BonariqField
GLOBAL SERVICES

COMPANY PROFILE

ADDRESS: Plot 479 Eagle Island, Port Harcourt, Rivers State, Nigeria.
PHONE: +234 8035251708, 07017232025, 08061403695, 07033798080
EMAIL: bonariqfield@yahoo.com, info@bonariqfield.com
WEBSITE: www.bonariqfield.com

OUR CLIENTS

GARDEN CITY MALL

CCECC

SAMSUNG ELECTRONICS

SIMS Nigeria Limited

ERICSSON

Ecobank The Pan African Bank

EMERSON

intels Integrated Logistic Services

ShopRite

MULTI-LINKS Telkom Touching Lives

MTN GTBank

MONI PULO (PETROLEUM DEVELOPMENT)

minerva HealthCare & Medical Tourism

RNL RIFITEL NIGERIA LIMITED

SLOT ..all about image

updc

airtel

NEXT CASH & CARRY

THE REDEEMED CHRISTIAN CHURCH OF GOD

DELTAAFRIK ENGINEERING LTD

Dataflex

CETCO OILFIELD SERVICES

NDDC

NDBDA Niger Delta Basin Development Authority

CHAPEL OF GOD INT'L WORSHIP CENTRE

RACHAEL HOTEL

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...Infrastructure Maintenance Solutions Providers...

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Company Overview

Bonariqfield Global Services commenced operations within the Oil and Gas industry with the sales, installation and maintenance of comfort cooling units, graduating shortly afterwards into the installation and maintenance of regular and specialized Commercial Cooling, High Precision Air conditioning units (HPAC's), Chilled Water HVACs (Air cooled and water cooled chillers), UPS's, Inverters, AVR's and other power solutions.

Today, we have evolved into a multi-million Naira enterprise capable of delivering high quality cooling, power and infrastructure maintenance solutions to major corporate entities within Nigeria and West Africa

.

Our footprints in both telecommunications, Manufacturing, Production & Hospitality, Oil & Gas companies is a testament to our uncompromising belief in rendering only qualitative services to all our Clients.

#CAPABILITY

Bonariqfield has the capability and superior experience in providing turn-key solutions such as:

- Site Acquisition & Civil Construction
- Engineering Designs
- Project Management
- Equipment Procurement
- Logistics
- De-flooding
- Power Generating Sets Installation
- Maintenance Support Solutions and
- Training.

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ALLIANCE & TECHNICAL PARTNERSHIP

Bonariqfield is in a commercial and technical relationship with strategic principals and partners such as Emerson Network Power (SA) (PTY) Limited, Jalinsa Vetures Ltd, LG, DAIKIN, Pollution SRI (Italy) Hisense and Some other Original equipment manufacturers (OEMs), have also provided our numerous clients with good quality products and spare parts, critical to the successful day to day running of their operations.

Bonariqfield after sales support team now partners (on an outsourced basis) with original equipment manufacturers to ensure the elimination of down time within the oil & gas and manufacturing industries being supported by us.

LG

Hisense
life reimagined

POLLUTION
ANALYTICAL EQUIPMENT

EMERSON
DAIKIN

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GLOBAL SERVICES

MISSION

To be the company of quality standard, providing infrastructure maintenance support services, HVAC & cooling stores, power, GCX Gas Analyser and Polaris FID Stack Emission Analyser in Nigeria and West Africa.

VISSION

With our experience in the oil & gas, telecommunication, manufacturing industries etc, we aspire to provide our clients, services and results beyond their expectation backed up by acquisition and utilization of the latest technology and methodology, with the aim of improving quality and reducing cost, maintaining an excellent and well motivated engineers and technicians to the end that we shall achieve recognition as the foremost engineering, procurement, construction and manpower service provider in Nigeria.

OUR CORE VALUES

- Integrity & Honesty
- Customer Satisfaction
- Creation of sustainable stakeholder value
- Professionalism
- Prompt and Timely service delivery

OUR SERVICES




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BonariqField GLOBAL SERVICES

01 HIGH PRECISION / INDUSTRIAL AIR-CONDITIONING

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02 HEATING, VENTILATION & AIR-CONDITION (HVAC)

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03 OFF-GRID POWER AND CLEAN ENERGY SYSTEMS.

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04 INFRASTRUCTURE MAINTENANCE SOLUTIONS

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05 COMMERCIAL COOLING & COMFORT COOLING

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06 FIRE SPRINKLER FABRICATION & INSTALLATION / HYDRANT SYSTEM

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07 INVERTER, SOLAR & CCTV SYSTEMS

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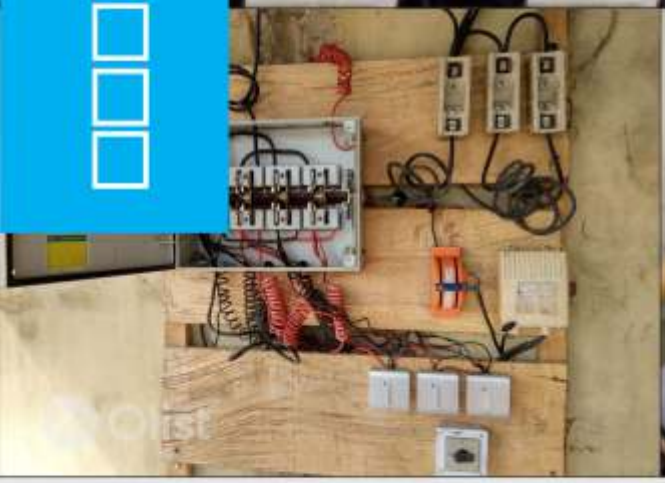

08 ELECTRICAL INSTALLATION

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09 AC & DC POWER SOLUTIONS

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SERVICES

10 ENGINEERING & CIVIL CONSTRUCTIONS

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11 FIRE PROTECTION SOLUTIONS

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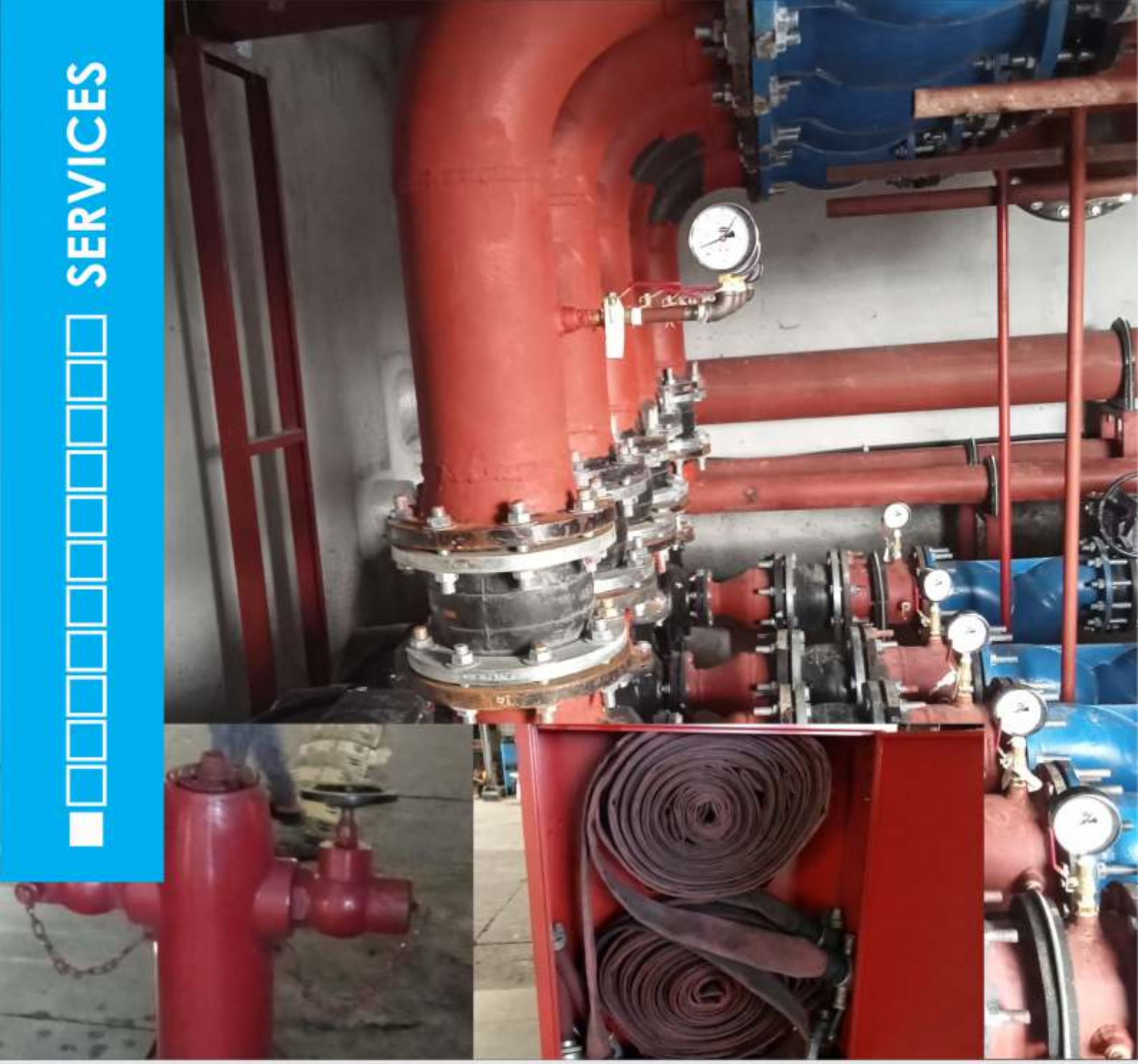

12 FIRE SPRINKLER & FIRE HYDRANT

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OTHER SERVICES OFFERING

In 2014, Pollution S.R.I, an Italian manufacturer of Polaris FID Stack Emission Analyser and GCX Gas Analyser equipments and Bonariqfield Global Services entered into a Cooperation Agreement where Bonariqfield was awarded the authorized distributor of Pollution GCX and Polaris FID in Nigeria and West African region.

