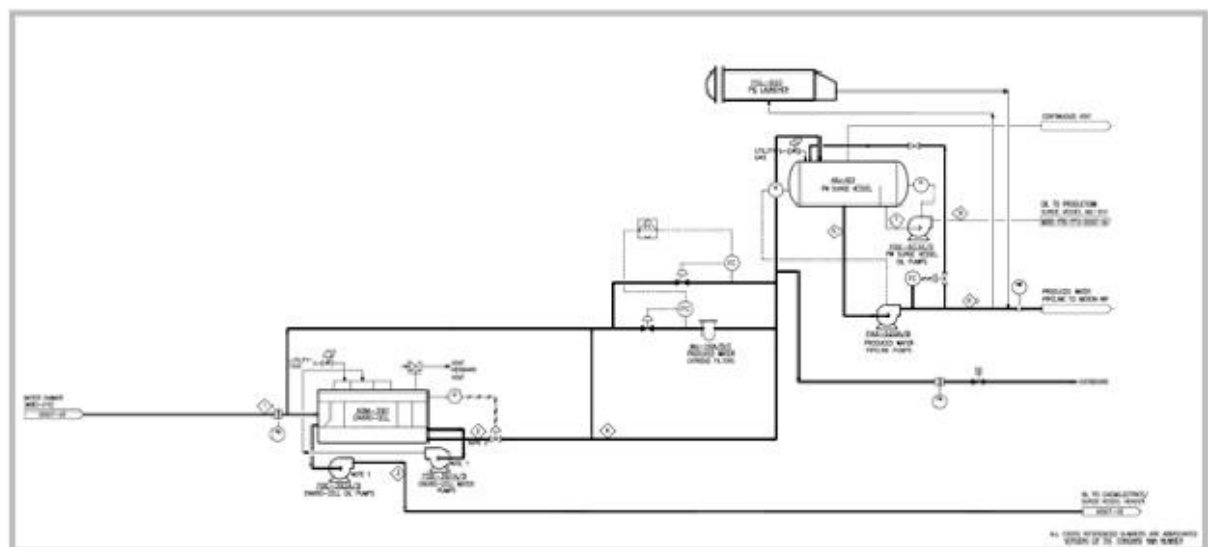
He further explained that the execution of both projects were

governed by requirements of Chevron and EGASPIN regarding produced water disposal location stated as follows:

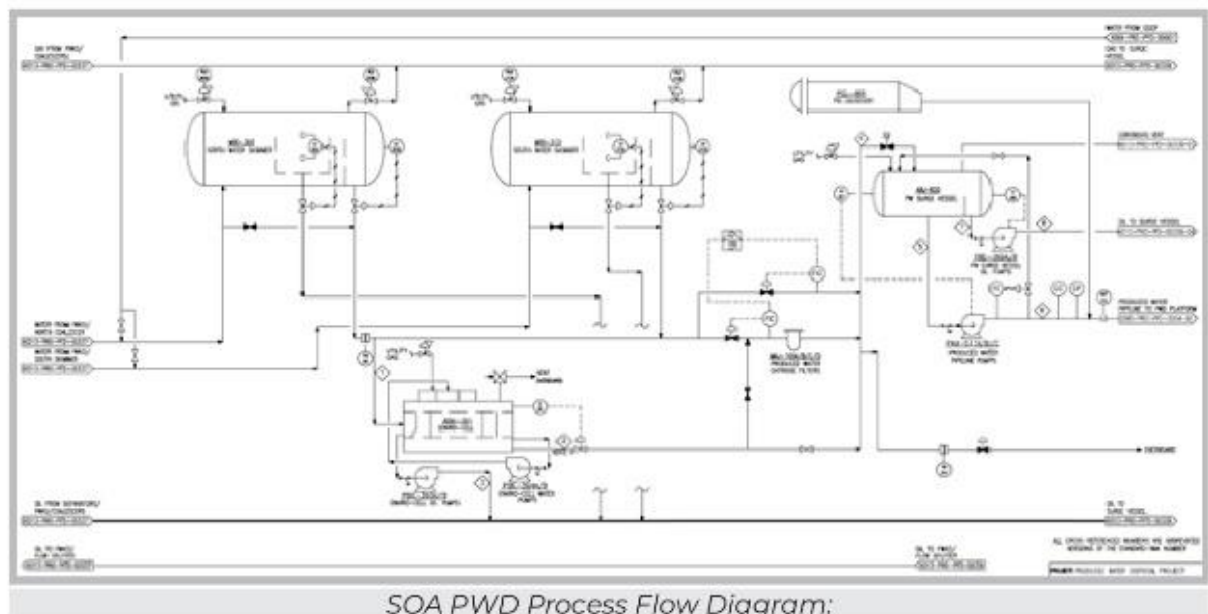
- To discharge produced water at the greater of 12 nautical

into compatible reservoirs; unless if technically proven as unfeasible.

The process flow diagrams are presented



NOA PWD Process Flow Diagram:



SOA PWD Process Flow Diagram:

miles offshore and the distance at which 200ft depth of water is attained (this translates to about 70km offshore Escravos); alternatively,

- Have the produced water injected into available compatible reservoirs. Chevron Produced Water Environmental Performance Standard meets this requirement of water injected

The North and South Offshore Area Production Platforms produced water systems engineering works involve modifications of the existing facilities, process philosophies, structural integrity checks of the platforms, piping network, installation of new equipment Enviro Cell, pipeline pumps, pipelines, corrosion considerations, electrical and instrumentation works. Treated Produced Water from pre-identified CNL North Offshore Area platforms is currently routed to

Parabe, Meren 1 and Meren 2 platforms and discharged overboard after treatment to about 5-10ppm Oil-in-Water.

Structurally, three main equipment are required to be accommodated on the facilities. The New Surge Vessels are to be supported directly on existing main decks – structural analysis will confirm the need for local strengthening of the deck. The Enviro Cell will be supported approximately five meters directly above the Surge Vessel – these will require deck modifications to create platforms for the Enviro Cells. Typical Enviro Cell Deck Structural Analysis Model is shown below.



Site Visit to Parabe Platform
PARABE PRODUCTION PLATFORM

considered during the structural design.

The South Offshore Area Platforms works entails Detailed Engineering Design (DED) required to provide company with a comprehensive engineering design of the facilities and the surface facilities development to enable CNL proceed with the Procurement, Construction and installation phase.

Facilities under consideration for modification in order to achieve the objectives of this project are:



Deck extensions are required for SOA-Okan on Cellar Deck to accommodate pumps and piping. Deck Extensions are also required on NOA - Meren I to support Pig Launcher. Simple fabrication and installation methodology is

- Okan Production Platform
- Produced Water Disposal Platform (PWDP)
- South Offshore Water Injection Platform (SOWIP) located in the South Offshore Area.

Cost Optimization: A thorough review of the Projects cost was done to determine where specific cost could be harmonized/ optimized to ensure the most efficient use of human capital and relevant engineering tools to deliver the projects promptly, effectively and profitably.

Aristobulus, the energetic PM further hinted that NETCO has a rigorous drive to deliver the projects before the scheduled date. He said “One critical thing is to under promise and over deliver, the client has giving us a window of 5 months, but in-house we are working as a team to complete this project in 4 months, leaving us a leverage of one month.

“I am optimistic we are going to complete this project as schedule, we will be working extended hours in order to conclude the project within the time frame of the client. “At this point we are at the phase of going into the 30 percent design / model review of the projects, scheduled for the March 2023, instant. We are working forward with great expectation to deliver by end of February 2023. “I cannot ask for any better team than this. I will really want to use this opportunity to appreciate Top Management, the NETCO SOA/NOA Projects Team, the Chevron Engineering Team and all who have been very supportive,” the PM concluded.

ODIDI-WARRI EXPANSION PIPELINE PROJECT

By Engr. PAUL KOMBOL
Project Manager

BACKGROUND

The Nigerian Gas Infrastructure Company (NGIC) awarded the contract for the 40"X30Km Odidi-Warri Expansion Pipeline (OWEP) Detailed Engineering Verification, Procurement and Construction to the Melcort-NETCO JV on the 28th of March, 2022.

This award was based on Technical and Commercial Bids submitted by the Consortium based on Detailed Engineering executed by Dover Engineering Limited.

executing the Engineering Verification in NETCO Office, while the Fabrication Yard is located in Warri to aid project execution. NNPC is free issuing 30kilometer length of the pipeline to NETCO/MELCORT in three (3) designated wall thickness specifications. The consortium shall be responsible for other

associate materials and equipment.

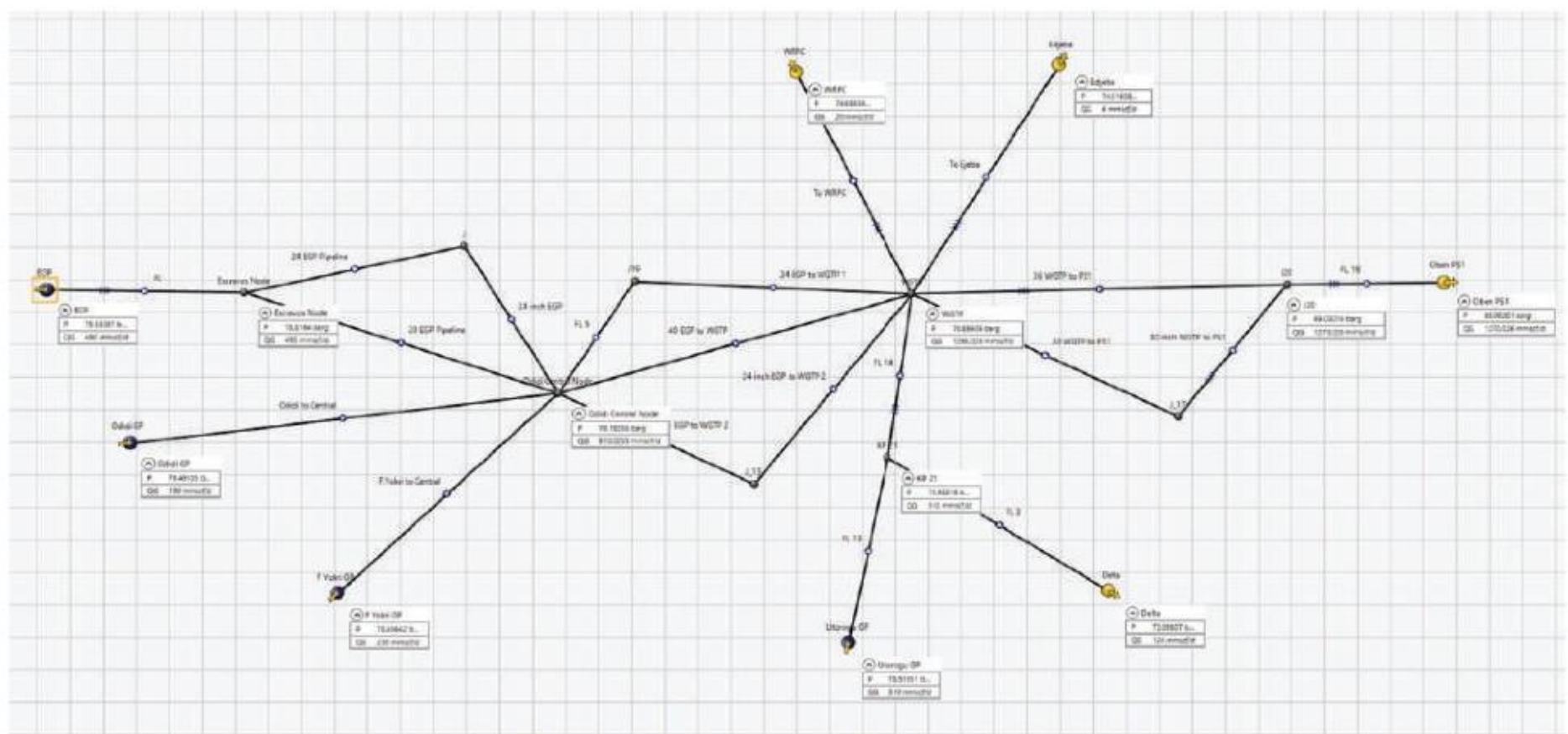
NNPC's preferred vendors shall be utilized respectively as the choice of Service or Material provider, while other sub-contractors will be

requirements while also ensuring capacity building via technology transfer.

SYSTEM DESCRIPTION

The Odidi- Warri Gas Pipeline Expansion Project is anchored on the prospects for additional gas supply from Odidi, Forcados and the Southern Swamp fields to bridge the supply gap in the Gas to Power agenda of the Federal Government of Nigeria.

There are gas fired plants that are either under-utilised or completely idling on the account of lack of natural gas thereby setting back



NETCO Process Team ongoing Flow Simulation from Odidi gathering location to Warri Gas Treatment Plant

The scope of work includes provision of Engineering Verification, Procurement, Construction Installation and Commissioning for provision of gas supply to Gas Treatment Plant, Warri through a 40"X30km Pipeline from the Odidi central node.