TRAININGS:

Provision of specialized technical training programmes for various categories of our client's work force, through customized courses specifically designed and targeted at improving the clients' overall efficiency and service delivery. By partnering in this manner with clients we are contributing our own little quota in the support of our client's long-term business objectives.

POWER GENERATING SETS

We also have capacity to supply and lease (on a short or long term basis) power generation equipment's to our clients

AFTER SALES SERVICE & MAINTENANCE SUPPORT:

Our after sales support team has evolved from a mare installation service department into one that now assigned to monitor our client's equipments via our routine maintenance checklist.

De-flooding: We have built immense capacity, using high capacity pumping equipment in dealing with excessive flooding of customer premises.

EMERGENCY & SECURITY SERVICES

We are well positioned with our strategic partners in the Supply and Maintenance of CCTV, burglary Alarm Systems, FM200 (Automatic Fire Extinguishers), Automatic sliding & swinging gates with remote control system, Polaris FID Stack Emission Analyser and GCX Gas Analyser equipments and other critical security / emergency services.

MAINTENANCE OF LIGHTNING ARRESTORS & EARTHING SERVICES

We also provide advisory and maintenance support in the area of lightning arrestors and earthing services in conjunction with our strategic partners.

LOGISTICS AND RELOCATION

We have adequate capacity to provide efficient and effective Moving and Relocation Services with our array of trucks (Hiabs inclusive), professional drivers and mobile crane operators.

FINANCIAL CAPABILITIES

We have excellent financial arrangements with reputable banking and financial institutions in Nigeria and can finance at very short notice, the implementation and deployment of very large turn-key projects for major operators requiring our products, services and expertise; using these existing financial arrangements. By so doing, we reduce the pressure on the client's cash flow and allow the client to channel its scarce funds towards other important uses while reserving payment till after the project is commissioned.

PRODUCTS OFFERINGS

- As resellers to major equipment manufacturers, we are able to offer the following critical and non critical solutions
- Purpose built Liebert Inverter/ DC (indoor & outdoor) power solution for bank ATM's
- Liebert Inverter Solutions for critical data and equipment rooms
- Liebert UPS's for all critical and non critical computer and Communication equipment
- Emerson industrial and medium sized electric stabilizers for corporate customer
- LG industrial and medium sized A/C's for corporate and private customers
- Panasonic industrial and medium sized A/C's for corporate and private Customers
- Daikin medium sized A/C's for corporate and private customers.
- Hisense Medium sized A/C's for corporate and private customers

SOME IMPLEMENTED PROJECTS AND SPECIFIED PROJECTS WE ARE CAPABLE OF IMPLEMENTING

- Installation of various capacities of HVAC units and cold rooms at Spar – Port Harcourt Mall with Industrial fire Suppression system.

- Installation of various capacities of HVAC units at La Sien Bottling Company, Trans Amadi, Port Harcourt.

- Installation of various capacities of HVAC units and cold stores at Next Cash & Carry Trans Amadi, Port Harcourt.

- Installation of various capacities of HVAC units at Chief O.B Lulu-Briggs (Moni-Pulo Founder/Chairman's) properties at different locations (Sombreiro House, Rachael Hotel, 18 Flats, Abonnema and Buguma)

- Installation of 3 x 110 KW HVAC Units for Oil & Gas Industries, Communication & Data Centers, Bank and Manufacturing Industries with FM 200 fire suppression system.

- Upgrading of Existing Cooling Solution for Telecommunication Switching Centers and Inter phase with FM 200 fire suppression system.

- Supplying of 360 Emerson Rectifier Modules & Emerson Batteries for power solutions.

- Supplying and Installing of various air conditioning Units at all kind of buildings (High rising or Low Buildings).

- Capable of Installing HVACs anywhere within Nigeria and West Africa.
- Supplying and installing of Liebert HVACs anywhere within Nigeria and West Africa.
- Supplying and installing of Hisense HVACs anywhere within Nigeria and West Africa.
- Supplying and installing of LG HVACs anywhere within Nigeria and West Africa.
- Supplying and installing of various capacity of CRAC units and VRV indoor cassette units anywhere within Nigeria and West Africa.

- Capable of supplying, installing and commissioning of 60 hours Inverters to Banks and Data Centers.
- Supplying and installing of Polaris FID Stack Emission Analyser equipments to Oil & Gas Industries, Production and Manufacturing Factories.
- Supplying and installing of GCX Gas Analyser equipments to Oil & Gas Industries, Production and Manufacturing Factories.

POLLUTION
ANALYTICAL EQUIPMENT
GCX
GAS ANALYSER

Polaris FID TVOC SE
Portable TOC Analyser for Stack Emissions

- Capable of Supplying Purpose built inverter/DC (indoor & outdoor) power solution with Emerson Network Power Limited for Bank ATM's.

- Upgrading of existing fire suppression systems and installation of new systems.

- Supplying and Installing of all- purpose HVAC units for Telecom Data Centers & Interphase with FM200 fire suppression system.
- Supplying and Installation of Inter phase with FM 200 fire suppression system.
- Upgrading of Existing Cooling Infrastructure Projects.

As main or sub-contractor Bonariqfield provides:

1. Supply, installation and commissioning services
2. 24/7 maintenance support to critical equipment in all our client's facilities.

HEALTH, SAFETY AND ENVIRONMENT HSE

All WORK shall be carried out in accordance with Bonariqfield HSE requirements. Our client reserves the right to conduct HSE audits for any and all aspects of the WORK carried out by Bonariqfield. In order to avoid unsafe acts / unsafe conditions, our key personnel shall have a minimum of five (5) years consistence field experience. Personnel shall be provided with protective clothing and safety equipment suitable for the working conditions. We shall provide comprehensive technical support services as requested by our Client. All such WORK shall be carried out by suitably competent and experienced engineering personnel. All such WORK shall be completed within the agreed completion dates. Our personnel shall be able to maintain an 8 to 12 hour a day operation, during performance of the WORK at the WORKSITE.

QUALITY ASSURANCE (QA)

All WORK shall be carried out in accordance with the project accredited quality assurance system which shall meet the requirements. The system shall be fully accredited by a recognised certifying authority.

POLICY:

We have effective policies, procedures and systems covering all aspects of the WORK and shall ensure that these are being adhered to. We have a QA system which ensures that all purchased or rented equipment and through life services meet the required quality, design, functional and performance standards.

We have effective quality control systems in place which captures defective products and services at each stage of the WORK.

We have in place an effective change management system for all aspects of the WORK.

SUBCONTRACTORS/VERIFICAITON BODY:

We have an effective system for the pre-qualification and selection of SUBCONTRACTORS which ensures the compatibility and effectiveness of the SUBCONTRACTORS' own QA management systems.

We have established a programme of internal and SUBCONTACTOR audits throughout the course of the WORK to ensure that the respective QA systems and procedures are fully effective and are being strictly adhered to.

Where the respective QA/QC systems are found to be ineffective or inadequate, we shall implement such corrective actions as necessary for immediate system improvement. We shall carry out from time to time, a quality assurance and inspection plan for all aspects of the WORK for review and approval by our client and verification authority. As a minimum, the plan shall be in accordance with ISO 10005 and shall be capable of being marked up to show both our Client and Verification Body to witness/review requirements. Client shall notify us and Verification Body prior to such witness/review points taking place. A minimum notice period of three (3) working days shall be required.

'PERSONNEL

We shall provide the necessary personnel for the WORK, subject to Client's requirements and shall have a dedicated project organisation to manage and execute the WORK. We shall establish and maintain the necessary management and organisational structure, control and reporting to ensure compliance with the Client and the efficient direction of the Service and will undertake to ensure the continuity of our team, subject to the Client approval for the course of the Project. We shall support CONTRACT with competent personnel, and maintain a system that demonstrates this competency (upon

demand where necessary) and ensures continuing competency. All personnel provided, shall be subject to COMPANY's approval prior to working on designated operations and COMPANY reserves the right to reject personnel it deems not of sufficient competency. Furthermore, we shall have a system in place to ensure that any additional and/or third party personnel that may be used from time to time are of an acceptable level of competence. We shall be allowed access to Client's system of assessing personnel and the results of such a system as appropriate. Demonstrating competency and associated costs will be the sole responsibility of our Client.