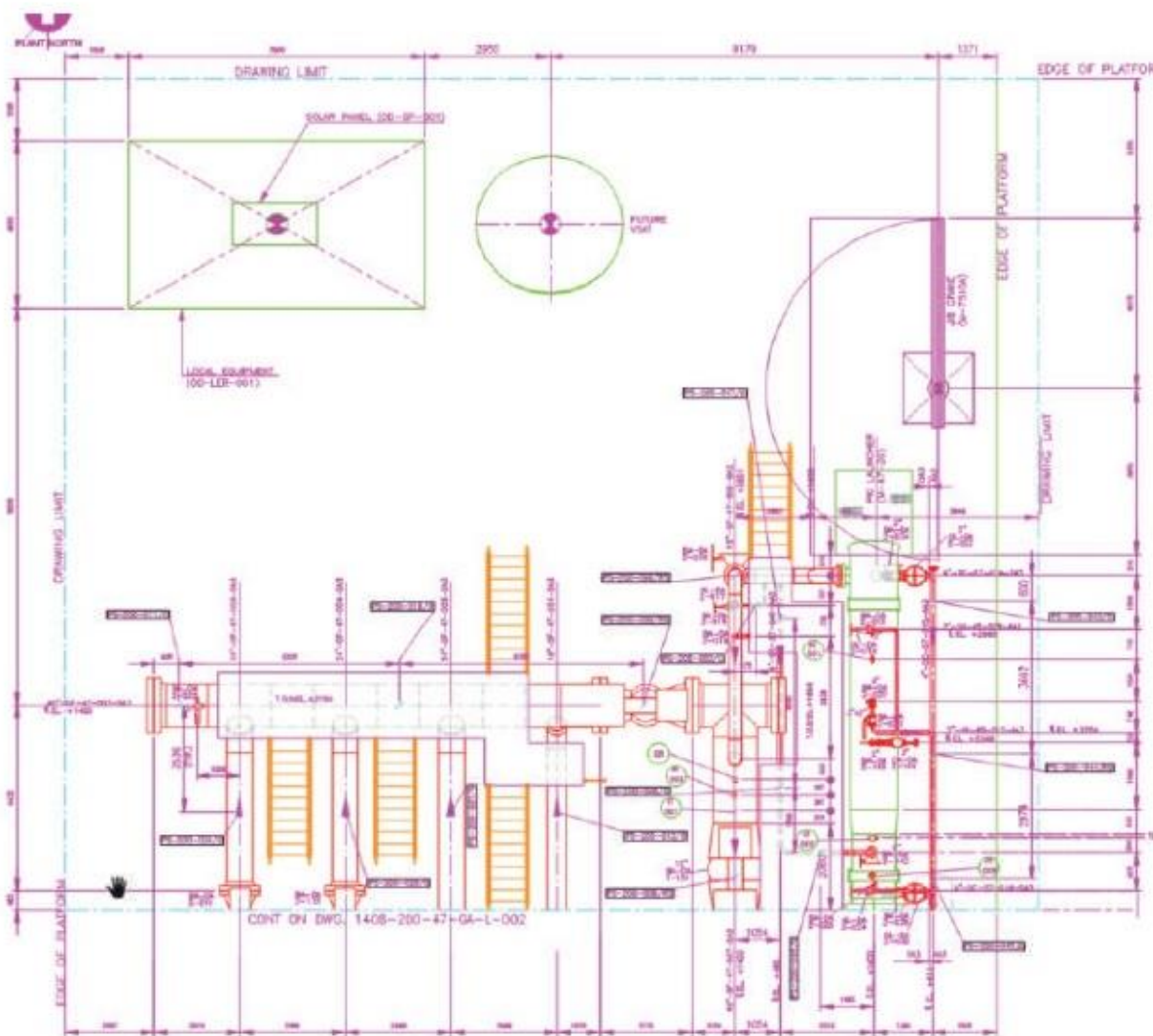
The consortium is currently

subject to NNPC approval prior to engagement in tandem with the Project Sub-contracting plan.

The consortium is leveraging on its expertise and past experience on similar projects to exceed Client expectation. The project is currently being executed in line with Nigerian Content

Government's efforts to improve the epileptic nature of electricity supply in the country.

The existing Escravos-Lagos Pipeline System Phase 1(ELPS 1) which stretches from Escravos Node to Oben Node cannot economically transport the additional volumes as Flow



Piping layout showing connection from South Swamps, Forcados, Yokri to Proposed OWE 40" Line

Assurance studies reveal constraints at the Odidi-Warri segment of the pipeline system.

The Odidi-Warri Gas Pipeline Expansion Project is therefore intended to eliminate all constraints to the transportation of additional volumes through the Escravos-Lagos Pipeline System to demand areas.

Hence, the project aims to install a new Pipeline system that measures about 40"x30km from Odidi Central Node to Warri Gas Treatment plant.

SCOPE OF WORK

In order to realise the Odidi- Warri Pipeline Expansion project the following activities shall be carried out as a minimum:

- Detailed Engineering Verification of Approved for Construction (AFC) documents from various engineering disciplines (Piping, Process, Civil/Structura

l, Electrical, Instrumentation, Te lecoms, Materials and Corrosion, Technical HSE and Pipeline)

- Verifications of Geotechnical and Topographic Right of Way Surveys.
- Site Preparation, Soil Reclamation and Ground Engineering Works.
- Route surveys for Equipment and Material transportation.
- Procurement, Supply, Inspection and Testing, Packing, Preservation, Delivery, Transportation, Custom Clearance, Inspection, Identification Control, Handling, Storage, and Incidental matters relating to all Equipment, Materials, Consumables.
- Installation of 40"x30km Odidi-Warri Pipeline inclusive of Pig Traps and Corrosion and Concrete Weight Coating.
- Installation of Fibre Optics Cable (FOC) between the Odidi Node and the WGTP along the length of the

pipeline ROW.

- On-site Testing, checking completion of detailed checklists, Pre-commissioning, Commissioning and Start-up, supply of consumables and any incidental matters relating to the satisfactory completion and operation of the complete facilities for Odidi-Warri Pipeline Expansion Project.
- Provision of insurance spares and Two (2) years' operating spares and ensuring they are on site prior to commissioning.
- Provision of adequate training for Employer operations and maintenance personnel to enable them operate and maintain the Odidi-Warri Pipeline Expansion Project facilities.
- Development of the Asset Integrity Management documents required to operate and maintain the Odidi-Warri pipeline facilities.
- Demobilization of all contractor's Facilities, Engineering Base, Fabrication Base, Construction Base, Storage Facility, Offices, Workshops, Equipment and Temporary facilities.
- As-Built documentation and handover.

LINE DESCRIPTION

The 40"x30km pipeline is designed for ANSI 600 pressure rating and a design pressure of 100 barg @50C and is expected to transverse rivers, swamps, and roads. This pipeline is designed to handle an estimated flow of 420 MMSCF from Odidi and Forcados, Yokri and the Southern Swamps.

ACTIVITY DESCRIPTION AT ODIDI END

The pipeline construction

NETCO EXECUTES DETAILED ENGINEERING DESIGN ON SAPELE LPG STORAGE AND LOADING FACILITY PROJECT

By Engr. Olufemi Olukoga
Project Manager

The Sapele LPG Storage and Loading Facility Project is a Detailed Engineering Design being executed by NETCO and Propak Systems Limited on behalf of Seplat West Limited. The kickoff meeting for the project was held on the 17th February 2022 and project duration is expected to be for thirty-one (31) weeks. NETCO is the main contractor while Propak Systems Limited is a subcontractor to NETCO.

On the project, NETCO handles the following disciplines: Civil, Electrical, Pipeline, Corrosion while Propak systems Limited handles the Process, Piping, Mechanical and Instrument/Control disciplines. At peak, about fifty-one (51) personnel from NETCO and Propak System Limited are expected to execute the project.

Total man-hours to be expended on the project is 29,387 man-hours. A site visit took place on the 21st March to 24th March 2022 to the Sapele Gas Plant and the LPG Storage and Loading Facility proposed site.

Below is a background and description of the project scope of work.

PROJECT BACKGROUND

A Seplat owned Gas Processing Facility located in Sapele is to be replaced with an efficient Gas Processing Plant that meets WAGP specifications, provide a Liquefied Petroleum Gas (LPG) recovery system and a Condensate Stabilization system capable of attaining an RVP of 9.5 psia at 38 °C. This has necessitated the design of a Propane and LPG storage



Sapele Gas Plant under construction (complete upgrade)

and loading facility.

The plan is to integrate the LPG/Propane storage and loading facility into the ongoing DED (Detailed Engineering Design) for the new Sapele Gas Plant as a solution to support flare-out and evacuation of Propane and LPG produced in the new Sapele Gas Plant. The Propane and LPG storage vessels at the Sapele storage facility will allow for a holding area and provide a trucking station. About Ten (10) days of on-site product storage has been considered for the storage facility.

The new Sapele Gas Plant DED has established optimum Propane and LPG production which needs to be evacuated. Consequently, Engineering Design will be carried out for the LPG/Propane Storage and Loading Facility.

Scope

The scope is to set out the basic design data and constraints necessary to develop Engineering Package for the LPG/Propane Storage and Loading Facility Project leading to Approved for Construction (AFC) deliverables required for the successful installation and commissioning of the project facility with required Equipment and the integration

engineering to enable hook-up/installation.

Project Objective

- The Sapele LPG/Propane storage and loading facility project will eliminate potential flaring of off-gas at the new Sapele Gas Plant when it comes on stream. This is in alignment with Seplat Corporate Strategy for gas flare out and commercialization initiative.
- The proposed product capacity is premised on circa 78MT per day (45,945 gpd) of incremental propane yields and circa 173MT per day (85,497 gpd) of LPG products to the domestic market.
- The proposed product storage will be in standard bullet size of 3277mm (ID) x 26315mm (S/S) and pump loading capacities of 136.3m³/hr (600USgpm).

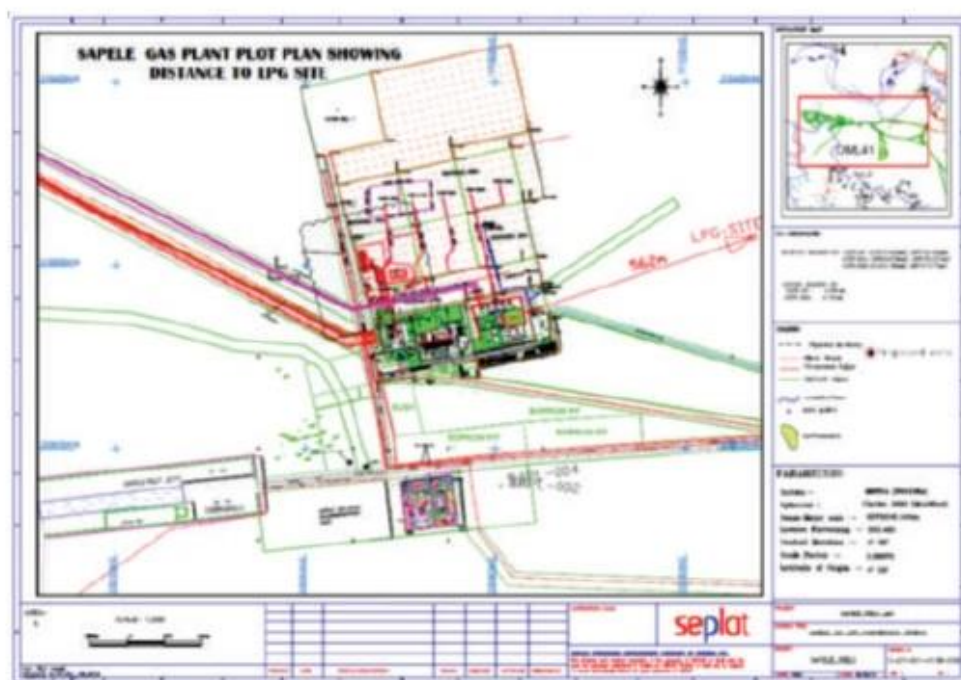
OVERVIEW OF SCOPE OF WORK

NETCO/Propak is to carry out the engineering design of a fit-for-purpose Sapele LPG/Propane Storage and loading Facility and its associated works as detailed in this document.

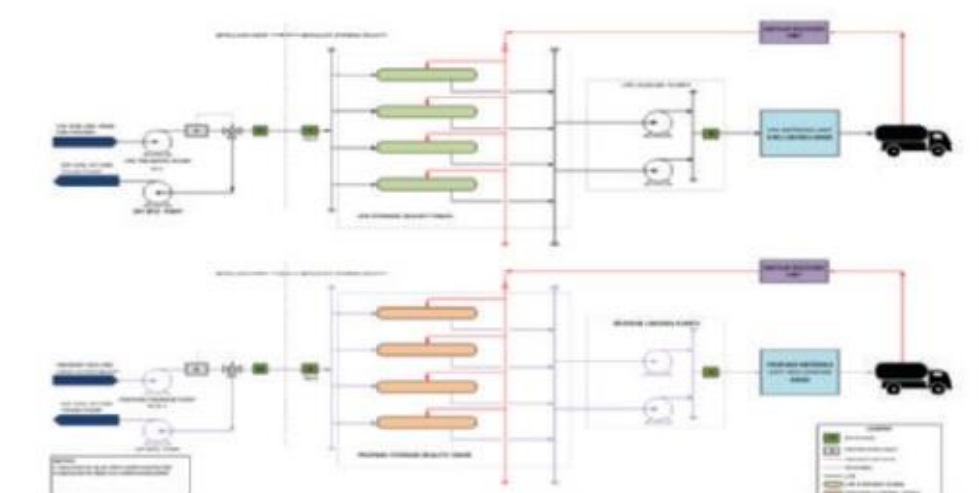
The aim of the design is to provide Technical Specification to facilitate the procurement of identified Long Lead Items and other materials and as well as all the vendor packages required for the successful installation and commissioning of the Facility.

The facility will be defined as starting from outlet lines of Propane and LPG from the Sapele Gas Plant to the Propane and LPG storage and truck loading station. The storage facility shall be made up of the following as a minimum:

- Propane/LPG Storage and Truck Loading bay
- Closed Drain Vessel
- Instrument Air System
- Power Generation
- Fire Fighting System and Safety Equipment (Safety in design to be premised on fire prevention)
- Administrative Rooms
- Drivers Lounge



Sapele Gas Plant Plot Plan Showing Distance to LPG/Propane Storage and Loading Facility



Schematic of Sapele LPG/Propane Storage and Loading Facility

SITE VISIT PICTURES



Proposed land for construction of the Sapele LPG Storage and Loading Facility



Proposed Access road to LPG Storage and Loading Facility Right of Way (ROW) showing the width of the road

NETCO STRENGTHENS TIES WITH ITF ON TRAINING AND DEVELOPMENT

By Kingsley Umoh



Group photograph of NETCO Management, Staff and representative of ITF

The NNPC Engineering and Technical Company (NETCO) in collaboration with Industrial Training Fund (ITF) will be strengthening ties in Learning and Development programmes in order to identify and remedy gaps in training and other needs.

The meeting which took place at NETCO Corporate office, had NETCO's top management and representative of ITF in attendance discussing plethora of issues that borders on training, and vistas of opportunities that can be beneficial to both parties.

The ITF Deputy Director Mr. Aminu Labo, said the partnership will cover Student Industrial Work Experience Scheme (SIWES) management, joining needs analysis which will be remedy to training, and advisory services to employers.

He further added that ITF believe

that training is a transformation, as no organisation can move forward without developing its own Human Resource, stressing that the ITF is a target driven system, while seeking for patronage in their training programmes.

Speaking on the issue of Training Reimbursement, the ITF Deputy Director, noted that according to the Act enacting the ITF, a maximum of fifty percent (50%) of what employers contributed are to be reimbursed, but the challenge of not requesting approvals for trainings most times hindered the fulfilment of this payment as there is no stipulated retrospective approvals of claims.

He stated, "we are ceasing this opportunity to call on NNPC NETCO to ensure that they request for approvals for local or foreign trainings and merged those approvals so that at the end of the year they can process the enrolment claim."

"Why some employers do not get up to fifty percent of the claim is because of this lapses we have identified from the companies; we also solicit for the HR Personnel to attend our Reimbursement Seminar as we have a new Certification Seminar for HR Personnel which is part of the Reimbursement processes."