OFFSHORE/ONSHORE SUPPORT:

Offshore/onshore support personnel shall be responsible for control and maintenance of all operations supplied equipment (whether purchased or rented). Offshore/onshore support personnel shall complete a comprehensive report for each offshore visit and this shall be provided to our Client. On completion of each offshore visit personnel shall present a detailed timesheet for approval of the relevant COMPANY supervisor. The approved timesheet shall be submitted with all invoices.

POLLUTION
ANALYTICAL EQUIPMENT

GCX
GAS ANALYSER

OPERATIONS:

We will resource sufficient personnel to maintain continuous twenty-four (24) hour operations when required based on eight - twelve (8 to 12) hour shifts. Any proposed personnel changes must be discussed between the parties and shall only be made with the prior written approval of COMPANY. The technical crew shall include a competent specialist for any third party equipment provided by CONTRACTOR, as deemed necessary by our Client in consultation with Bonariqfield.

Personnel shall be provided with protective clothing and safety equipment suitable for onshore/offshore working conditions. We shall procure that its Personnel shall, throughout the duration of this Agreement comply with all the applicable laws, rules, orders and regulations of any Governmental or regulatory body having jurisdiction over the Services. For the avoidance of doubt, Bonariqfield acknowledges that it is aware of and will comply with the Directives of the Department for Petroleum Resources (DPR), Nigeria, for obtaining onshore/Offshore Safety Permits for all personnel required to work in your facility. All such WORK shall be carried out by suitably competent and experienced technical personnel. All such WORK shall be completed within the agreed completion dates.

PROJECT MANAGEMENT

We shall provide the necessary resources and services to effectively manage all aspects of the CONTRACT. The WORK shall be carried out in accordance with our already established quality assurance procedures and systems. We shall nominate a dedicated Project Manager with responsibility for all aspects of the WORK. The Project Manager shall have full authority to represent and act on behalf of Bonariqfield on all matters in respect of the CONTRACT. The Project Manager shall be the prime contact point between our Client and Us.

The project management work scope shall include but is not limited to the following: Management and co-ordination of every aspect of our technical and infrastructure maintenance services, procurement, manufacturing, fabrication, installation and assembly, testing, quality assurance, commissioning and all other aspects of the WORK. Planning, monitoring, expediting and reporting all aspects of the work scopes to ensure agreed delivery dates are maintained. Prepare and regularly update detailed project master schedule and production schedules to demonstrate progress and highlight potential problem areas.

for all aspects of the WORK; format and content of the respective reports to be agreed with our Client. Prepare and maintain an inventory list of all COMPANY supplied items; attend and issue minutes for all project meetings. Provide all necessary project management support to COMPANY in the effective execution of the WORK from design through to commissioning and operation of the EQUIPMENT.

Identify problem areas and implement all necessary action plans to maintain agreed delivery dates. Prepare and maintain interface register for all 3rd party aspects of the WORK. Prepare and maintain a register of project documentation to be submitted for Client's review. Undertake project audits to ensure WORK is being carried out in accordance with our procedures/systems and in compliance with CONTRACT requirements. Prepare and issue project quality assurance and inspection plans. Co-ordinate all agreed COMPANY and verification authority hold, witness, monitor and review points. Co-ordinate certifying authority reviews. Provide weekly and monthly reports detailing progress and key issues

BonariqField
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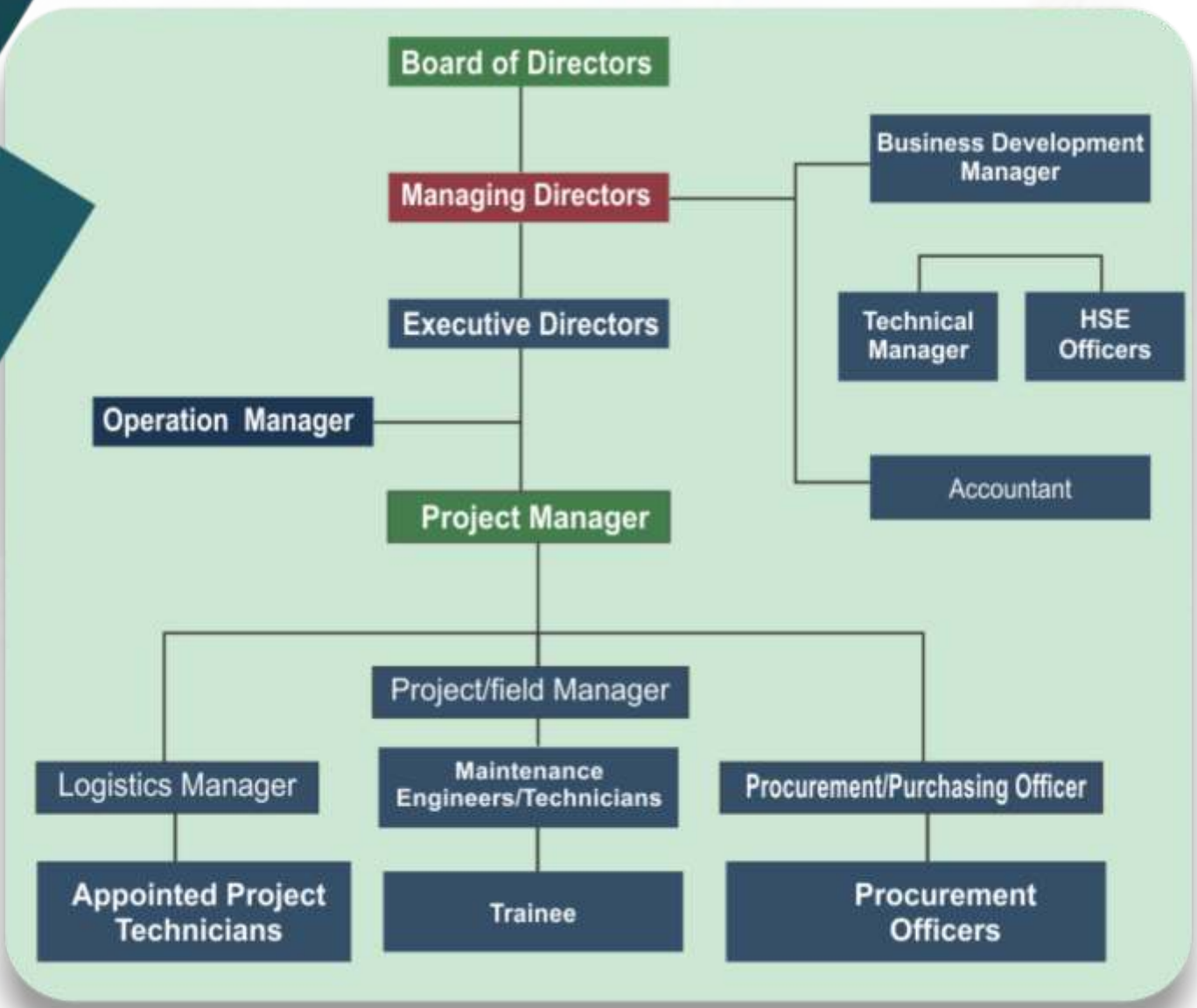
ORGANISATIONAL STRUCTURE



BONARIQFIELD AND POLLUTION S.R

COOPERATION AGREEMENT

Cooperation between Bonariqfield Global Services (BGS), 307 Rumuibekwe 11, Aba Road, Port Harcourt, Rivers State, Nigeria. Website: www. bonariqfield.com Email: bonariqfield@yahoo.com, phone +2348035251708, and POLLUTION S.r.l. Website www.pollution.it (POLLUTION) Via Guizzardi, 52, 40054 Budrio (BO) - Italy

BonariqField
GLOBAL SERVICES

SALES:

DISCOUNTS:

SALES SUPPORT:

PROMOTION ACTIVITIES:

PAYMENT CONDITIONS:

POLLUTION EXPORT DECLARATION STATEMENT

The export of technical information can be subject to an export licence requirement. The supplier in such cases must not provide the requested information without having obtained a licence.

DISTRIBUTOR will provide name and address OF customers who are not themselves end users of the equipment on order placement. In such case the end user order or an end user declaration will be necessary.

DISTRIBUTOR acknowledges the actual export regulations (primarily of the European Union, USA and Italy) as binding for themselves. Expert advice is available at POLLUTION.

IN the event that DISTRIBUTOR is aware one of its customers intends to use components for A purpose described in Article 4 of the EC-dual-use-regulation No. 428/2009, it will immediately stop all activities and consult POL LUTION.

DISTRIBUTOR will apply due diligence to end use examination and will support - to the best of his knowledge - the supplier effort to comply with the export control regulations. There is, however, no need to investigate and DISTRIBUTOR will not be responsible for a business it could not identify as a sensitive transaction.

POLLUTION GCX

FAST ON-LINE ANALYSIS, WHERE YOU NEED IT

Based on micro gaschromatographic technology, the GCX is a powerful GC solution that provides fast, accurate, reliable analysis of gas samples.

It is ideal for Process Analysis, Industrial Health & Safety and Environmental Monitoring.

Its rugged construction ensures long-term, trouble-free operation.

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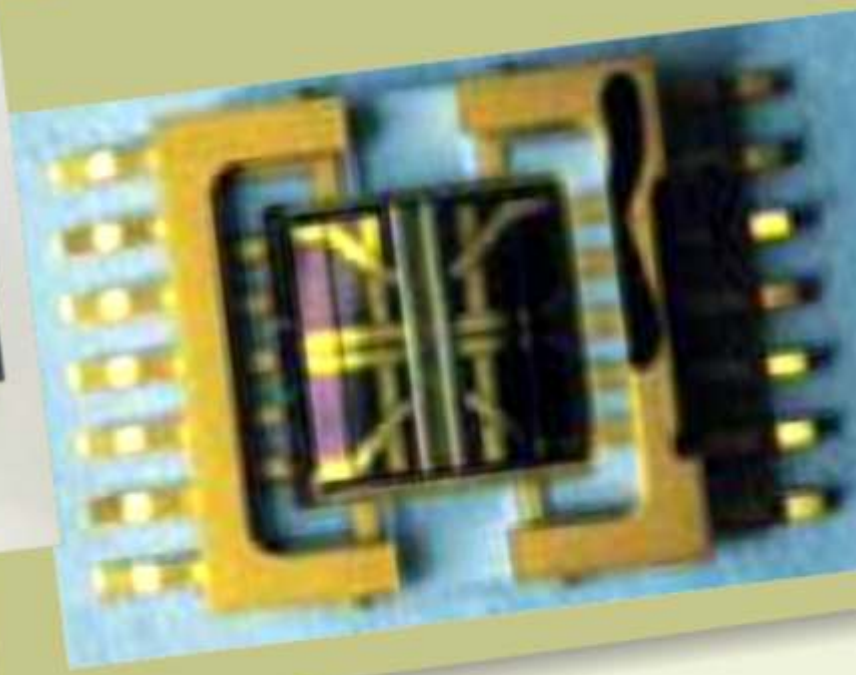


EASY AND EFFICIENT

The innovative modular system can perform the analysis of complex environmental matrices with a single sample. Up to four analytic modules can be installed on the GCX, each of them containing a microinjector, a detector and a high-resolution capillary column. The GCX is equipped with Laptop or rack PanelPC and MC^2 Software for the complete management of the instrument.

RUGGED AND RELIABLE

The GCX is a really tough instrument, thanks to its zinc-coated welded steel chassis and to a careful study of its structure; it can perform complex analysis under the most demanding conditions; it is suitable for the most extreme applications typical of the online analysis with no human intervention.

FAST AND ACCURATE

The high-performance analytical modules of the GCX allow to perform an analysis even at low ppm concentrations. Thanks to the fast detection system it is possible to complete most of the analysis in few seconds..

KEY FEATURES

The modular design offers the maximum flexibility in the application and it reduces the method development lead time. The used TCD is up to 10 times more sensitive than the traditional high-conductivity detectors, allowing to detect the gas components at low ppm concentrations. The analytical modules based on micro capillary column allow analysis in few seconds. The rugged system for 19" rack installation allows its use in critical conditions

APPLICATIONS

Composition and Calorific Power of Natural Gas, GPL, Biogas
Odorants (THT, TBM etc.), Natural Gas
Alternative Energy (Fuel-cell, Biogas)
Hydrocarbons (Refineries, Methane, etc.)
Chemical and Process Industries
Fermentation Process
Industrial Hygiene and Worker Safety
Process Analysis
Environmental and Air Monitoring
Industrial Emissions
Custom Solutions

CONTINUOUS ON-LINE MONITORING

The GCX is designed to work without any intervention of the operator after its installation and initial configuration.

The volatile compounds in the air or in a gas stream are analysed on-line, providing a continuous monitoring of different chemicals in a single analytic cycle.

Moreover, the GCX system allows to directly send via FTP the results of the analysis at the end of each cycle anywhere in the world. The user can access the system remotely to view the data or to activate an alternative analytical method.

The communication with the system can be managed via Ethernet and the results of the analysis are stored in the PC connected to the instrument.

ACCESSORIES

MPX and **MPS** multi-stream samplers

MPX is designed for distance sampling of low corrosive agents. It allows the managing of 8, 16, 24, 32 sampling points within 100 metres. (basic version) or 300 metres (high-range version). It keeps monitoring the status of the pump, the functioning of the electrovalves and the status of the filters.

MPS is designed to be easily re-located. It is equipped with an AISI316 rotating valve for aggressive samples.

MPS-H10 is completely heated at adjustable temperature to avoid the condensation of hot and humid samples. It is equipped with an AISI316 rotating valve with separate draining pipes.

SAMPLE CONDITIONING

Specific accessories for sample conditioning are available. These systems extract the condensation, lower the temperature and regulate the pressure.

EDU3 is a thermal enricher/desorber, configured to be interfaced and automatically controlled by GCX. It allows to concentrate the sample up to 100 times (depending on the analyses).

It includes sample and transfer line, swagelock 1/16 joint, setup interface, 3 Tenax concentration tubes.

SAMPLE LINES

Complete equipment for sampling installation: fluxbox, terminals with sinterized filters for particular, sampling lines in inert material (steel, PEEK or PTFE) heated at controlled adjustable or fixed temperature. Available in different lenght, temperature range and connections.

ANALYTICAL MODULES

The GCX can analyse simultaneously a wide range of compounds since it can contain up to four MicroGC modules. Each of the modules can use its own carrier gas (H_2, He, Ar, N_2) and sample inlet.

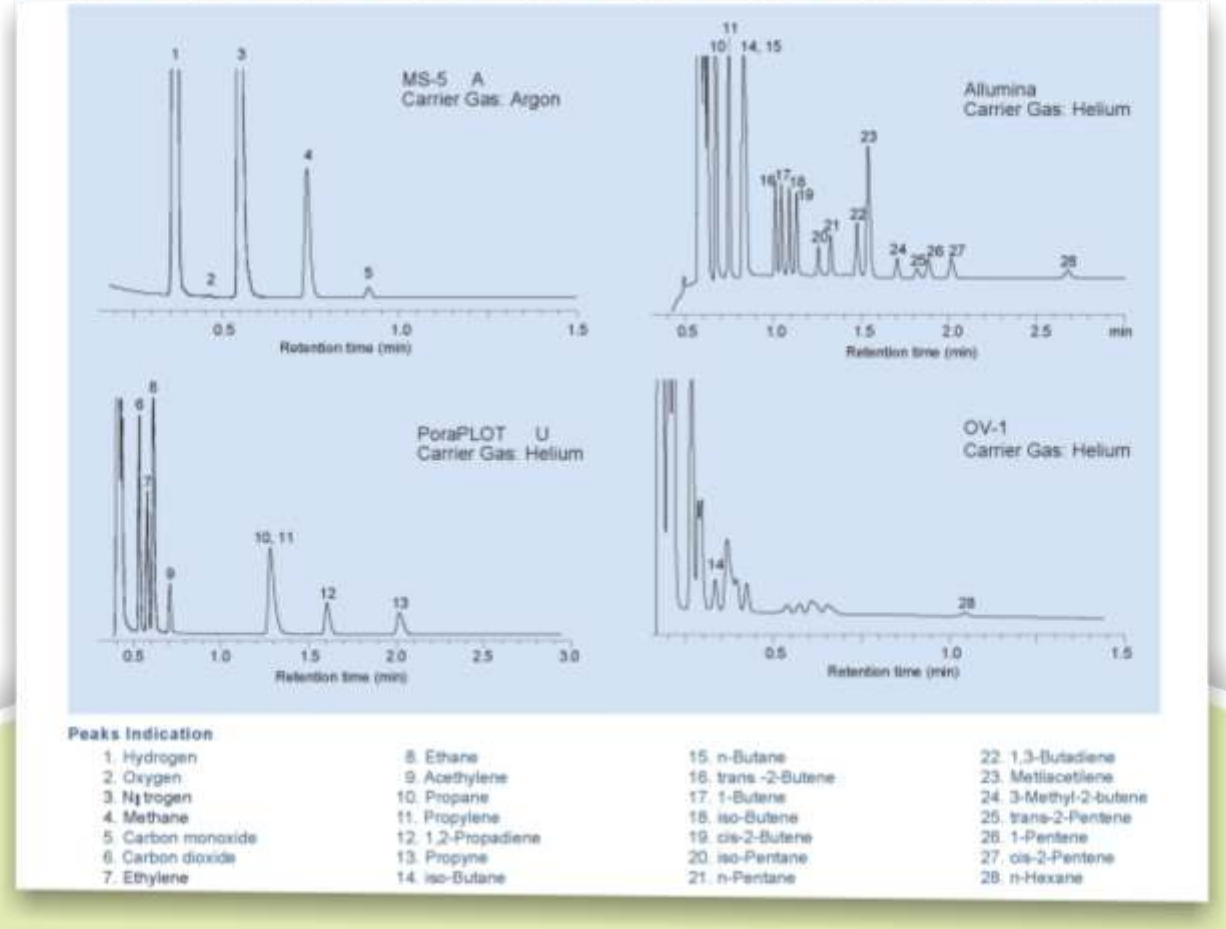
Each module is an autonomous MicroGC that integrates a microinjector, a high-resolution capillary column and the TCD detector based on MEMS technology. Choosing the analytical modules means to identify the appropriate injector and the chromatographic column.