"NETCO being an Engineering organisation, ITF has an Engineering and Construction Training needs, and part of our mandate in our work plan is to scout through our environment to carry out PNA in Engineering and Construction, when we identify the needs, we remedy those gaps through training or other means."

"I call on NETCO to allow ITF work with them in different areas of training and development so that the Nigeria Economy will be the better for it."

Responding to Mr. Labo's



NETCO erstwhile Acting Managing Director, Engr. Kanayo Odoe watching with wrapt attention to the presentation of ITF Deputy Director Mr. Aminu Labo



All at attention: R-L Kenneth Akanazu, Kate Ezeanya, Akinola Akinsola, Mrs. Omotayo Mobolaji and Caroline Olaniyan during the meeting with ITF representatives.



Engr. Kanayo Odoe and ITF Deputy Director Mr. Aminu Labo exchanging gifts shortly after the meeting

presentation, the outgoing Acting Managing Director of NETCO, Engr. Kanayo Odoe, hinted that NETCO, with its in-house expertise, also carry out internal and external training programmes, as he called on ITF to partner more with NETCO as they expand their scope.

Kanayo also emphasised on the need for ITF to adhere strictly to standard and safety during training programmes with staff.

The erstwhile NETCO boss said: "when you are training our staff, we have the basic standard in terms of the environment where they are trained, who is training them, the kind of reception they should be accorded, and safety."

"If we are going to patronise you, you have to assure us that those standard will be met at effective cost.

The Manager, Information Technology Department NETCO, Mr. Kenneth Akanazu, expressed gratitude to ITF and the visiting team, saying that NETCO will always like to work with ITF.

Akanazu said that Management will look at areas highlighted by the ITF team, especially the issue on approval before training, and the need for NETCO to work more with ITF in future trainings.

He said: "I thank the ITF team, for all you said, there are lot of areas we can work together in training for the development of the country, we have taken note and we will make corrections where needed so that both parties can work together, we appreciate what you are doing and we assure you that whatever we can do to ensure we become partners in progress we will always do that."

Recall that the goal of Learning and Development Unit NETCO is to build capacity that can be deployed on jobs in the Oil and Gas Industry by ensuring that all Technical and Non-Technical personnel are trained to acquire the right skill and competence.

MULTIPHASE PRODUCTION FOR WALTERSMITH'S ASSA MARGINAL FIELD RE-DEVELOPMENT (OML 21)

By Elizabeth Ekanem

*Project Manager,
ASSA Marginal Field Re-Development FEED Project.*

ASSA Marginal Oil Field is located Onshore Nigeria block OML 21. In April 2020, Waltersmith Petroman Oil Limited (WSPOL), an indigenous E&P company acquired ASSA oil field from Shell Petroleum Development Company (SPDC), the operator of the oil block on behalf of NNPC/SPDC/

The ASSA field comprises eight (8) oil reservoirs of a combined STOIP of 74.65M barrels per day equivalent (bpde) and 28.5 Bscf of associated gas. ASSA Field Re-Development FEED project is for a duration of six months and involves the re-entry and re-development of the field as a tie-back to the

multiphase pipeline to convey the produced well fluid) tied back to IBIGWE flow station. Both wells will be fitted with gas lift mandrels for artificial gas lift to enhance hydrocarbon recovery, and chemical injection valves to address possible flow assurance issues. Also, part of the project



Fig 1: ASSA Marginal Field Location Map.



Fig 2: ASSA oil wellhead (dual string)

TotalEnergies/Agip Joint Venture. The block covers an area of approximately 1,226.28 hectares and is situated 5km east of IBIGWE field (OML16) in Ohaji-Egbema LGA of Imo state.

SPDC discovered ASSA oil field in 1961 with the drilling of ASSA-1 well; additional wells - ASSA-2, ASSA-3 & ASSA-4 were added by 1967. The field commenced production in 1971 and was operated until 1994 when operations were suspended. The wells were later shut in 2003.

existing nearby 15,000 bpd IBIGWE flow station also owned by WSPOL using the Multiphase Production technology. The FEED Design aims to develop the oil field in two phases: Early Oil and Full field development.

The Early Oil development involves the drilling and completion of two (2) new dual strings wells (ASSA-1 & ASSA-2), installation of associated production infrastructure (a test & production manifold, multiphase pump (MPP) station, multiphase flowmeter MPFM) and a single

scope is the revamp of access roads to ASSA 1 & 2 wells and the installation of wellpads at each well location. Below is a schematic representation of the Early oil set-up.

The full field development phase of the project entails drilling three (3) new wells (ASSA-5H, 6 & 7) with the attendant expansion of major process equipment at IBIGWE flow station to handle the increased throughput. In addition, a power generation station and central

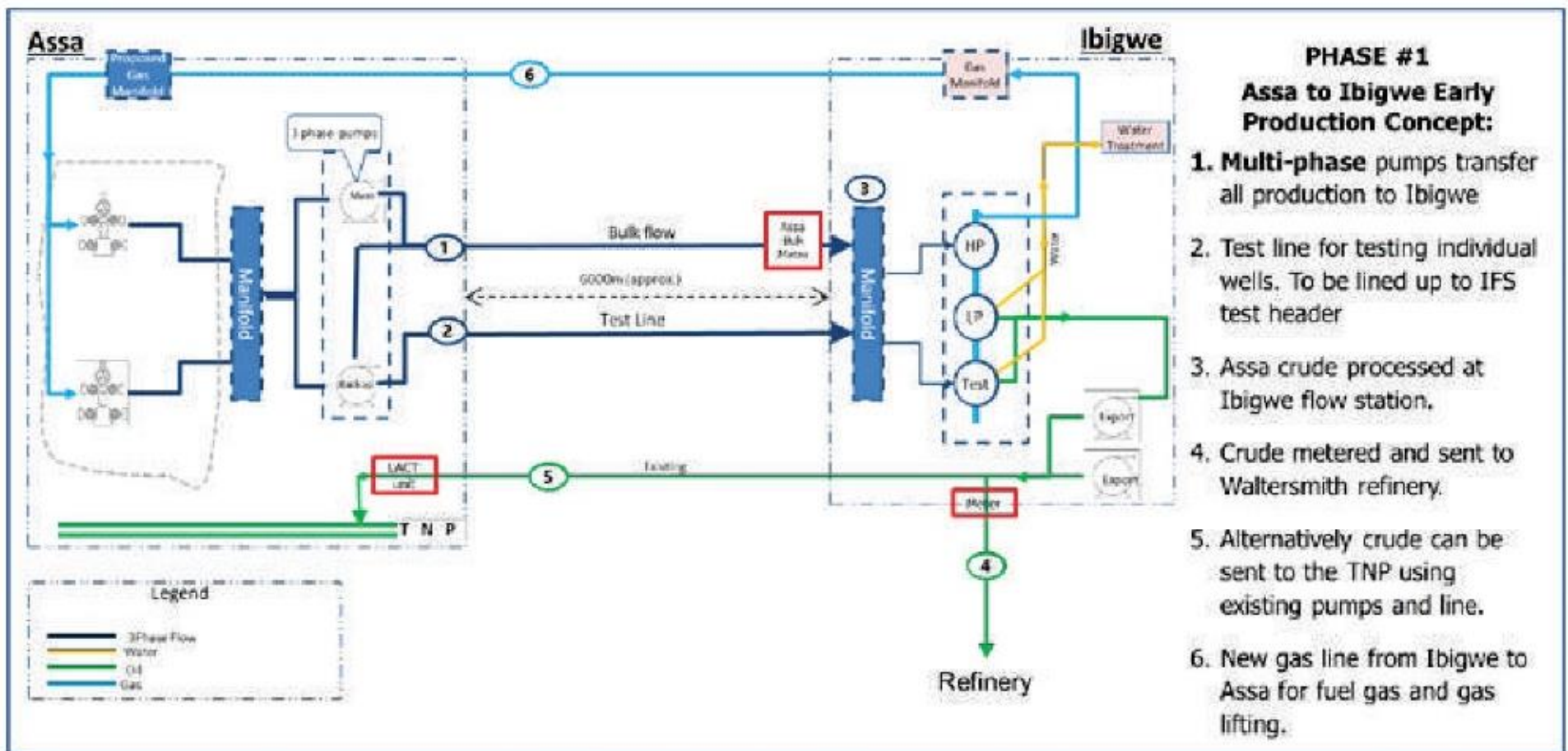


Fig 3: ASSA Early Oil Development - Surface Production Facility

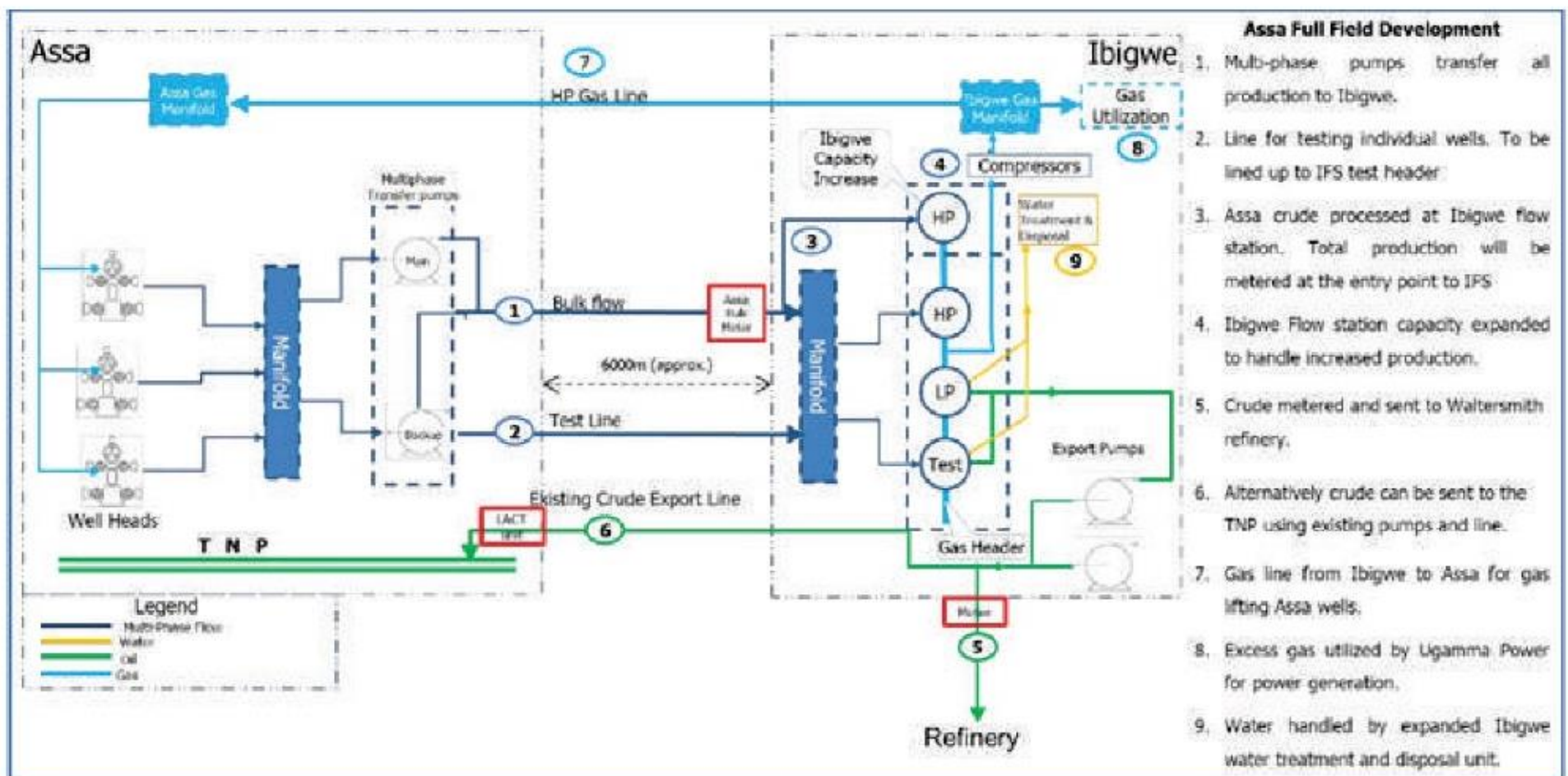


Fig 4: ASSA Full Field Development – Surface Production Facility

control building with offices to cater for periodic operational activities on site will be provided.

MULTIPHASE PUMP SYSTEM

In many oil fields, the conventional production approach is to locate the central processing facility as close to the wellhead as possible to separate the well stream into crude oil, associated gas and condensate/produced water. Each

phase is then treated individually and transported via pipelines to export terminal for sale while the treated produced water is used to boost well reservoir pressure via re-injection or simply discarded. This production scheme is viewed as a single-phase production.

Multiphase pump system is a new yet proven technology that is simple, economical and ideal for

the production of new oil fields, mature or marginal fields and oil reserves in terrains that are inaccessible. It involves the use of a multiphase pump (MPP) to transports unprocessed well fluids as a mixture of crude oil, associated gas, and water, which can also contain sand, wax, emulsion or other particles, without prior separation, to a processing facility for further treatment.

A multiphase pump is a pump which is also able to transport gas along with liquids. It is an isothermal machine in which the heat generated from compressing the gas is dissipated by the flow of the liquid stream through the pump. This is contrary to a compressor, which is an adiabatic machine (releases heat) and requires additional cooling. A multiphase pump is capable of handling fluid mixtures with over

90% gas by volume. The gas volume is often referenced in terms of percent of Gas Volume Fraction or GVF. The GVF is an average value and not a continuous gas/liquid ratio. What is typical for multiphase flow is slugging, which means random intervals of 100% gas, 100% liquid and varying GVFs. Since the MPP relies on liquid to seal the pumping chambers and take away the heat of compression, some liquid from the multiphase flow must be trapped for recirculation

back to the MPP suction, thus maintaining prime.

The MPP helps to increase oil production in mature wells and revitalizes shut-in wells by reducing the well backpressure arising from surface flow lines and pipeline losses. This subsequently lowers the wellhead tubing pressure resulting in increased flow into the wellbore, thereby extending well production life. It also reduces or eliminates flaring and venting of associated gas during crude oil production since the gas is conveyed along with the well liquid stream and no longer separated and burn off at the well site. MPP eliminates the need for process equipment such as separators, compressors, heaters, gas flares, storage vessels and dual pipelines for crude oil and gas. Hence, improving field production at lower production costs.

Considering the current fluctuating oil prices, the multiphase production technology, which has been used for over 25 years by multinationals including Chevron, Shell, Saudi Aramco, TotalEnergies, and ENI, to mention a few, has become a cost-effective alternative to the conventional production of oil fields.