SELECTION OF THREE INJECTORS:

- **Variable volume:** it allows greater analysis flexibility, even at low ppm concentration
- **Fixed volume**: it allows to obtain the maximum repeatability
- **Backflush:** it preserves the separation column from undesired contaminants

Main chromatographic columns with their respective applications:

OV-1	Hydrocarbons C4-C9, aromatics, solvents, halogenated anesthetics. BTEX, CFC, mercaptans, acroleine, oxygenates, etc.
OV-1701	Natural gas odorants (THT), hydrocarbons C6-C10
CpSil13CB	Natural gas odorants (TBM), hydrocarbons C3-C9, sulfurate, amines and halogenated compounds
MolSieve 5A	Permanent gases: CH4, CO, H2, N2, O2, He, Ar, Ne, etc.
PPQ / PPU	Hydrocarbons C1-C3, volatile solvents, N2, N2O, CO2, CH4, NH3, H2S, SO2, acetylene, halogenates, free fatty acids, etc.
Stabilwax	High boiling point solvents. Alcohols, aldehydes, ketones, nitro compounds, etc.
Alumina	Hydrocarbons C3-C6, olefins and isomers



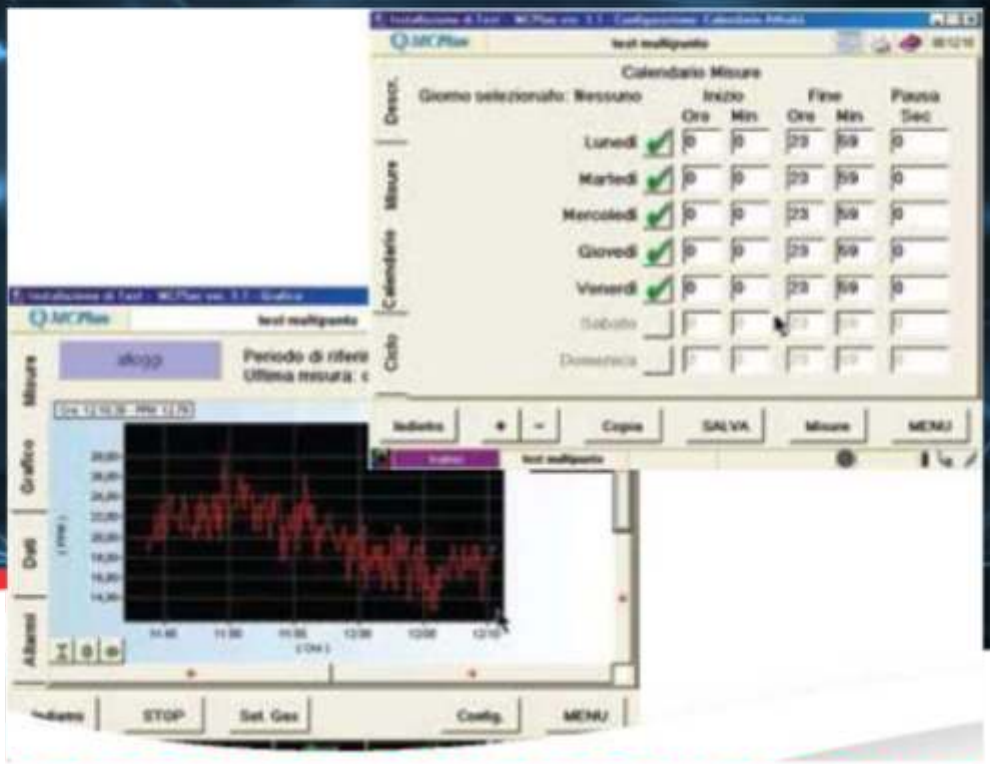
MC-TUNE

Chromatographic analysis

The analysis software MC-Tune, designed to maximise the efficiency of the microgas-chromatographic technique, allows to:

- set the instrumental operating parameters
- drive the optional sample pre-concentration system
- perform the qualitative and quantitative calibration
- indicate to the instrument how to process the output signal

Through MC-Tune it is possible to perform an analysis and look over the chromatogram. If the instrument has previously been calibrated, it will provide name and concentration of the compounds.

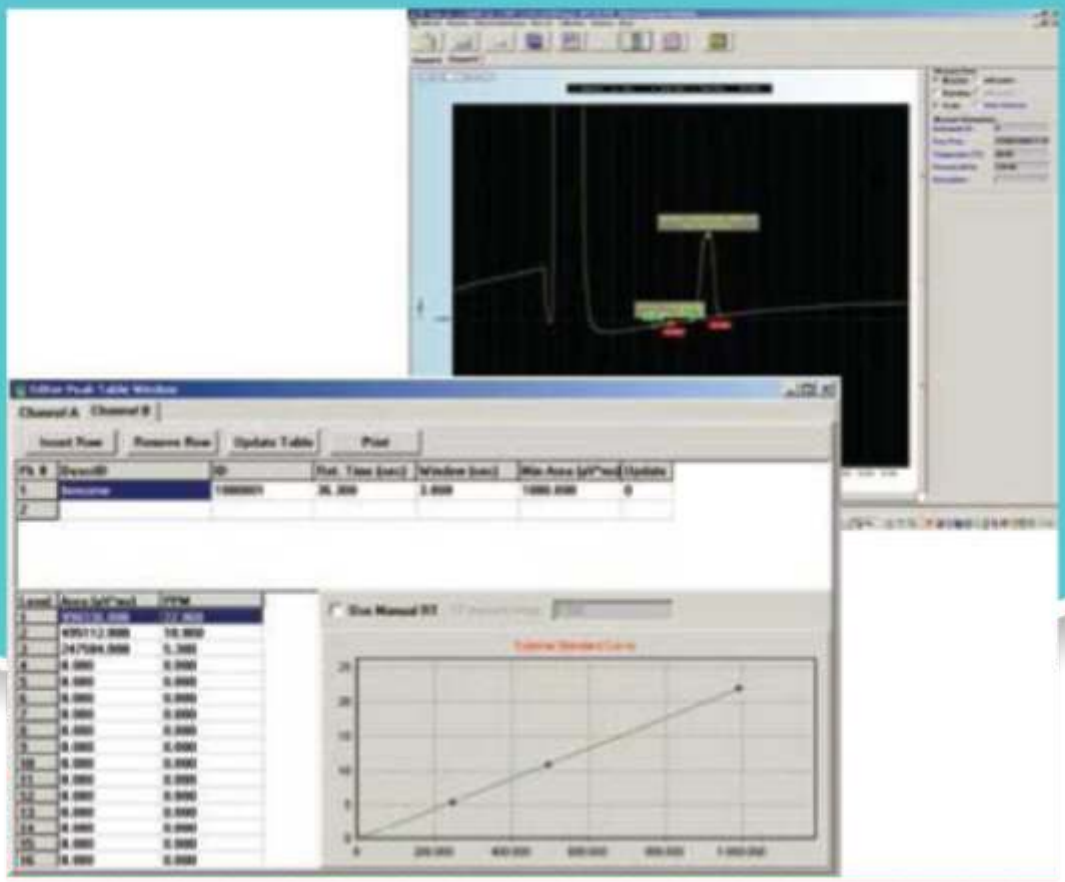


MC-PLAN

Automatic management of the activity

The MC-Plan software combines an easy and intuitive interface with an extreme flexibility, allowing to:

- Work on different user levels protected by password
- Select different preconfigured analytical methods
- Start an analysis and read immediately the qualitative and quantitative results
- Select days, hours and recurrence of the measurings for a continuous automatic monitoring
- Export the data (on USB flash drive) and generate printable reports
- Read on a synoptic chart the instantaneous concentration of every gas in every sampling point, with alarms for alert thresholds
- View on tables and charts the temporal trends of the concentrations
- Send a visual, acoustic or remote alert (e-mail or sms) when the chosen limits are exceeded
- Set the gases to be measured in each sampling point
- Customise the timing of measurements and their sequence in case of multi-stream monitoring activity



MC-PLAN plug-in

MC-PLAN-MP "Multi-stream"

Allows to drive the multistream sampler of the series **MPX, MPS** and **MPS-H10.**

MC-PLAN-MP "Particles"

Allows to manage in an integrated mode a complete system of indoor fixed particle counters for cleanrooms.

MC-PLAN-R "Advanced Report"

Allows to build up advanced reports with average values, trends, etc. and to print them out on an external printer.

MC-PLAN-R-CP "Report Calorific Power"

Allows to determine the values of calorific power (including Wobbe index and relative density) and to extract the complete report.

KEY FEATURES	
Size	132.5mm x 483mm x 437mm - 3U Rack 19"
Weight	From 10.6 Kg to 13 Kg depending on the installed modules
Power supply	100 - 240 VAC
Operating temperature	0°C - 50°C
Sampling conditions	Indoor and Outdoor with appropriate protection from atmospheric agents
Carrier Gas	Helium, Hydrogen, Nitrogen, Argon. Work pressure 500 kPa
Column temperature	Isothermal operation: 30-180 °C, 15°C above environmental temperature
Sample conditions	Temperature 0 - 120°C, pressure 0 - 210 kPa
Detector	TCD based on the Micro Electro-Mechanical System (MEMS) technology
Detection limits	Low ppm
Dynamic range	$10^6 \pm 10\%$
Repeatability	RSD at constant temperature and pressure (for C1 to C6 components at % level): *Injector type* — *Area repeatability* Variable volume — ≤ 1% RSD Backflush, timed mode — ≤ 1% RSD Fixed volume — ≤ 0,2% RSD Backflush, fixed mode — ≤ 0,5% RSD
Communication	TCP/IP; RS-232; Remote Digital I/O; opt.Modbus

POLLUTION, A TEAM OF PEOPLE

POLLUTION is an experienced designer and manufacturer of analytical instruments for the on-site chemical analysis of volatile compounds. Since 1991 POLLUTION has been a leader in microGC and emissions FID technologies. Markets served: Environmental, Energy & Process (natural gas, petrochemical), Health & Safety.

POLLUTION's young and highly motivated team, on top of providing continuous innovation, works projected towards customer needs and satisfaction. In its modern internal R&D Center, located in its Italian facility, chemists and engineers work together to develop innovative technologies and advanced instrumentation.

POLLUTION is driving successful partnerships with universities and industrial research centers in Italy and worldwide.
POLLUTION is ISO9001:2008 and ISO13485:2004 certified.

THE PORTABLE FID FOR STACK EMISSIONS: LIGHTWEIGHT, COMPACT, ERGONOMIC, SAFE

"POLARIS FID" analyser realized by POLLUTION is an on-site monitor for the detection of total organic carbon (TOC) in compliance with EN12619, EN13526 and EPA METHOD 25A. It is a fully portable instrument because it incorporates everything needed for the analysis; for that reason it is useful for environmental screening as well.

FID POLARIS RUNS WITH BATTERIES THANKS TO THE EXCLUSIVE DESIGN WITH LOW POWER CONSUMPTION

The miniaturization of the flame ionization detector (FID) and heated volumetric sampling system result in outstanding energy savings and thus allows the use of built-in rechargeable batteries. It also ensures the highest accuracy and repeatability of sequences of analysis.

FID POLARIS FEEDS THE FLAME THROUGH AN INTEGRATED AND SAFE HYDROGEN STORAGE

The compact hydrogen storage cartridge (using an innovative metal-hydride technology) is integrated into the instrument and self-desorbs the hydrogen fuel to the flame detector at appropriate pressure and flow.

It is very safe and it does not require pressure regulators; it is a very handy instrument because it allows to perform analysis for many hours.

Because of its peculiarities, it can be carried by car and by plane without any restriction. It can be easily recharged in a few hours in the laboratory using a standard hydrogen cylinder with regulator or with an hydrogen generator at high output pressure.

KEY FEATURES

- Rechargeable battery operations fully portable
- Integrated hydrogen cartridge safe and compact
- Zero Air and Span Gas integrated into the chassis ergonomic and lightweight
- Heated volumetric sampling system accurate and precise
- Alphanumeric display and USB port for uploading methods and downloading data analysis easy and advanced
- Docking station for Methane/NMHC and optional controller for heated lines effective and flexible
- TUV Approval certified and guaranteed

APPLICATIONS

- On-site analysis of TOC (Total Organic Carbon) in Stack Emissions, in compliance with EN 13526, EN 12619, EPA Method 25A
- Methane/NMHC Automatic analysis
- Environmental screening

FID POLARIS IS BUILT TO RESIST TO THE MOST DIFFICULT OPERATING CONDITIONS

The instrument is designed to be resistant to samples with high temperature and humidity: this is a typical working condition with hot samples during stack monitoring. The detector manifold, the sampling lines and all the valves are integrated into a single block and uniformly heated, in order to eliminate all possible cold spots and avoiding local sample condensation.

FID POLARIS IS COMPACT, LIGHTWEIGHT AND ERGONOMIC FOR EASY USE

The instrument incorporates everything you need for analysis: batteries, hydrogen storage cartridge, pump and Activated Charcoal filter for the flame air, span gas cylinder for the calibration and technical air cylinder for high accuracy and precision. The sample inlet, with double filter, is compatible with all sampling lines on the market.

It is equipped with comfortable shoulder strap for field use, also available as a front-bag.

THE INSTRUMENT OPERATES IN COMPLETE AUTONOMY, AND CONTROLS THE ENTIRE ANALYTICAL PROCESS

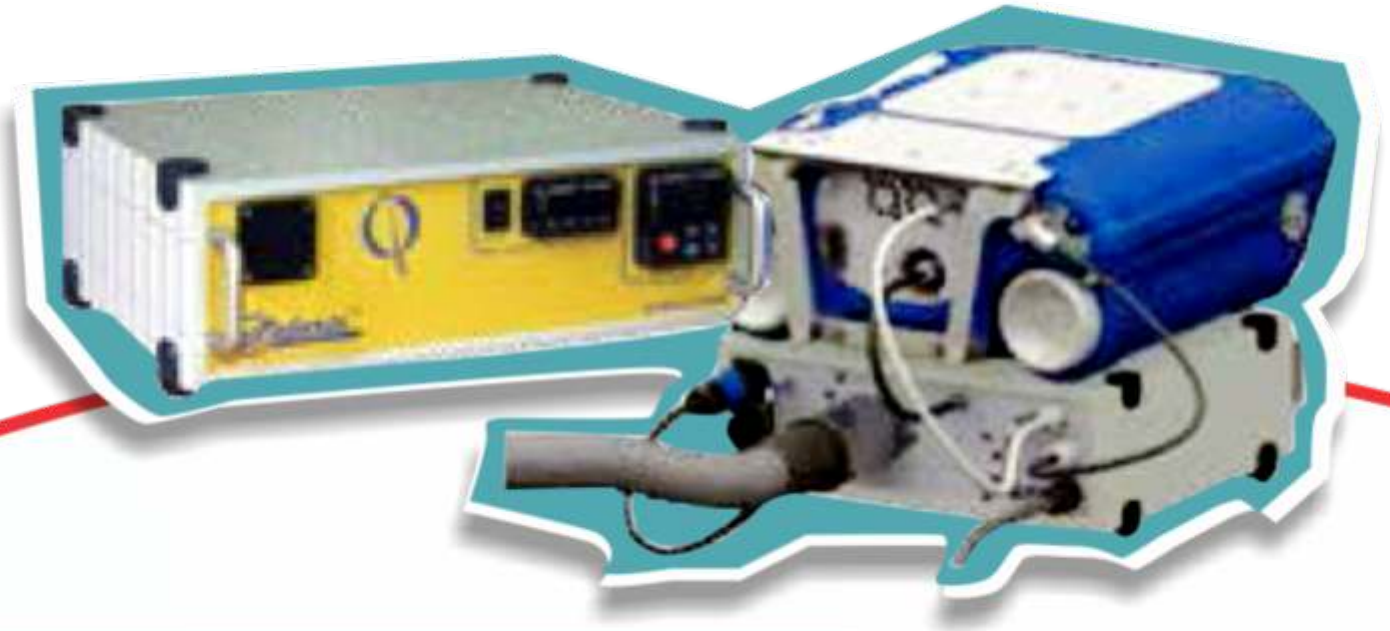
The integrated microprocessor automatically controls several parameters: ignition and flame monitoring, setup of parameters chosen by the user according to the analytical method, diagnostic checks, life monitoring of the gas cans and energy reserves, sampling lines cleaning cycles, calibration procedures.

ACCESSORIES

POLARIS - NMHC Docking Station

External Catalyst for automatic Methane/NMHCs analysis. POLARIS FID controls the Docking Station to measure sequentially total hydrocarbons and/or methane only. Automatically it calculates the difference between them reporting the NMHC value.

The Docking Station also powers POLARIS FID and heated lines. Optional internal temperature controller for the heated line, range 80°C - 200°C.



POLARIS - H2 Recharging Station

High pressure Hydrogen generator designed for the fast recharge of the Hydrogen cartridges, thanks to a very high purity output.
It only requires electric power and demineralized water.

POLARIS - H2 RECHARGING INTERFACE

Connection Kit for the recharge of the Hydrogen cartridges through external pressurized cylinder. It is equipped with safety valves.

FULL RANGE OF ACCESSORIES AND CONSUMABLES

Portable heated lines: 3 - 5 - 10 m

Portable heated lines and probes with on-line replaceable dust filters and calibration port: 3 - 5 - 10 m

Kit of 12 disposable cylinders:

- Span Gas 16/40/120/320 mg/Nm^3
- Zero Air
- Combo: 9 Zero + 3 Span

Many other accessories and consumables are available for best results with FID POLARIS, e.g. external battery charger, carrying cases, double shoulder strap for front-bag use, spare Hydrogen cartridge and filters.