FIELDS OF APPLICATION

Multiphase pump systems can be installed Onshore, Offshore and Subsea to provide artificial lift as well as boost production from low and medium pressure wells. The following fields of application are possible:

- Dry installation (Onshore) on land to economically exploit smaller oil fields, mature



Fig 4: Typical Conventional Production facilities for Crude Oil Production.



Fig 5: MPP System for Crude Oil Production.

fields and marginal wells.

- Dry installation (Offshore) on a platform, enabling further processing on land with a simplified line-up on the platform
- Wet installation (Subsea) on the seabed, to improve the production of smaller fields such that platforms may no longer be required

Besides the different field applications, pump manufacturers are also particular about the field production capacities which the MPP system is designed to handle. The following ranges of operations are possible for multiphase pumps:

- o For High capacity fields e.g. productions above 500,000 bpd. The pump is installed behind a reservoir and aims at increasing the pressure of the pipeline. This allows for simplification of the platform and for subsea installation, the transportation of the multiphase mixture to a distant facility to further process it.
- o For Medium capacity fields e.g. productions between 50,000 and 500,000 bpd. This is applicable to oil fields which are slightly productive and the well stream is transported to a storage tank or vessel.
- o For Low capacity fields e.g. productions less than 50,000 bpd and installed between a remote well and a reservoir to exploit the well flowrate at low reservoir pressure
- o For Low capacity fields with the aim of keeping the delivery head pressure at a constant low level with changing operating conditions. This helps to improve well flowrate

and invariably increased the production of the field.

TYPES OF MULTIPHASE PUMP SYSTEM

Figure 6 above shows the various types of multiphase pumps available today and they are broadly divided into two groups

overcome to deliver the fluid to a set pressure downstream of the pump. For any positive or near positive displacement pump, the interaction between the pump and the adjacent pipeline segments determines the pump performance.

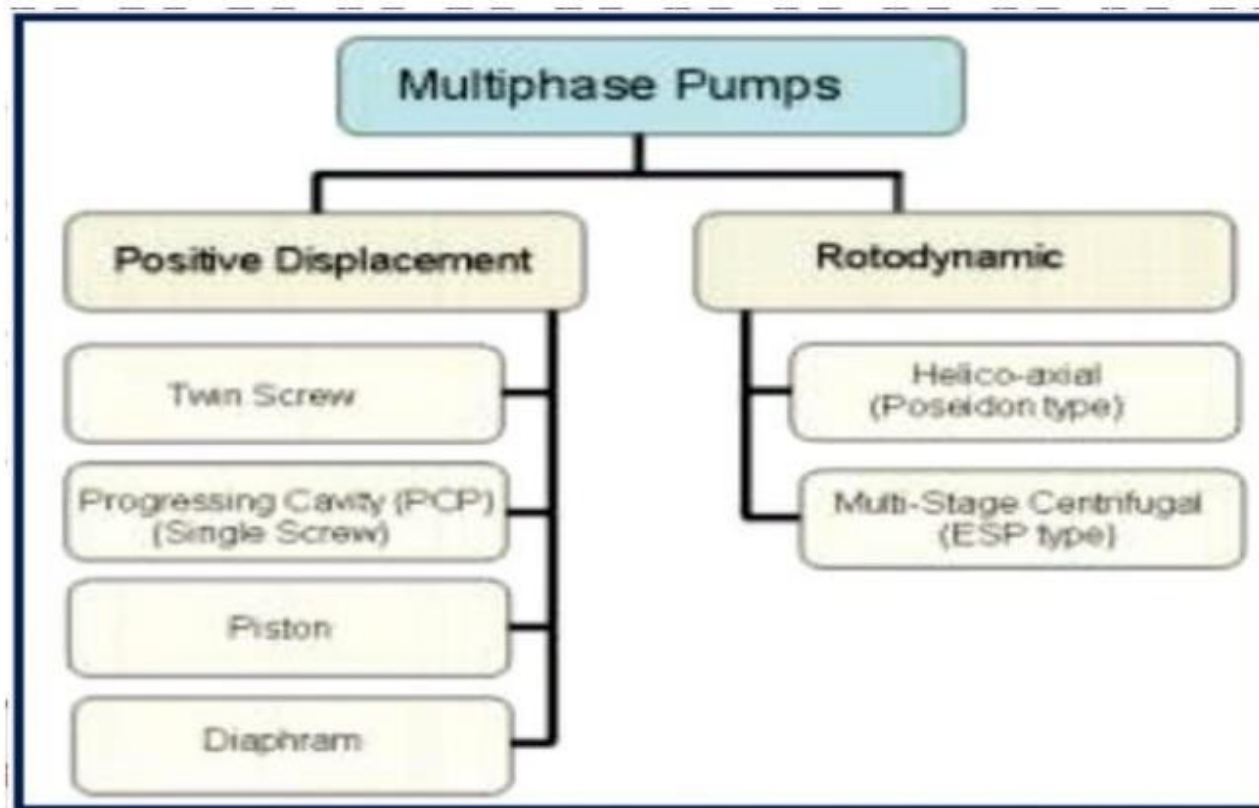


Fig 6: Types of Multiphase Pumps

based on their principle of operations.

- Positive Displacement Pumps e.g. Twin Screw Pump (TSP)
- Rotodynamic Pumps e.g. Helico-axial Pump (HAP)

Positive displacement pumps

Positive displacement pumps operate on the principle that a fixed amount of fluid is transferred through the pump based on the volume created by the pumping chamber and the speed at which this volume is moved. The amount of differential pressure that develops in the pump is a function of the resistance to flow downstream of the pump arising from pressure losses that must be

Twin Screw Pumps (TSP)

Twin-screw multiphase pumps are the most commonly used technology for multiphase applications because they are robust, reliable and allows large combination of materials based on application. TSP works with a fixed displacement where each pumping chamber forms when the two meshing screws rotates and delivers a constant volume from suction (inlet) to discharge (outlet). The liquid part of the multiphase flow becomes very important in compressing gas as it helps to dissipate the excess heat produced.

A TSP consists of two opposite sets of screw profiles positioned side by side in the horizontal plane of the multiphase pump that moves inlet flow from opposite ends of the

screw sets toward the middle, where it connects to the pump outlet. When the screws turn, the centrifugal forces cause the liquid phase to separate from the gas phase. The liquids concentrate in the perimeter of the screw set in the annulus between the liner and the screw tips, and between the screw tips and the root of the profile. As the flow moves from the inlet toward the outlet, the liquid phase becomes more defined and a laminar stream of liquid travels in the opposite direction of the main flow stream. The reverse flow of liquids is a result of the pressure build-up from downstream

discharge port of the pump and continue downstream. As shown in Figure 7 below, the pressure build-up is progressive from chamber to chamber. However, compared to liquid, it is in the last chamber before the pump outlet where most of the gas compression takes place. Although a typical TSP is a constant displacement machine, the back-flow of liquid makes it a virtual variable-displacement machine, thereby allowing it to compress gas. Though it is still a classic pump, this feature enables it to transport 100 percent liquid at any time, which is not possible in a variable- displacement machine

rates (less than 30,000 bbl/day total volume of gas, oil and water) and for lower discharge pressures (maximum of 400 psig). This pump has the unique ability to tolerate considerable amounts of solids (sand). However, high sand production rates result in the need to replace the stator on a regular basis.

Piston Pumps

One of the simplest forms of multiphase pumping is the use of a large double-acting piston to compress the multiphase oil, water and gas mixture. This approach is effective in the low and moderate flow rate ranges with a maximum capacity of approximately 110,000 bbl/day (total volume of gas, oil and water) and maximum discharge pressure of approximately 1,400 psig. The first type of piston pump, the “Mass Transfer Pump”, was installed in June 1998 by National Oil Well in Canada. This pump makes use of the same gear box and prime mover that is utilized in conventional sucker rod pumping units. Also, the pumping chamber functions much like a down-hole sucker rod pump. It is comprised of two check valve assemblies which operate in the same fashion as the standing valve and traveling valve in a down hole pump.

Diaphragm Pumps

The diaphragm pump is a reciprocating pump consisting of two pumping chambers. The piston and motor are immersed in hydraulic oil supplied by a conventional axial-piston hydraulic pump. An elastomeric diaphragm separates the hydraulic oil from the pumped fluids. While these pumps have been primarily associated

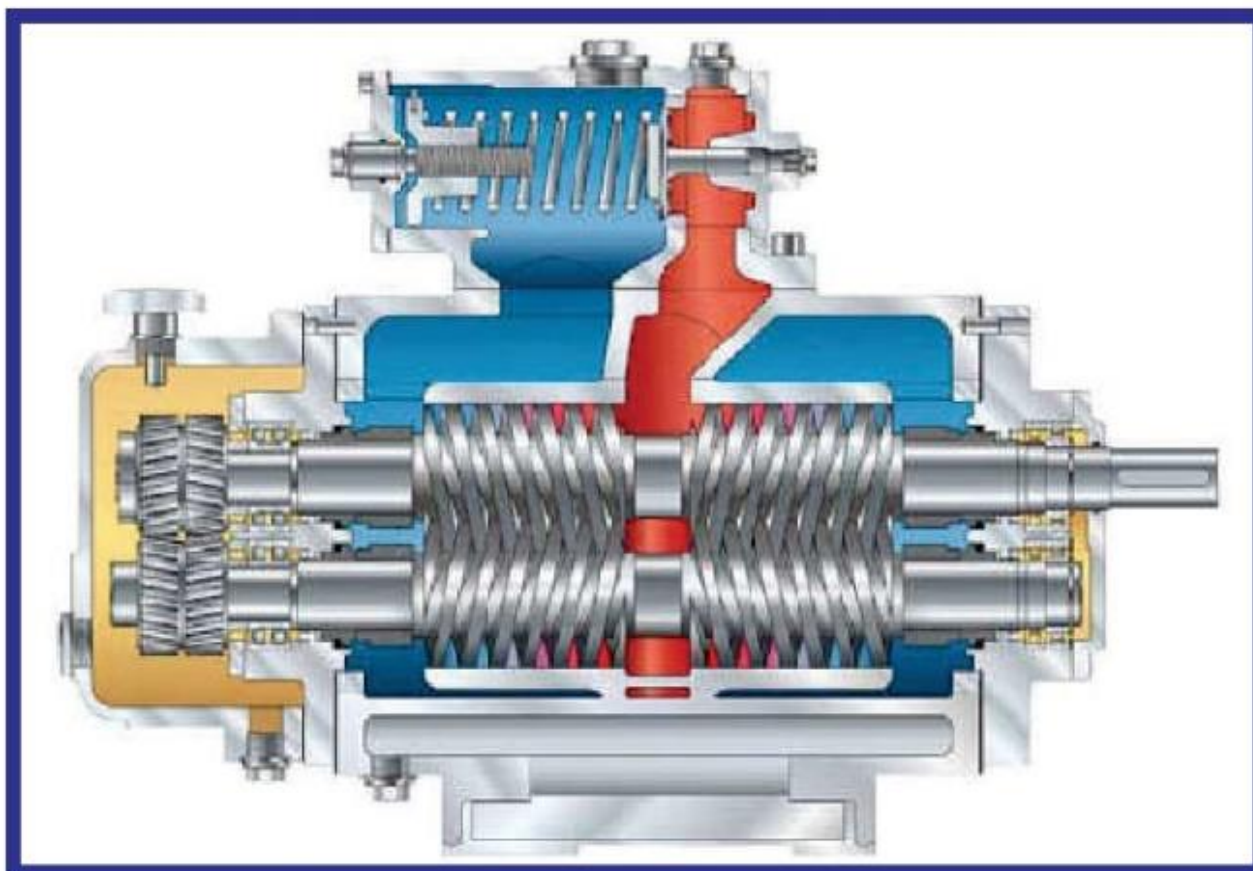


Fig 7: A sectional view of a Twin-screw multiphase pump

pipelines or the separator pressure control. When the back-flow of liquid occurs as a result of losses in delivery pressure and fills the next upstream pumping chamber, the liquid will compress the gas in the chamber. Overflow liquid will continue to fill preceding upstream chambers, and the gas compression will occur as the liquid continuously fills the chambers. Somewhere there will be equilibrium between gas and liquid pressures, and the combined liquid/gas flow will reach the

such as a compressor or a pump with variable displacement in order to operate with solid liquid.

Progressing Cavity Pumps (Single-Screw)

Widely used in shallow wells as an artificial lift method, the Progressing Cavity Pump has been adapted for surface multiphase pumping. The Progressing Cavity Pump is comprised of a rubber stator and a rotating metal rotor. This pump is effective for low flow

BENEFITS OF MULTIPHASE PUMP SYSTEM

Multiphase production technology reduces backpressure on the well by boosting the untreated well flow, thus allowing the reservoir to accelerate production and ultimately increase hydrocarbon recovery from mature and marginal fields. Facility requirements are reduced by eliminating separation and processing equipment such as separators, flares, pumps, compressors, flow lines, etc. With multiphase pumping, process facilities can be centralized and optimized for gathering a large number of producing wells, thereby reducing footprint and limiting environmental impact such as gas flaring, as well as drastically reducing operating and capital expenditures.

Flow assurance is an equally important benefit of multiphase pumping. Increased liquid production, slugging –especially terrain-induced liquid slugging, which is very difficult to address – and surging are problems. Multiphase pumps have the advantage of breaking up slugs and allowing first-stage production separation to work without liquid carry-over or other upset conditions. The same problems occur with risers, where slugs effectively can be mitigated by using multiphase pumps. These pumps can be operated remotely so it is also useful in de-manning of marginal production facilities.

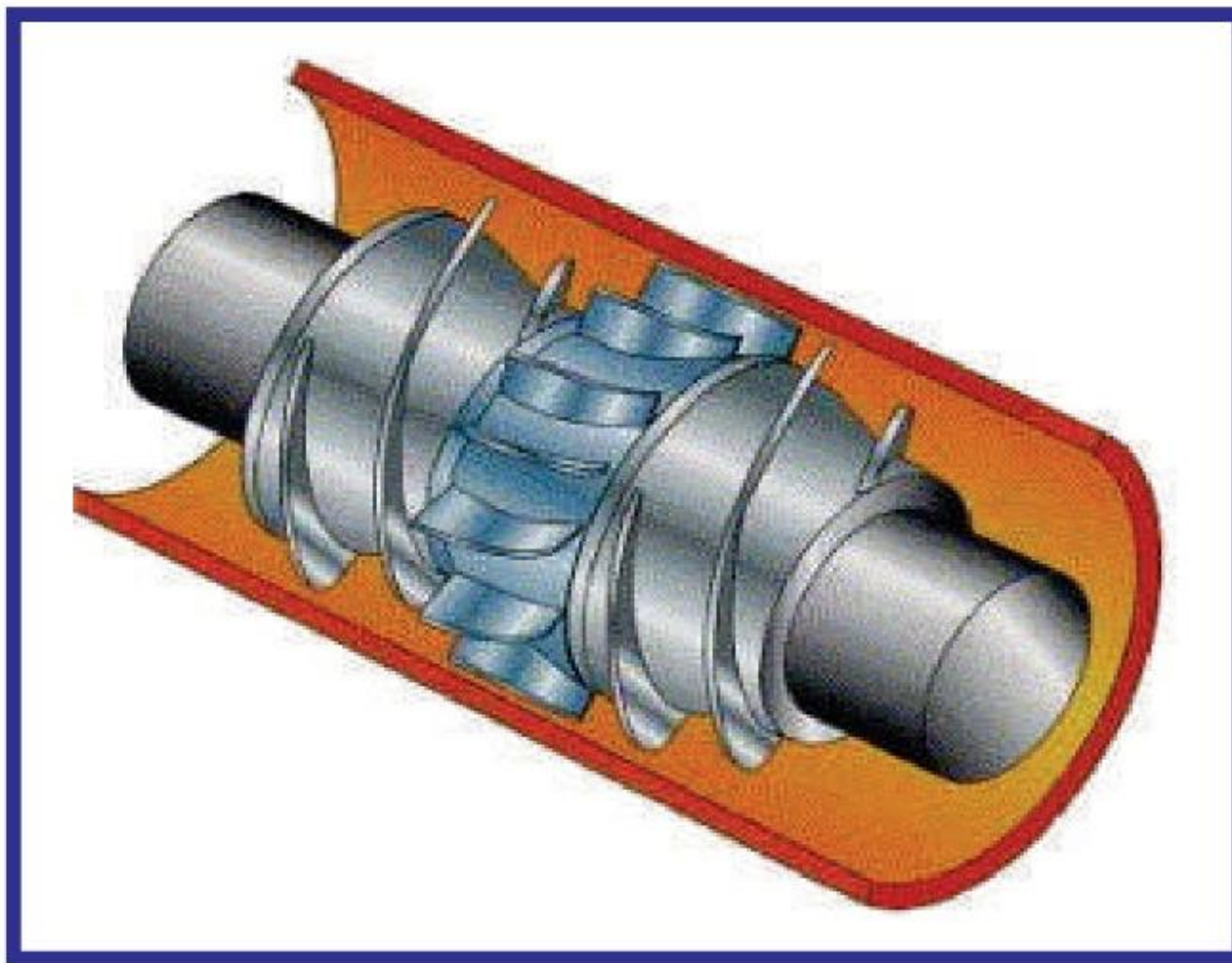


Fig 8: Helico-axial multiphase pump.

with the liquid-solids flow associated with deep-water drilling operations, they can be modified to accommodate 100% GVF fluids with high efficiency.

Rotodynamic Pumps

Rotodynamic pumps operate on the principle that kinetic energy is transferred to the fluid which is then converted into pressure. In rotodynamic pumps, this occurs when angular momentum is created as the fluid is subjected to centrifugal forces arising from radial flow through an impeller. This momentum is then converted into pressure when the fluid is slowed down and redirected through a stationary diffuser.

Helico-axial Pumps:

The Helico-axial pump is a type of rotodynamic pump and fluid flows horizontally through a series of pump stages, each consisting of a rotating helical shaped impeller and a stationary diffuser as shown in Figure 8 above. This configuration is a kin to a hybrid

between a centrifugal pump and an axial compressor. Each impeller delivers a pressure boost with the inter stage diffuser acting to homogenize and redirect flow into the next set of impellers. This inter stage mixing prevents the separation of the gas-oil mixture, enabling stable pressure-flow characteristics and increased overall efficiency. As the gas is compressed through successive stages, the geometry of the impeller/diffuser changes to accommodate the decreased volumetric rate. The impeller clearances are sufficient to allow production of small amounts of sand particles. While helico-axial pumps are more prone to stresses associated with slugging, installation of a buffer tank upstream of the pump is generally sufficient to dampen slugging effects such that they are not a problem. Helico-axial pumps has ability to pump any GVF from 0 (100% liquid) to 1.0 (100% gas).

WORLD BREAST CANCER MONTH: NETCO SUPPORTS NMSL ON THE FIGHT AGAINST BREAST CANCER

By Muzammil Kigo



World Breast Cancer Month 2022: Participant displaying banner and placards in support on the fight against breast cancer

The NNPC Engineering and Technical Company Limited (NETCO), on Tuesday, 12th October 2022, partnered with the NNPC Medical Service Limited (NMSL) for the 2022 World Breast Cancer Month.

The roadshow, which was supported by 15 entities outside NNPC Limited, had various stakeholders joining the march, which took off from the NMSL Corporate office at Muri Okunola, Victoria Island, Lagos.

Speaking on this year's World Breast Cancer Month, the Deputy Manager, Insurance Health Services, NMSL, Dr Ayo Agboola, reiterated NNPC Limited's commitment to supporting its environment and their operating communities in fighting the scourges bedeviling them.

He said, "we are committed to helping these communities in reigning in these scourge, as part of our effort is to create awareness and provide whatever support we can to the communities to ensure that breast cancer is not a public health burden to these communities.

"We believe that the most important is to be aware of Breast Cancer and be mindful of what we need to do to ensure that breast cancer is not a problem in our community anymore.

"He explained that breast cancer in women is one of the most common cancers in Africa, underscoring the importance and public health burden breast cancer is to these communities.

Dr. Agboola further stressed that the essence of the awareness

campaign is to create and deepen awareness to encourage people to go for regular screening.

Regular screening is the easiest way to identify breast cancer while informing; when breast cancer is identified early enough, it can be taken care of before it causes damage, as it is a very rare cancer that can be treated in this part of the world.

On the possibility of fighting the deadly scourge called breast cancer, the veteran Dr. Agboola is optimistic that the battle against cancer can be won.

"I am optimistic that the battle can be won because the digit shows that the incidents of breast cancer are going down and deaths from breast cancer are also at a minimal level.



World Breast Cancer Month 2022: Participant displaying banner and placards



World Breast Cancer Month 2022: Participant displaying placards

"Though these numbers may not come to zero, we are hopeful that in no distant time, it will become insignificant, just like some other conditions that we have eradicated in our environment. We are optimistic that it will soon be a burden that has been taken care of in our communities.

Dr Agboola also added that the NMSL would continue to sensitise the public on breast cancer by road show and 'mouth marketing' which is an essential tool to spread messages like this, with the belief that they would go forward and share with others as this will help to fight breast cancer in our community.

In the same vein, Supervisor, Human Capital Management, NETCO, Daniel Osin, who was an active participant in the Breast Cancer Awareness Campaign Road Show, said, "There is nothing as good in creating awareness, a lot of people are not aware of the breast cancer scourge, most especially the less educated ones, even the educated ones do not take time to understand their body and know if something is happening to them."

"This road show awareness campaign has created insight for a lot of people to be conscious about breast cancer, and a lot of people that we share the message to are really happy to know what breast cancer is all about, and I want to thank NNPC Limited for giving this opportunity to create awareness for those around their community."

The Deputy Manager Nursing, Osobu Olawunmi, called on women to be sensitive to changes in their breasts while emphasising the need for a regular breast check. She said: "This awareness is for all women to check their breast at least once in a month, and if any variation is noticed you should visit your doctor immediately. It is just for us to be aware that as a woman we need to check our breast for lumps."

Breast Cancer Awareness Month is an annual international health campaign organised by most breast cancer charities every October to increase awareness of the disease and build funds dedicated to researching the cause, diagnosis, how to prevent it, the treatment and cure.

PHOTO NEWS



Engr. Kanayo Odoe exchanging pleasantries with a staff during the farewell town hall meeting



Engr. Aristobulus Tauna expressing his gratitude to former NETCO boss Engr. Kanayo Odoe during the farewell town hall meeting



Engr. Kanayo Odoe watched on as staff extol his virtues



NETCO Public Affairs Supervisor, Mr. Daniel Joseph anchoring proceedings during Engr. Kanayo Odoe farewell town hall meeting with staff



Engr. Kanayo Odoe during his farewell presentation with staff



Engr. Kanayo Odoe addressing staff during the farewell town hall meeting

PHOTO NEWS



NETCO Human Capital Management Supervisor, Mr. Daniel Osin join participant during the road show for the fight against breast cancer



Breast Cancer Month 2022: participant displaying banners and placards in support



Group of participant during the road show on the fight against breast cancer



NETCO Daniel Osin (HCM) together with other participant sharing fliers to enlighten the populace on breast cancer



A walk for breast cancer: cross section of participant showing solidarity for the fight against breast cancer



Group photograph of participant during the 2022 breast cancer awareness month

PHOTO NEWS



L-R: NSE President, Tasiu Sa'ad Gidari-Wudil and Chief of Defence Staff, General Lucky Irabor with his entourage at the NETCO booth during the Nigerian Society of Engineers (NSE) 2022 Annual General Meeting (AGM), Conference & Exhibition



Visitors at the NETCO booth during the NSE 2022 Conference & Exhibition



NETCO exhibitors: L-R: Adimabua Ogbue, Kingsley Umoh and Pemi Temitope performing their duties at the NETCO booth during the NSE 2022 AGM, Conference & Exhibition



Engr. Babagana Mohammed, FNSE (Past President of NSE) middle with staff of NETCO at the NETCO booth



Cross section of NETCO Young Professionals



Cross section of NETCO Young Professionals

PHOTO NEWS



NETCO Executive Director Business Services Mrs. Daisy Wari celebrates her birthday with Staff



HSEQ Manager, Akinyemi Johnson (standing right) joins the celebrant Mrs. Daisy Wari to cut her birthday cake as other Staff watched on



Prayer time: NETCO Executive Director Finance (EDF) Mr. Asolu Olajide in prayer during his birthday celebration



A Team of NETCO Staff gathers to pose for a group photograph with the celebrant Executive Director Finance, Mr. Asolu Olajide



Engr. Kanayo Odoe joining Engr. Frank Nwaneto to cut his birthday cake



A group of NETCO Staff joins Engr. Frank Nwaneto in a group photograph during his birthday

NETCO-ILF PROJECT MANAGEMENT CONSULTANCY (PMC) SERVICES TO NGIC ON THE AKK 40" X 614Km PIPELINE PROJECT

By Engr. M. Y. Madaki
Manager Engineering, NETCO

The Nigerian National Petroleum Company Limited (NNPC) is developing and implementing the Ajaokuta – Kaduna – Kano (AKK) Section of the Trans Nigeria Gas Pipeline Project. The objective of the Project includes but not limited to the Engineering, Procurement, Construction, Installation, Testing and Commissioning of a 40" x 614km linear length pipeline system from Ajaokuta to Kano with associated intermediate, terminal facilities and all other related equipment to transport natural gas to off-takers at Abuja, Kaduna, and Kano.

The Project will also supply three (3) IPPs, Abuja-1350MW, Kaduna-900MW and Kano 1350MW to further support Petrochemicals, Fertilizer, Methanol and other gas-based industries

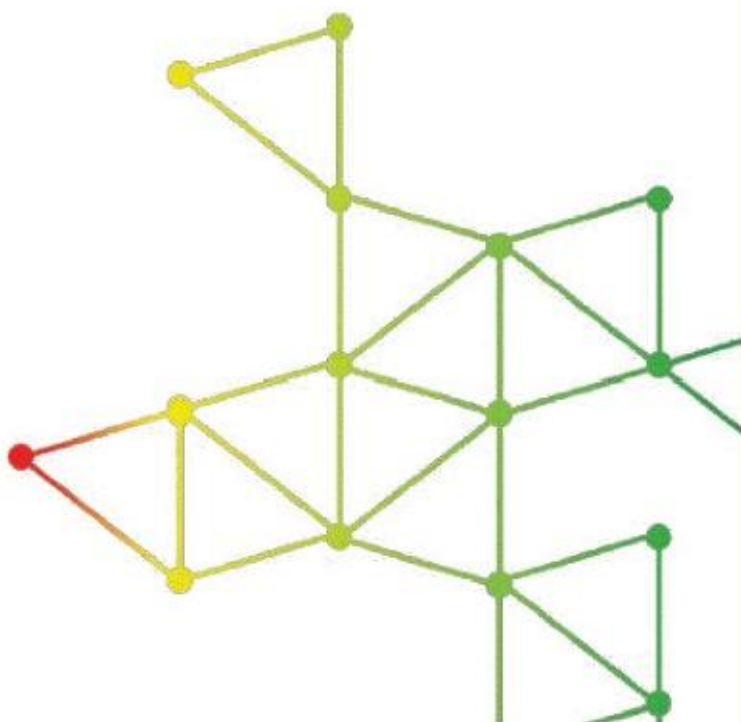
The AKK pipeline cut across four states - Kogi, Niger, Kaduna and Kano and the Federal Capital Territory (FCT).

The Scope of PMC include but not limited to the followings:

- Supervision of engineering, procurement, construction and commissioning activities
- Supervision of the SCADA implementations
- Provision of legal, government and regulatory support; and
- Provision and management of project facilities including logistics arrangements.

The AKK project was awarded to two EPC Contractors namely Oilserv (Segment 1) and Brettex (Segment 2) who simultaneously have the overall responsibility of delivering the project accordingly by December 2023.

AKK 40" X 614Km PIPELINE PROJECT SCOPE ON MAP



NNPC GCEO and Board members visit to AKK Project Site



NNPC GCEO and Board chairman visit to AKK Procurement Office in Abu Dhabi



Project Team at FAT facility in Italy



Project Manager at Segment 2 site



Cold Bending in progress



Offloading of Project Line Pipes



Project Manager at Segment 1 site



Automatic Welding Machine in action

TRAINING AND DEVELOPMENT: NETCO GRADUATES 6 NCDMB TRAINEES

By Kingsley Umoh



NETCO Management Team in a group photo with the 6 NCDMB graduate trainees

The NNPC Engineering and Technical Company, in collaboration with Nigeria Content Development and Monitoring Board (NCDMB), on Friday, 30th September 2022, graduated six (6) intern trainees who were attached and participated in the Bonga North Project awarded to NETCO.

The training, which began on Tuesday, 9th August 2022, was cleaved into two categories; on-the-job training and classroom training, as they were exposed to AUTOCAD, ASYNS and PDMS.

The trainees were also taught the basics of Oil and Gas practices and given the general scope of the Bonga North project (executed by NETCO) with the various disciplines and roles of Graduate Engineers on the Project explained.

The classroom training spanned three months (3 months), within which they (the participants) obtained relevant certifications from different professional bodies in the Oil and Gas industry.