SPECIFICATIONS	
Size and Weight	355(W) x 155(H) x 426(D) mm, 10 Kg *(with batteries 13,4 Kg)*
Power Supply	• External Power Adapter 110 - 240VAC - 24VDC @ 8,2A • 2 batteries 9Ah *(running-time 3h @ 140°C detector)*
Sampling	Heated head system
Environmental Operating Ranges	+5°C < T < +40°C - 0% < RH < 95%
Sample conditions	Temperature 0 – 170°C / pressure 90 – 110kPa
Max detector body temperature	190°C
Max temperature Sample Inlet	180°C
Materials in contact with the sample	Steel AISI316 and high performance polymers
Sample flow	Approximately 800 ml/min
Sample pressure	atm ± 100 mbar
Measuring Range	0-20/50/150/500/5000/10000 mgC/Nm^3 (other on request) 0-10/100/1000/5000 ppm relative to Propane
Detection limit (LDL)	0,3 mg/Nm^3
Accuracy	1% of the F.S. or 0.4 mgC/Nm^3, whichever is greater
Setting Methods and Data Analysis	• Internal memory flash *(30 days of continuous measurements)* • Upload/download via USB
Flame management	Electronic, with diagnostic and 'flame off' visual alarm, automatic system to restart the flame
Hydrogen storage cartridge	• Metal hydrides technology *(running-time about 30 hours)* • Rechargeable via external source of hydrogen under moderate pressure • No restrictions on transport
Zero Air	• 1L Cylinder (non-rechargeable): technical air @ 12bar / 20°C *(running time approximately 10h)* • Quick connectors for external Zero Air cylinder
Span Gas	• 1L Cylinder (non-rechargeable): propane in air @ 12bar / 20°C *(Concentration of total carbon equivalent : 16/40/120/320mg/Nm^3, other on request)* • Quick connectors for external Span Gas cylinder
Certifications	Issues by TUV Rheinland (ID 000039773) according to MCERTS performance standards • EN12619, EN13526 • Validation of Field Performance AST and QAL2 according to EN14181 • Quality Management System complies with EN15267-2 and ISO9001:2008
POLARIS - NMHC Docking Station	
Size and Weight	330 (W) x 110 (H) x 330 (D) mm, 7 Kg
Power Supply	110 - 240VAC
Measurement	Automatic: Methane, Total Hydrocarbons, NMHC (calculated)
Optional	Temperature controller (80-200°) and power for sampling line
POLARIS - H2 Recharging Station	
Size and Weight	230 (W) x 430 (H) x 353 (D) mm, 17 Kg
Power Supply	110 - 240VAC
Hydrogen Output	Pressure: 11bar - Flow: 350cc/min - Purity: 99,99996%

NITROGEN PURGE AND BRAZING

Most HVAC installation instructions require flowing nitrogen through the copper tube during brazing. This is an important step in producing a quality HVAC system.

WHY NITROGEN PURGE?

Oxygen in the air combines with copper to form surface copper oxide. We see this on copper tube as a light to dark brown discoloration. You've probably seen ACR/medical gas copper tube supplied from the tube mill nitrogen charged and capped. This is designed to prevent this oxide formation inside the tube. Once the caps are removed and the tube is cut for installation, the nitrogen protection is lost.

At high brazing temperature a heavier black oxide forms (cupric oxide). On cooling this oxide flakes off to form "scale".

This problem has long been an issue in brazing HVAC tube. It has become more important with the change from HCFC refrigerants like R-22 that use mineral oil to the new HFC refrigerants (410a) using POE oils. Due to their polar nature, POE oils have a solvent effect and can "scrub" the copper tube walls. Oxide from tube walls and loose scale can circulate through the system.

WHAT'S THE PROCEDURE?

To prevent oxidation, flow dry nitrogen through the tube during brazing. Nitrogen is inert, (non- reactive), and will displace the oxygen to prevent scale formation.

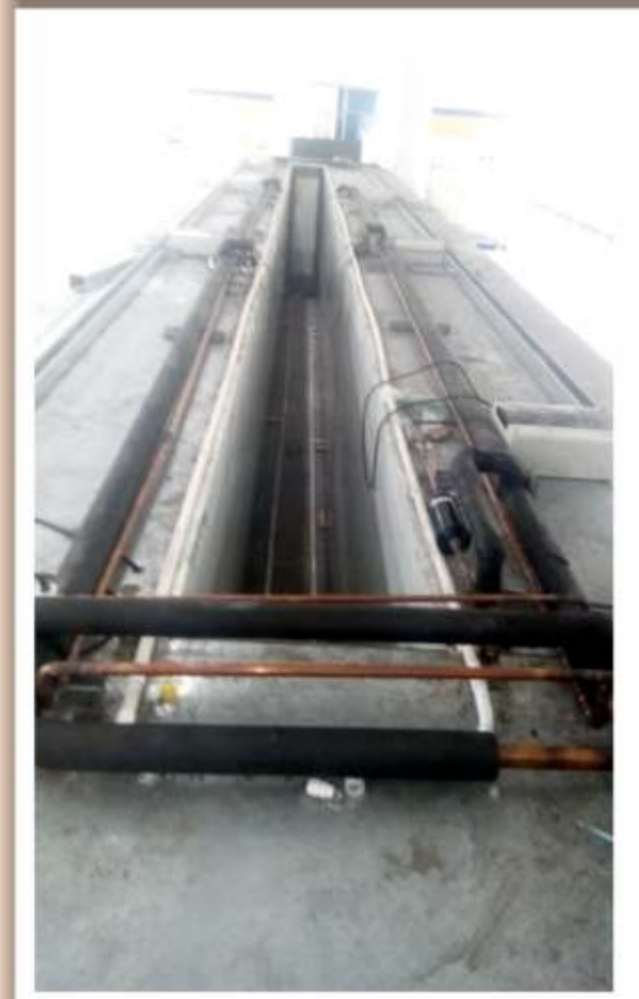
While mostly cosmetic on the tube exterior, inside the tube the oxide flakes are carried by the refrigerant through the system. This contaminant can restrict flow through small orifices such as metering devices or the pilot valve capillary tube in a reversing valve.

Nitrogen is typically introduced into the system through the Schrader valve (after removing the core), or other system opening. Connect a hose or tube from the nitrogen cylinder to one end of the pipe. The cylinder will be equipped with a regulator or flow control valve. There is no universal requirement for the delivery pressure setting, but the goal is to use low volume/pressure to displace the oxygen. A suggested starting point is 2 -3 CFH or 1.5 - 2 PSI. Some users will set pressure until they feel a slight flow at the exit point on the back of their hand. It's good practice to initiate flow before heating and continue to flow nitrogen until the part has cooled. Avoid an excessive flow rate that builds pressure inside the tube. A high flow rate will tend to cool the tube reducing brazing heat efficiency. Excess nitrogen pressure can build up inside the tube and reduce braze alloy penetration. A small hole in a cap at the end of the line will allow the nitrogen to escape. It's a good idea to experiment with flow rates by test brazing parts on the bench. Section the finished assemblies and inspect for a clean inner tube wall. We take this step during installation and eliminate problems down the road.

INSTALLATION & NITROGEN PRESSURE TO FIND LEAKS

This Good Practice guide is intended to cover the identification of leaks using Nitrogen for refrigeration systems which are already in operation and are known to have undergone a strength pressure test. This leak tightness testing procedure will sometimes be necessary to comply with the standard leakage checking requirements of the F-Gas regulations.

The majority of leaks can be found by either visual examination or use of either an electronic leak detector or a proprietary bubble solution. Where the leak cannot be identified or the gas charge has been lost, then it will be necessary to find the leak by pressurising the system with Nitrogen. To carry out this procedure safely it is important to use the correct equipment, carry out a risk assessment and then follow the test procedure.



THE TEST PRESSURE

The maximum test pressure to be used should be the maximum allowable pressure, which should be stated on the equipment label. On smaller systems the suction and discharge pressures will be the same, however on larger equipment the maximum allowable suction pressure will be lower and the system will need to be tested in several sections. If the system information is not available a general guide to pressures which could be encountered are:

Refrigerant	Suction pressure	Discharge pressure
RI 34a	7.1 bar	1 3.7bar
R407C	I3.2bar	23.6bar
R404A	14.1 bar	24.8bar
R4I0A	18.8bar	3 3 bar

These have been established assuming a maximum condensing temperature of 55°C and a maximum ambient temperature of 32°C (as specified in EN378 - Refrigerating systems and heat pumps - Safety and environmental requirements).

USING THE CORRECT EQUIPMENT

The nitrogen must be oxygen free (OFN) or High Purity. Oxygen must never be used as it can explode when mixed with oil, causing serious damage to equipment and injury or death to those in the vicinity.

It is essential to use a suitable regulator with the nitrogen cylinder. The regulator has an output limiting device to prevent over pressurising of systems. The rating of this must be higher than the test pressure to be used but not excessively so.

Refrigerant	Maximum Pressure	Suitable regulator
RI 34a	1 3.7bar	maximum output of 26bar
R407C	23.6bar	maximum output of 33bar
R404A	24.8bar	maximum output of 33bar
R4I0A	3 3 bar	maximum output of 40bar

There are now specific Nitrogen Pressure test kits on the market which use braded steel hoses. These are safer to use than a standard manifold and should be considered.