Some of the courses the trainees bagged certification include; Health Safety and Environment (ISPON Certification on General HSE and HSE Level 3), Aspen HYSYS, SACS, PV Elite, Autocad, PDMS, Emotional Intelligence, Entrepreneurship Skills, API Technical Report writing and communication skills, Introduction to Subsea Engineering, Basic Petroleum Technology and the fundamentals of the Oil and Gas Business.

However, the on the Job training lasted for nine months, as the trainees had the opportunity of working on the job first-hand with the various Departmental Leads.

The nine trainees involved in the training programme were; Ubong Essien, Ojulari Rukayat Kemi, Ade-Ojo Tolulope, Koru Timipre, John Doye Solomon, Utti Gloria, Akoko Kitchener Taribio, Obulor ThankGod, and Bewul Puobah Matthew.

At the graduation ceremony organised for the young Engineers by NETCO to celebrate the

completion of their training, some of the trainees who spoke to NETCO NEWS correspondent narrated their experiences during the training.

One of the trainees, Bewul Puobah, said: "Walking through the gates of NETCO, I came in with high aspirations, dreams and expectations. I believe my colleagues shared a similar plight. With the joy of watching a career fantasy come to fulfilment and gladness in my heart, I thank NETCO, SNEPCO and NCDMB. I leave reborn, comfortable and confident in carrying out tasks and with the hunger to test the depth of these waters (the Oil and Gas Industry). What an opportunity, what a privilege. Thankyou."

Another trainee, Rukayat Kemi, who was elated with the experience and knowledge gained during the period of the training, said: "on my part, it has been a fantastic experience; sincerely, it is an eye opener for me, I have never been in the Oil and Gas industry before, the privilege of being here has given me the opportunity to



Manager, Human Capital Management NETCO, Mrs. Lillian Nse Afu-Leo presenting gift to one of the NCDMB graduands, Mr. Bewul Puobah



The 6 NCDMB graduate trainees during the graduation ceremony organised by NETCO
L:R - Timipre Koru, Obulor ThankGod, Bewul Puobah, Ojulari Rukayat, Ubong Essien, and Akoko Kitchener

learn and re-learn.

For instance, before now, I did not know how to use AUTOCAD, but now I am proficient in using it, together with some other Software like the PDMS (Plant Design Management System). Now I can do more, and the world is my starting point.

I am grateful to NETCO, and NCDMB. It is incredible."

This is one moment we consider the highlight of our careers, we are just starting, but we are indeed very grateful.

The MD of NETCO, Engr.

K a n a y o c h u k w u O d o e congratulated the graduands for their steadfastness and enthusiasm to acquire knowledge.

He noted that the knowledge acquired by the graduands in training should increase their confidence to compete favourably with their contemporaries while wishing them the best in their future endeavours.

Project Manager, Engr. Tauna Aristobulus also expressed his profound gratitude and appreciation to the graduands: "When I listen to the graduands speak, it gives me a feeling of

nostalgia; I remember in 2006 when I graduated from this same NCDMB programme policy.

It gives me a lot of joy; this training will take you to a greater height for the rest of your career. It is a building block you will continue to build on, and I wish you all the best." In her remark, the Manager, Human Capacity Management (HCM) NETCO, Mrs Nse Lillian Afu-Leo, assured the graduands that they would be left better than the way they came in, she further stressed that the training and knowledge acquired by the graduands would boost their self-confidence in their various fields of studies.

She added: "NETCO has always been known as a training ground. I am confident that when you get the opportunity, you should be able to showcase the skills and knowledge you acquired here and apply them effectively.

On behalf of NETCO management, I wish you all the best in your future careers and profession."

Recall that on 23rd April 2010, the NOGICD (Nigeria Oil and Gas Industry Content Development) bill was passed into law by former president Goodluck Jonathan, leading to the emergence of the NCDMB.

The NCDMB is vested with the mandate to make procedures that will guide, monitor, coordinate and implement the provision of the NOGICD act.

To this light, the NNPC Engineering and Technical Company (NETCO), while carrying out the Front End Engineering Design (FEED) for the Bonga North deep water engineering project conventionally operated by Shell Nigeria Exploration & Production Company (SNEPCO), partnered with the Nigerian Content Development and Monitoring Board (NCDMB) to train six (6) successful graduates on the activities performed during the FEED of the Bonga North Project base on their disciplines.

Contd. from page 12



PIGL
OWEP SURVEY PROJECT
16.01.2023 14:04
31N 786742.615577 (±2m)
Altitude: 15m

ROW Survey Verification Works Along Odidi-Warri ROW

transverses from Odidi Central node with an Isolation Ball valve of 40" and a Tie-in point to the launcher @ E772202.301/N615379.505. At ODIDI launcher station, the major activities to be carried out include but are not limited to the following:

- Pig Launcher Foundation
- Piping Connection from manifold up to the isolation valve and all the four Pipeline connections @24" size.
- Hot tap tie-in into the two existing 24" ELPS Pipelines
- Erection and adequately supporting the manifold and its isolation Valve.
- Erecting the spur line connections from the Forcados/Yokri/Southern Swamp and NNPC Compressor up to their respective Odidi central Node battery limits.
- Tie -in to the Manifold Isolation valve, connections to all equipment and erection of all piping supports and piping systems.

ACTIVITY DESCRIPTION AT WARRI END

The 40"X30km Pipeline emerges with a Riser @ KP 20+575< Ugbokodo-Okpe Community> prior to its termination at Warri Gas Treatment Plant End Facility to a pig receiver at tie-in point @ E800194.374,N617155.688.

The activities to be carried out at WGTP include but are not limited to the following:

- Pig Receiver Foundation
- Erection and adequately supporting the interconnected system of Piping to all Equipment.
- Tie-in and Hook-up Scope to the existing 24" Separator Inlet header
- Tie-in and Hook up Scope to the existing 24" Separator outlet header.
- Tie-in and Hook-up Scope to the existing 8" Flare header to the existing Vent stack
- Tie -In and Hook-up Scope to the existing 2" Instrument Gas header
- Installation of equipment (Pig

- Receiver, Pig Handling Equipment, Gas Filter Separator, Closed Drain vessel, Metering Skid, Drain tanks etc)
- Fabrication and Installation of pipe and equipment support skids
- Painting and colour coding of equipment
- Coating of Field joints
- Cathodic Protection Earthing System

Construction/Installation, Pre-Commissioning/Commissioning

Pipeline Construction, Pre-commissioning and Commissioning activities shall be carried out in tandem with approved procedures and specifications.

These activities shall include but not be limited to Survey Works, Bush clearing and Grading, Excavation, Haulage and Stringing, Welding, NDT, Field Joint Coating, Hydrotesting, Dewatering, Drying, Cleaning, Lowering, Backfilling, Installation of Pipeline markers prior to commissioning and start up.

NETCO BIDS FAREWELL TO OUTGOING ACTING MANAGING DIRECTOR, ENGR. KANAYO ODOE

By Fidelis Okoroanyanwu



Outgoing NETCO Managing Director, Engr. Kanayo Odoe giving his farewell message to NETCO staff as NETCO new COO (sitting left) Engr. Abdullahi A. Yuguda, watches on.

Having taken over the realms of the NNPC Engineering and Technical Company Limited (NETCO) as the Acting Managing Director in the absence of one, Engr. Kanayo Odoe recently relinquished his roles as the Acting Managing Director and the Executive Director, Operations of NETCO.

In a widely attended townhall meeting held with staff of NETCO on October 25th, 2022, Engr. Kanayo Odoe announced his recent promotion to the post of Managing Director of NNPC New

Energy Limited which is an offshoot of Renewable Energy of NNPC.

The outgoing MD, who had spent 3 years in NETCO, first as the Executive Director, Operations and later as the Acting Managing Director thanked NETCO and staff for the experience and relationships gained throughout the years.

He said, "For the past close to three years that I have been here, we weathered through the storm and we did well with all of us working together as a team. While I prepare

to leave and move on with my life as an NNPC staff, and as a product of NETCO. I thought that I should thank you for the relationship that we shared in the past three years."

Highlighting the significance of the staff to the company, he admonished those present to protect NETCO, give it their best and keep the company strong.

The departing Acting MD used the avenue to introduce the new Chief Operating Officer (COO), Engr. Yuguda Abdullahi and Executive Director Finance (EDF) Mr. Asaolu Olajide who were recently



A cross section of NETCO Staff watched on as Engr. Kanayo Odoe gives his farewell message

promoted.

Staff who were at the town hall meeting congratulated the outgoing MD, thanking him for his hard work and successes achieved in NETCO.

The Manager, Human Capital Development, Mrs. Lillian Afu-Leo, congratulated the MD and the two Directors present on their promotions saying; "I congratulate the new Directors on their promotion and the outgoing MD, Engr. Kanayo on his appointment as MD, NNPC New Energies

Limited. Everything that happens is to the glory of God and the only thing constant is change."

She praised the fact that two of the new Directors are existing NETCO staff which would lead to continuity of Management urging the Directors to guide the incoming MD and will perform their best in their respective roles.

Mrs. Lillian Afu-Leo praised the working and leadership style of the outgoing MD and said that he has steered the ship of NETCO well as the Acting MD, wishing him the

best in his new position.

The NETCO PENGASSAN Branch Chairman, Comrade Andrew Onah expressed his profound appreciation for Engr. Odoe and his efforts towards NETCO; "I want to appreciate you specially because from what I have seen, you are a man of humility in many ways. You embrace all staff and do not discriminate. This is quality of a leader and a team player and I know where you are going, you will equally display these traits.

"You are now our ambassador there. We hope and believe you will represent us well there and I pray that as you are going there, you will perform even better than when you were here.

You have done well, because there was industrial harmony during your period and it is one key that shows that there is growth and understanding. When there's no industrial harmony in an organisation, that organisation cannot grow. We are happy and you are blessed. Thank you.

The townhall meeting closed with words of thanks from the acting Executive Director Services.



Engr. Kanayo Odoe exchanging pleasantries with a staff as he bids farewell to NETCO

COST OPTIMISATION: NETCO INSTALLS, COMMISSION AVC

By Daniel Osin (Supv. HCM) and Oyewunmi Dauda



NETCO former MD Engr. Johnson Awoyomi together with Manager HCM Mrs. Lillian Nse Afu-Leo and Supervisor HCM Daniel Osin commissioning the AVC Installation

Executive Summary

NETCO moved to FEYIDE House in 2010, shortly afterward, NETCO began to experience public utility power supply under-voltage capable of causing damage to IT, lighting, HVAC and other electrical appliances. This occur mostly during working days peak period. Meanwhile, the building distribution equipment protection system detects and disallow this

poor quality public electricity power supply into the building leading to extended hours of diesel engine generator usage.

In order to meet the Company's business hours average load demand, running two (2) 500KVA diesel engine generators with one of similar size on standby has become expedient with consequential negative impact on

energy and maintenance cost.

In view of NETCO's Management drive for cost saving and positive environmental impact, NETCO in-house team was charged with the responsibility of providing alternative lasting solution having realized that all efforts and collaboration with the electric power provider company (EKEDC) to deliver quality power was not yielding desirable results.

Based on the team consultation with ABBN and eventual recommendation, NETCO Management commissioned Messrs. ABB Nigeria (ABBN) to supply, install and commission two (2) Active Voltage Conditioners (AVC), 750KVA PCS100, AVC-40 on Tuesday, February 23, 2021 with the in-house team as Supervising Consultant.

AVC Installation, Testing and Commissioning

The PCS100 AVC-40 is an Active Voltage Conditioner designed to solve power quality problems such as Voltage sags, voltage surges, phase unbalance and flicker that often cause electric and electronic equipment to malfunction.

It is a high performance power electronic system that responds instantly to power quality events and provides online regulation of voltage.

The equipment was installed in the existing Electrical equipment room. Adherence to Original Equipment Manufacturer (OEM) checklists assisted in ABBN successful installation and commissioning of the AVC with zero Injury and incident records in February 2022.

Advantages of the AVC to NETCO

a. Correction of Power Quality Challenges

The AVC provides accurate voltage sag correction which ensure that equipment in the building is only exposed to 230

V ± 6% in accordance with Nigeria Electricity Supply and Installation (NESIS) standard section 5.1.6. This is necessary for optimal equipment performance and longevity.

b. Compliance with NETCO's Environmental and Quality Policies

NETCO is committed to promoting healthy and quality environmental policies. Installation of the AVC has reduced noise pollution and other associated environmental issues owing to diesel engine generators operations.

c. Fire Risk/Equipment Damage Mitigation

Low voltage cause heating in electrical equipment particularly electric motors and Air conditioner compressors. This heating effect potentially cause deterioration of motor winding coil insulation and eventual short circuit which could result in fire outbreak due to uncontrolled energy released.

The installation of the AVCs has greatly mitigate impact of low or high voltage from public utility power supply on NETCO equipment thereby reducing the risk of fire on equipment, and by extension the FEYIDE House.

AVCs Cost-Benefit Analysis to NETCO

Diesel Cost Reduction.

MONTH	DIESEL CONSUMPTION (LITRES)
JUN 2021	25,580.97
JUL 2021	27,959.67
AUG 2021	22,110.23
SEP 2021	21,054.81
OCT 2021	23,536.69
NOV 2021	20,665.58
DEC 2021	25,871.32
JAN 2022	19,262.91
FEB 2022	11,849.81

Table 1: Diesel Consumption from Jun 2021 – Feb 2022.

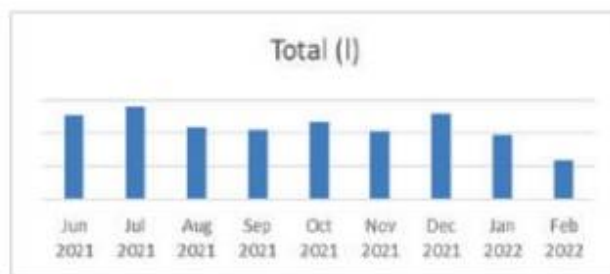


Fig. 1: Diesel Consumption from Jun 2021 – Feb 2022.


From the table 1 above, monthly diesel consumption from June 2021 to Jan 2022 was 23,257.76 liters. this

has significant cost implication which is likely to increase due to inflation, escalating crude oil prices and exchange rate, bearing in mind that diesel price is fully de-regulated in Nigeria.

Generally, complete installation and Commissioning of the AVC in February 2022 has significantly resulted in 50.9% drop in monthly average diesel consumption and has also lower the generators wear and tear as well as maintenance costs.

Reduction in the Total Cost of Ownership (TCO) of Electrical Equipment.

- TCO
- Fire risks from low-quality electricity.



Long term cost savings - cost of Feyide House and associated costs (over 5 billion).

Pre - AVC Installation.



Former NETCO Management Team with Team Members of the Human Capital Management Department (HCM) and other Staff at the commissioning of the AVC Installation

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NSE HOLDS 55TH NATIONAL CONFERENCE AS FEDERAL GOVERNMENT PARTNERS BODY ON COMMUNICATION AND DIGITAL ECONOMY

By Kingsley Umoh and Fidelis Okoroanyanwu



NSE President Engr. Tasiu Sa'ad Gidari-Wudil giving his keynote message during the 55th NSE National Conference

The Nigerian Society of Engineers (NSE) held its 55th National Engineering Conference, Exhibition and Annual General Meeting (AGM) from 14th to 18th November 2022, with the crème de la crème of engineers converging to grace the occasion.

The conference tagged "Abuja 2022" with the theme "Advancing the Frontiers of Communication and Digital Economy" had in attendance top dignitaries, which

include the President of the Council for the Regulation of Engineering in Nigeria (COREN) Engr. Ali Alimasuya Rabi, the Chairman NSE Board of Trustees Engr. Emeka Ezeh, the President-elect World Federation of Engineering Organisations (WFEO), Engr. M.B Shehu, Chairman of National Assembly Service Commission Engr. Ahmed Amshi, Chief of Defence Staff, General Lucky Iabor, the Honourable Minister of Science

Technology and Innovation, Senator Dr Adeleke Mamora, who represented the President, Commander-in-Chief of the Armed Forces of the Federal Republic of Nigeria, His Excellency Muhammadu Buhari, politicians, government functionaries, foreign delegates from Ghana, Sierra-Leone, and Kenya.

In his keynote message, President Buhari stated that the theme "Advancing the Frontiers of Communication and Digital Economy" bears great testimony to the potency of the Nigeria Society of Engineering conferences in attracting attention to the critical aspect of the nation's corporate existence.

President Buhari noted, "the theme of this conference reflects the yearnings of the Federal government drive towards digitalisation of the country's economy using modern technology and making our country rank among the most advance in the world in the communication sector."

The President also informed that Nigeria's digital economy had been noted by the international community, eliciting recognition from international stakeholders, including the appointment of Nigeria to chair some highly regarded fora.

He added that the Federal Government's partnership with the NSE through the Federal Ministry



Hon. Minister of Science, Technology and Innovation, Senator Adeleke O. Mamora representing President Muhammadu Buhari at the 2022 NSE Conference



Chief of Defence Staff General Lucky Irabor delivering his keynote message at the 2022 NSE Conference

of Communication and Digital Economy in organising the conference is not misplaced. The partnership has strengthened the conviction that such partnership between and amongst the government and the private sector players are not only key but inevitable handshakes that any nation needs for accelerated growth and development.

In his remark, the President-elect World Federation of Engineering Organisations (WFEO), Engr. Mustafa Balarabe Shehu hinted the NSE competes favourably with their international counterparts, and it was no surprise when the leadership of WFEO is now vested in the hands of a member of the NSE.

Engr. Shehu called for support from the government and members of the NSE that will position him to contribute his quota effectively when he begins his reign as the President of WFEO. "As President of WFEO come October 2023, I need the support of all the machinery of the government of the Federal Republic of Nigeria and the support of all the engineers in Nigeria. And this is the first time an African is getting to this level of leadership at the world body.

If I get your support, we will contribute to the solutions bedevilling the global community through engineering."

Another high point of the conference was the presentation of the NSE President award to eighty-nine distinguished individuals, including former state governors and chief executive officers of public and private sectors.

Over 3,500 participants registered for the conference, and a total of eight lead papers were discussed at two plenary sessions, while fifty-seven technical papers on the eight sub-themes were presented.

MENTAL HEALTH MENACE AND AWARENESS FOR YOUNG PEOPLE

By Inusa Ekhagbai



In Nigeria today, attitude towards mental illness is gravely coloured with prejudice and misconceptions. It is believed that an estimated 20% to 30% of the population suffer from mental illnesses; regrettably, the awareness of mental health issues amongst the Nigerian public is

considerably dismal.

This type of belief is one of the significant problems facing mental health care in Africa's most populous country. Its large army of youths, employed or not, is even more at risk.

Between 2013 and 2017, twenty-two thousand seven hundred and ninety-three (22,793) patients who were either children or adolescents were treated for different mental health issues at the Federal Neuro-Psychiatric Hospital in Lagos. The majority of these patients were children.

According to the World Health Organization (WHO), mental health is a state of well-being in which every individual realizes their potential, can cope with the everyday stresses of life, can work productively and fruitfully, and can contribute to their community. Mental health condition, also referred to as "Any Mental Illness" (AMI), is any mental, behavioural, or emotional disorder, ranging from mild to moderate impact on one's daily life:

Further research shows that 1 in 10 young people experiences a mental health problem every year, with over three-quarters (¾) of mental health problems onset by age 20.

Statistics also revealed that eleven per cent (11%) of 18 to 34 years old attempted suicide, and sixteen per cent (16%) reported self-harm at some stage in their lives.

Suicide is the most significant cause of mortality for young people under 35 years, as young people in the youth justice system are three times more likely to experience a diagnosable mental health condition than children who do not offend.

It was also revealed that children affected by learning disabilities are four times more likely to have a diagnosable emotional or mental health problem. In contrast, ¾ of children raised in local authority residential homes meet with criteria for a psychiatric diagnosis.

There are some myths surrounding mental health, with different mental health problems affecting our society today that have caused victims to end up in the hospital.

Sometimes, mental health problems are generated from birth and People suffering from these problems are likely to be violent.

What can affect Young People's mental health

- Poverty
- Bereavement
- Imprisonment
- Divorce/separation
- Bullying
- Long term illness
- Physical abuse
- Sexual abuse
- Peer pressure
- School pressures
- Denial of benefits
- Caring responsibilities
- Addiction

Signs of mental health illness in young people

There are many mental illnesses, each with symptoms, diagnoses, and treatment regimes.

Some of the common mental health disorders in young people include;

- Physical symptoms (Depression)
- Change in appetite
- Change in bowel function
- Dry mouth
- Palpitations
- Indigestion
- Feel slowed down
- Look unkempt
- Loss of libido
- Amenorrhoea
- Sleep disturbance
- Headaches, giddiness, tight band round chest and head, skin-picking, handwringing, general aches and pains

Psychological symptoms

- Thinking slowly and difficult
- Poor concentration
- Preoccupation with morbid thoughts (death/suicide) and/or physical symptoms
- Feel sad, low or flat
- Fed up, indecisive
- Indifference, denial or lack of awareness of symptoms
- Loss of interest in life
- Speech; slow, monotonous, monosyllabic answers. Incessant negative talk
- Withdrawn
- Decline in school performance

Physical appearance Best Practices in Protecting, promoting and supporting young people's mental health and well-being in the workplace

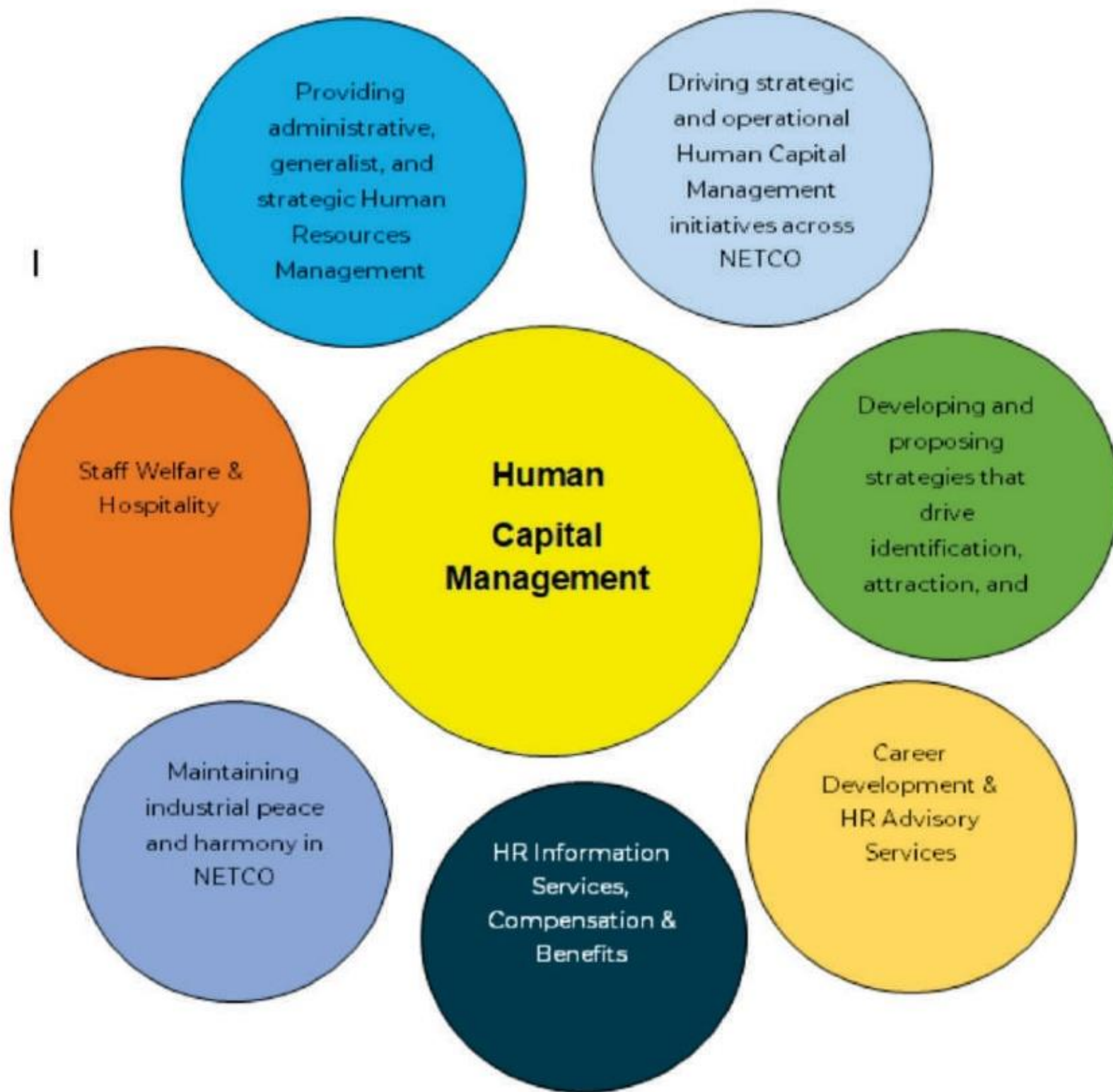
- Raise Awareness About the Importance of Mental Health and Well-being
- Leadership demonstrating support and care
- Identification of psychosocial hazards in the workplace
- Manage Psychosocial Risks Related to Work, Environment, and Culture
- Initiating mental health and well-being programs across business
- Assess Mental Health and Well-being Needs and Measure Intervention Impact
- Ongoing review and evaluation of mental health and well-being initiatives at all levels of the organization
- Provide and Promote Access to Evidence-based, High-Quality Mental Health Care

Although there is rising research on the mental health literacy of adults, there is yet to be a similar interest in the mental health literacy of young people in Nigeria. Some of the policies on mental health and development in Nigeria – the Mental Health Policy formulated in 1991, National Adolescent Health Policy (NAHP), and National Youth Policy (NYP) – do not earnestly address the issues of mental health among adolescents and young persons.

This information gap results from continual disregard for mental health issues and the need for preventive services for young persons. It is essential to understand the rate and distribution of these disorders among the population, to improve the health conditions of adolescents with psychiatric disorders.

HUMAN CAPITAL DEVELOPMENT AND MANAGEMENT IN NETCO

By **Omotayo Omobolaji**
Supervisor, Human Capital Management



The Human Capital Management (HCM) Department provides Strategic Human Management support to NETCO towards the achievement of key corporate goals and business values.

The Department is saddled with the great responsibility of:

STAFF WELFARE AND DEVELOPMENT

NETCO prides itself on a great team of a human capital assets. These assets play a crucial role in the delivery of her strategic goals. In this wise, to the Human Capital Management (HCM) Department, employee welfare can never be overemphasized. Employee welfare encompasses everything

from services, facilities, and benefits that are provided or done by an employer for the advantage or comfort of an employee. It is undertaken to motivate employees and increase productivity at all levels.

It is pertinent to state that even though employee welfare increases an organization's

expenses, it, however, has huge benefits for the employer because if an employee feels that Management is concerned and cares for him/her as a person and not just as any other employee, he/she will be highly committed to his/her work. Our motivation is that an employee who feels appreciated will be more fulfilled, satisfied, and very productive. This will not only result in higher productivity but also satisfied customers and more profitability for the company.

During employment processes, the benefits offered to the employee will determine whether an employee commits to an organization or not. As such, good employee welfare enables a company to compete favorably with other employers for the recruitment and retention of quality personnel.

The HCM Department also drives NETCO values in the provision of adequate medical care for her employees by ensuring adequate care is given to her employees' health, safety, and welfare in addition, to the provision of a fully equipped gym facility in her premises to ensure staff attains a healthy work-life balance.

A clean and safe work environment instills confidence in staff. HCM ensures the work environment is conducive for employees not only physically but psychologically by ensuring the ambiance and lighting are appropriate for staff well-being, the work environment is devoid of harassment, there is respect for individuals, and

teamwork is extremely encouraged. This is done by setting the right Policies and inclusion in the Workplace.

WORK ETHICS AND ORGANIZATIONAL PRODUCTIVITY

The HCM Department ensures good work ethics and organizational productivity is achieved in an organization. These are based on human interactions and the provision of a Code of Conduct Handbook to communicate acceptable behavior to staff in line with the values of the Company.

It is important to create the right enabling environment which is supportive of team work. Without an appropriate environment that consists of people, tasks, and situations, teams cannot be effective. The result is a work culture that recognizes a teamwork approach to problem-solving and decision-making with particular reference to the management of efficient customer service. It invariably means a happy workforce is a necessary condition for productivity and effective customer service delivery.

ENHANCEMENT OF ORGANISATIONAL CULTURE IN NETCO

As the saying goes, "Culture is learned, It is not biological and we do not inherit it". Organizational culture contains the underlying values, beliefs, assumptions, and modes of interactions among staff.

The culture of the workplace controls the way employees behave and interact amongst themselves, clients as well as with people outside the organization.

The HCM Department ensures every employee in NETCO upon engagement is properly inducted and well-integrated into NETCO's business operations. At this point, orientation of people on the Vision, Mission and Strategic Direction of NETCO as well as employee/employer is spelled out for compliance. It is important to reiterate that NETCO's culture promotes Respect for the individual, Professionalism, Responsibility/Accountability, Unity, and Teamwork.

In the long run, a healthy culture encourages employees to stay motivated and loyal to the Management and organization. Moreover, the work culture promotes healthy relationships amongst the employees thus promoting healthy competition at the workplace.

In conclusion, the Human Capital Management Department promotes workplace involvement! NETCO's culture supports employee involvement and provides positive, fun ways for employees to get together for personal and professional development activities, such as Town Hall Meetings, Team Building/Bonding, Gymnastics, TGIFs, etc.

THE PARALLEL EVOLUTION OF TECHNOLOGY AND GOVERNANCE RISK CONTROL

By Mohammed Bappah FCA, CIA, CISA.
Manager GRC.



Inherently, a problem came before the answer but the solution needs to be fast enough to catch up with the number of rising problems. It suffices to say the solution brings new problems. This is our predicament among GRC professionals and business leaders in our journey to having a near-perfect enterprise.

Historically, humanity had experienced different ages of survival strategies. Each era solves a significant problem of its preceded period yet present another challenge that requires a pragmatic approach.

The industrial revolution solved the problem of product scarcity through mass production and at the same period, the problem of control is addressed by having segregation of duties, a scalar chain, and a defined span of control in a hierarchical structure from bottom to top.

Moreover, industries are bedeviled with capacity constraints, technological obsolescence, inward/outward logistics issues among others. While the governance aspects are also having problems of information reliability,

market instability, ethical issues etc.

The digital revolution and the evolution of Governance Risk & Compliance (GRC) have significantly addressed the challenges. Digitalization improves marketing, production, logistics, accounting, finance, human capital, and all sundry functions within an enterprise.

Specifically, in a digital ecosystem, one person can effectively supervise the work of 5 to 20 subordinates. Whereas in a manual face-to-face communication setup, the acceptable span of control is 1 to 4 thereby making the structure labor-intensive.

The digitization made the organogram flatter but wider in coverage. Leading companies are fast in leaning their organisational structure to remain agile, nimble and competitive.

In view of these submissions, the technology is faster than its Governance. However, most of the emerging issues are difficult to detect, predict, and control. In addition, there is no silver bullet to problems but rather requires a fast-track continuous improvement approach. Notwithstanding, to speed up robust control these are some of the considerations:

- **Governance:** Business leaders are yet to harness the existing technology for improved information reliability for quality business decisions. Blockchain, Artificial Intelligence (AI), and other emerging technologies need wider application. There is also a need to reduce the cost of governance and improve

decision speeds. Digital transactions require digital governance for effective oversight of large volumes of data. Real-time data and real-time decision is the quest of modern business information systems.

- **Risk:** The Volatile, Uncertain, Complex and Ambiguous (VUCA) business ecosystem widens the gap between strategy and execution. The application of Data science and the application of Enterprise Risk Management (ERM) are the likely solution to reduce the VUCA's negative impact on business outcomes.
- **Compliance:** there's a need to improve compliance quality, reduce costs, and increase speed. On the other hand, balancing performance to conformance is also important for resource optimization.

Lastly, as the digital revolution eases operations, management, and governance of enterprises. The cyber risk that comes along with the technology is a major nightmare for business leaders and GRC professionals.

To get out of the speed quagmire, increase digital penetration, and improves digital trust. Enterprises need to adopt the COBIT 2019 framework for governance and management of their information systems as well as business success.

Mohammed Bappah FCA, CIA, CISA.
Manager GRC.

2022 END OF YEAR GOODWILL MESSAGE TO NETCO STAFF BY CHIEF OPERATING OFFICER (COO) ENGR. ABDULAHI A. YUGUDA

All thanks be to God Almighty who in His infinite mercy has brought us to the end of another calendar year. Truly we can say that 2022 has indeed been an eventful year for all of us!

Great appreciation goes to the Top Management of NNPC Limited under the amiable leadership of the GCEO, Mallam Mele Kolo Kyari for the support and guidance to NETCO, without which the success we have achieved would have been impossible.

As the year gradually comes to an end, I want to take a moment to express my sincere appreciation and gratitude for all your hard work and dedication to NETCO Limited. We can recall that during the year, NNPC transitioned from being a Corporation to a Limited Liability Company. This transition also impacted positively on NETCO which changed our name from National Engineering and Technical Company

Limited to NNPC Engineering and Technical Company Limited. Your commitment to this transition process has helped us to not only weather the storm of apprehension, but to forge ahead even stronger together.



Engr. Abdullahi A. Yuguda

The unveiling of the new NNPC Limited by Mr. President on July 19, 2022 brought about the merging of NETCO and ETD to birth a full-fledged Engineering, Procurement and Construction Company (EPC) under the brand name NNPC Engineering and Technical

As we look forward to 2023 in good health and prosperity, we must remember that under the new dispensation of NNPC Limited, there is no room for NETCO to report losses. We are uniquely positioned to become the EPC company of choice and together we must leverage on our strength as

While we celebrate some of our feats in NETCO, we should also remember our colleague Late Mrs. Beckley Adedayo Adeola and her family. My heart also goes out to staff who lost loved ones in 2022. May God's light and love be with you and your families.



We are uniquely positioned to become the EPC company of choice and together we must leverage on our strength as the foremost engineering company and tremendous opportunities that opens to us. Together we can build a world class EPC company that we would be proud of.



As we usher in the new year 2023, I enjoin all staff to put on their business thinking caps as well as commit to being more productive, optimize cost, and contribute to towards our aspiration of identifying more revenue streams for NETCO.

As we close this chapter and enter the new year 2023, I want to say a very big thank you to the Top Management of NNPC Limited under the leadership of Mallam Mele Kolo Kyari for the confidence and the opportunity given to serve.

To the entire NETCO Family I say thank you all.

Long live NNPC Limited
ENERGY FOR TODAY! ENERGY FOR TOMORROW.

I WISH YOU AND ALL YOUR LOVED ONES A MERRY CHRISTMAS AND A HAPPY & PROSPEROUS 2023

**ENGR. ABDULLAHI A. YUGUDA. –
MNSE, MNIMechE, PMP
CHIEF OPERATING OFFICER/MD
COVERING**

Company Limited (NETCO). This merger will certainly position NETCO to become a more

Commercial and Profit-oriented entity focusing majorly on performance and profitability.

I am very proud of all that we have accomplished together this year; and I am confident that with your continued support and teamwork, we will thrive and succeed in the coming years ahead.

the foremost engineering company and tremendous opportunities that

opens to us. Together we can build a world class EPC company that we would be proud of.

I wish to reassure all staff that management remains committed to the safety and welfare of staff, particularly in capacity building to enhance our competence to be able to deliver our projects to the satisfaction of our clients and stakeholders.

NETCO IN PIA TIMES: A CASE FOR WORK PLACE AUTOMATION OF NETCO PROCESSES AND OPTIMIZATION

By Adeuga Abraham

The Nigerian National Petroleum Company Limited (NNPC) recently changed from a public liability company to a limited liability company in light of the recently passed Petroleum Industry Act (PIA) and this has brought a lot of focus to profitability and reduction of wastage in processes. The NNPC Engineering and Technical Company Limited (NETCO) is not left out in this drive for profitability as business will no longer be run as business as usual, hence the case for optimization and automation.

What is Automation?

The dictionary defines automation as "the technique of making an apparatus, a process, or a system operate automatically." We define automation as "the creation and application of technology to monitor and control the production and delivery of products and services."

What is workplace automation?

The answer can help companies automate repetitive business processes and increase efficiency. Workplace automation refers to using systems to perform predictable and repetitive tasks without direct human input. This enables companies to simplify tasks and provide a better experience for their employees. It often refers to companies using technology to perform workflows, such as organizing e-mails, generating sales leads, reducing paperwork, and managing data.

What is Optimization?

Optimization refers to the act or process of making something as good as it can be. In the 21st

century, it has seen much use in technical contexts having to do with attaining the best possible functionality, as in "network optimization" and "search engine optimization" (SEO). Like the words optimum and optimism (which refer, respectively, to the amount or degree of something that is best or most effective, and to a feeling or belief that good things will happen in the future), *optimize* and *optimization* derive from Latin *optimus*, meaning "best."

Automation and optimization goes hand in hand first you automate processes then you optimize, without automation most of our processes can't be optimized, what processes can NETCO automate? what are the benefits of automation to NETCO? How will automation drive growth and cost optimization in NETCO? what are the cost implications of optimization and automation? will automation lead to loss of jobs? all this questions and more shall be looked into in the next paragraph.

What processes can NETCO automate?

The following are some common workplace automation examples that NETCO can adopt:

Marketing automation

To deliver an improved customer experience, NETCO can implement automation in their marketing strategies. Marketing automation is a process that enables companies to provide highly personalized and relevant experiences to customers. With workplace automation, NETCO can reduce the number of repetitive marketing tasks, such as sending e-mails and updating editorial

content for various social media platforms. They can also use software that enables them to send messages in response to certain actions that a customer performs.

Human resource automation

Human resources (HR) is a department that deals with multiple administrative tasks that a business can automate. Organizations usually automate the tasks that HR performs to make them more efficient. Examples of tasks that an HR department can automate are as follows:

- Handling staff training requests
- Managing payrolls
- Reimbursing expenses
- Managing holiday requests, timesheets, and records
- Onboarding and offboarding
- Recording performance reviews
- Conducting recruitment processes
- Recording employee data

Various automation software programs enable an HR department to sort through job applications according to their content. HR professionals can then focus on reducing employee turnover by improving a company's culture and creating career development programs.

Accounts payable automation

An accounts payable software system helps businesses automate finance processes, reduce accounting errors, and improve invoice approvals. This workplace automation typically guarantees immediate transactions to a company's contractor and supplier. It also enables a company to track

its orders and invoices accurately and to approve payments quickly, improving cash flow.

Supply chain automation

Automation of supply chain processes like requesting for bid, bid submission, bidding process, approval processes can lead to reduction in paper waste, more man hour for other activities and work optimization.

Sales/Business development automation

Using software and algorithms to automate sales activities such as contact management and lead generation helps a sales or business development team improve its efficiency. The following are examples of automation in sales:

- Processing orders: Upselling queries, managing stock
- Invoicing: Communicating with clients about pricing and payment and checking credits
- Managing inventory: Returning notifications and delivery, dispatch, refund, and payment acknowledgments
- Searching leads: Sending e-mail reminders and finding leads online

IT automation

IT automation is the use of triggers and actions to streamline IT

processes end-to-end. Using incident management as an example, a trigger can be when an employee files a ticket, while an action can include assigning that ticket to the appropriate employee.

Examples of IT automation

- Help anyone request access to applications independently: here is how it works
 1. An employee goes into a communications platform (in this case, Slack) and requests access to a specific application.
 2. Workbot (the enterprise platform bot) instantly creates a ticket in Service Now that reflects this request.
 3. IT then receives the request in a Slack channel. They can choose to accept or reject the request within Slack.
 4. The requester is then notified within Slack on their status.

Answer employees' questions quickly and in a way that's scalable

- An employee asks a question to Knowledge Bot (a

customized version of WorkBot) in Slack.

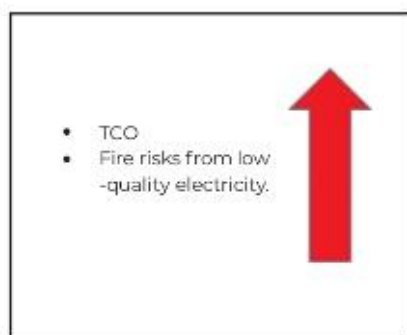
- Knowledge Bot uses natural language processing to understand the question, and then searches through information from your existing knowledge base to identify the answer (this is all done in real time).
- If Knowledge Bot finds the answer, it automatically serves it to the requestor. If it doesn't, or if the employee says the answer doesn't help, the bot files a ticket in ServiceNow, prompting your team to respond to the requestor.

Escalate issues with the click of a button

In many cases, incidents can't be resolved by the team they're initially assigned to.

To account for this, and to allow the appropriate stakeholders to become aware of and begin working on the issue, you can build an escalation workflow that leverages an IT service desk chatbot.

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Post - AVC Installation.

Long term cost and material savings could be estimated at over Five Billion Naira (N5bn) considering mitigation against fire risks to the facility due to poor public utility power supply quality.

The undesirable effect of voltage fluctuation and excessive sag on electrical and electronic equipment such as lift system, IT equipment and HVAC systems can hardly be quantified in term of cost and reputation potential negative impacts.

The installation of the AVC will reduce TCO in the long term as it helps prolong equipment life. Therefore, it is a cost optimization strategy that mitigate under-listed components of TCO:

1. Acquisition (Replacement) cost of damaged equipment
2. Installation cost.

3. Commissioning cost.
4. Maintenance cost of damaged equipment.
5. Downtime cost.

Given the foregoing, the installation of the two (2) 750KVA, PCS100 AVC-40 has helped NETCO to achieve desired objectives of quality power and ultimately energy cost optimization.

According to ABBN, the installation is the first of its kind in East and West Africa and probably 4th in Africa. This is a great success story for ABB Global and NETCO.



NNPC
ENGINEERING &
TECHNICAL COMPANY



ESTABLISHED TO
**DOMICILE
ENGINEERING
CAPABILITY**

PROVIDE A STRONG TECHNICAL
**SUPPORT TO THE
NIGERIA ENERGY,
OIL & GAS INDUSTRY**

WE REMAIN THE
**FOCAL POINT FOR
ALL ENGINEERING
WORKS IN THE
COUNTRY**



CORPORATE INFORMATION

- HEAD OFFICE** ➤ FEYIDE HOUSE
23 Engineering Close off
Idowu Taylor Street
P.O.Box 74173
Victoria Island
Lagos Nigeria
-
- TELEPHONE** ➤ 01 - 2718840 - 45
-
- FAX** ➤ 01 - 2716041, 2718839
-
- E-MAIL** ➤ info@netco.com.ng
-
- WEBSITE** ➤ <http://www.netco.nnpcgroup.com>

Our Vision

To be a world-class Engineering, Procurement and Construction Management Company in the Oil, Gas & Energy industry

Our Mission

NETCO is committed to providing continuous excellent services in the Oil, Gas & Energy Industry

NETCO is a wholly-owned subsidiary of Nigerian National Petroleum Company Limited established in February 1988 to provide an efficient and reliable engineering base for the NNPC Group and the entire oil and gas industry. Its services however, extend to the rest of the economy and beyond. NETCO is certified to ISO 9001, ISO 14001 & ISO 45001 International Standard. NETCO provides the following:

- Feasibility Studies
- Conceptual Design
- Basic & Detailed Engineering Design
- Procurement
- Construction Supervision
- Project Management
- EPC Collaborations
- Quality Assurance & Quality Control
- Operations & Maintenance
- Projects Cost Estimating/Benchmarking
- Health, Safety & Environmental Management/Study
- Training