Warning - use of Manifolds with sight glasses: This guide assumes the use of Refrigerant Manifold and Gauges. It is essential that the manifold does not have a sight glass. These sight glasses have been known to fail and risk causing serious injury to the engineer carrying out the test. The manifold, gauges and service lines must be in good condition. Manifolds with sight glasses are only suitable for refrigerant recovery.

It is essential that appropriate personal protection equipment (PPE) is used when carrying out this test and this should include: safety goggles, gloves and a hard hat as well as normal work wear, including safety footwear.

THE RISK ASSESSMENT

Before any work can take place it is mandatory to carry out a risk assessment. For guidance on carrying out risk assessments and sample generic versions for Nitrogen Pressure Leak Testing see the British Refrigeration Association Guidance. This assessment can then be put into practice taking into account the particular site conditions. It is essential that this takes into account the safety of personnel carrying out the test as well as other personnel on site not involved in the operation.

HANDLING OF NITROGEN CYLINDERS

When the cylinder is not being used ensure the valve is closed. Never transport or store the cylinder with the regulator fitted.

DANGERS OF USE OF NITROGEN

You will be pressure testing at high pressures with nitrogen. The pressures are high enough to cause serious injury or death. Nitrogen is an asphyxiant - it will suffocate you in high concentrations. The following guidelines show how to minimise risk during pressure testing.

PRESSURE TESTING PROCEDURE

If there is any residual refrigerant left in the system this must be recovered prior to following this procedure.

1. Ensure the nitrogen cylinder is either secured or located in a position so that it cannot fall over.
2. Ensure the regulator valve is wound fully out (counter clockwise / anti clockwise).
3. Fit the regulator to the cylinder.
4. Fit gauges to the system and ensure there are no isolated sections within the part of the system to be pressure tested.
5. Fit the common manifold hose to the nitrogen cylinder.
6. Open the system valves and open the high side manifold valve (to avoid damaging the low side manifold gauge do not pressurize the low side of the manifold with the test pressure).

7. Open the nitrogen cylinder valve.
8. Slowly wind the nitrogen regulator in (clockwise) to pressurise the system:

- Pressurise the system in stages of no more than 3 bar (45 psi) at a time;
- Ensure you only pressurise the relevant sections of the system to their maximum allowable pressure.
- Listen for audible pressure loss at every pressure increment increase;
- Watch the gauge for pressure loss.
- If a leak is identified, the nitrogen should be vented, the leak repaired and the leak test procedure repeated.

9. When the maximum system allowable pressure has been reached, close the nitrogen cylinder valve and the high pressure manifold valve.
10. Note the pressure shown on the high pressure gauge.
11. Wind the nitrogen regulator valve fully out (counter clockwise / anti clockwise).
12. Carefully remove the common hose from the regulator, slowly venting the nitrogen pressure.

13. Maintain the system at the maximum allowable pressure for the duration of the test.
14. Test each joint with leak detection spray or soapy water to identify the leak point. If leaks are found, they must not be repaired with the system pressurised.
15. Slowly vent the remaining nitrogen.
16. Repair any leaks found and then repeat the test procedure using OFN.
17. When it is established that the system is safe and leak tight the OFN can be evacuated and the system can be recharged with refrigerant.

FOR MORE INFORMATION

- HSE Gn4 Safety In Pressure Testing ISBN 0717616290
- BS EN 378 (2007) - Refrigerating systems and heat pumps - Safety and environmental
- Regulation pursuant to Regulation (EC) No 842/2006 of the European Parliament and of the Council, on standard leakage checking requirements for stationary refrigeration, air conditioning and heat pump equipment containing certain fluorinated greenhouse gases
- British Refrigeration Association's Risk and Task Assessments.
- Material Safety Data Sheets for nitrogen.

HVAC & HPAC SYSTEM CHARGING AND START-UP

Refrigerant and oil are the only two residents allowed to exist in a refrigerant system. The refrigerant process — liquid to vapor to superheated vapor to superheated gas and back to liquid — will not work correctly if refrigerant and oil take on any newcomers in their neighborhood.

Meanwhile, nitrogen, oxygen, and water vapor are all trying to sneak in to the system. The evacuation process evicts these undesirable elements from the neighborhood. Today we will examine the terminology, procedures, and equipment used in the evacuation process.

TERMINOLOGY

Micron — One thousand (1,000) of a millimeter or 0.00004 of an inch. A micron is a unit of measurement used in measuring a vacuum.
Vacuum — The absence of matter in a space. In HVACR terminology, it refers to the absence of air and water vapor within the refrigerant system.
Non-condensables — Gases that will not condense in the condenser.
Dehydrate — To remove water and water vapor from the system.
Evacuation — The removal of water vapor and air from the system.

PROCEDURES

Deep vacuum — Refers to pulling a system down to as low as 20 microns. This method is accomplished by way of a two-stage vacuum pump.

Triple evacuation — A method of evacuation that initially pulls the vacuum down to between 1,000 and 2,000 microns. Then a small amount of refrigerant or an inert gas such as nitrogen is introduced into the system. The object is for the gas to absorb moisture from the system. The gas is then purged, and this process is repeated two additional times. Depending on the size of the system being evacuated the vacuuming time can vary between 2 hours and 24 hours.

Detecting leaks — Once the system is evacuated, the vacuum pump is valved off. If the system pressure begins to rise according to the micron gauge, there is a leak.

Cleaning — Contaminants form within the system from the mixture of moisture, acid, and oil. This buildup results in sludge. Sludge cannot be removed from the system using a vacuum pump. Standard cleanup procedures using filter-driers (flushing) should be used.

EQUIPMENT

Vacuum pump — The machine at the heart of the evacuation process, the vacuum pump lowers the pressure inside of the system to below atmospheric pressure, causing water vapor to boil off and vent to the atmosphere. The contaminants from the system being evacuated end up in the vacuum pump's oil. It is necessary to periodically change this oil.

I would also recommend that a different vacuum pump be used for R22 and another for the "newer refrigerants" such as R134a, R404A, R407C, R507 etc.

If you do not own more than one vacuum pump then the oil should also be changed when changing between these refrigerants.

Single- and two-stage vacuum pumps are most commonly used in the field today. The two-stage model pulls a deeper vacuum because the first stage exhaust is actually vented into the second stage intake. This allows second stage to pull at a lower pressure, increasing efficiency and reducing the vacuum.

Vacuum pumps are rated in cubic feet per minute (cfm). Three- to 6-cfm pumps are typically used in residential applications.

Refrigerant gauges — In addition to the typical gauge setup, a 3/8-inch charging hose is connected to the manifold set to allow for faster evacuation.

Electronic vacuum gauge — Sometimes referred to as a micron gauge, the electronic vacuum gauge reads in units of microns, and it is the most accurate method of measuring a vacuum. Some technicians today feel that they know what is sufficient run time for a vacuum pump without connecting a micron gauge. This is a mistake. The professional technician always verifies and measures his or her work with an electronic vacuum gauge. If you do not test, you are only guessing.

CONCLUSION

Sometime in the future, someone — maybe you — will invent a refrigerant that's not particularly fussy about its neighbors. Of course, once any element moves in, it not only has to get along with the refrigerant but also other inhabitants, such as thermal expansion valves, metering devices, and controls. So, until then we have the evacuation process to keep the neighborhood in an orderly fashion.

The control circuit should be energized 24 hours before charging and start-up to open the liquid line solenoid and turn on the crankcase heater. This will assist the evacuation and dehydration process and provide additional compressor protection during the charging and start-up.

Charge refrigerant into a system through a filter- drier in the charging line. This provides further assurance the refrigerant charge is clean and dry. The system refrigerant capacity is approximately 80% of the condenser, receiver, and liquid line capacity. If the condenser volume or refrigerant capacity is unknown, the system refrigerant capacity is often calculated at 90% of the receiver and liquid line capacity. Be cautious if the calculated charge is exceeded. Weigh the refrigerant. The actual refrigerant charge should be less than the calculated capacity. DO NOT charge liquid refrigerant into the suction side of the compressor. Be sure the compressor discharge valve is open. The suction valve should be open 2 or 3 turns, with a valve stem wrench attached for quick throttle adjusting. High and low pressure gauges should be attached. Liquid charging is faster. If R-404A or R-507 is used, liquid charging is mandatory. R-404A and R-507 refrigerant cylinders have a dip tube and liquid is charged with the cylinder upright. Break the final vacuum by charging liquid refrigerant into the receiver outlet valve access or the area of liquid line downstream from the receiver outlet.




Approximately 50 to 60% of the system charge can usually be injected into the receiver area before it is necessary to start the compressor for the system to accept more refrigerant . It may be necessary to throttle the compressor suction valve to keep suction pressures reasonable and prevent tripouts during charging and pull-down. If it is necessary to add liquid refrigerant to the suction side, a full control ball valve must be used in the charging line to slowly meter refrigerant vapor into the system. If the condensing temperature is 105°F or greater, charge the system until the sight glass just clears, being careful not overcharge. If the condensing temperature is below 105°F, a part of the condenser coil can be blocked to raise the condensing temperature to 105°F. Be careful not to block the air blast against the compressor. This procedure satisfies systems with floating head pressure control. Follow the same procedure for systems with low-ambient flooded condenser head pressure control. With 105°F condensing temperature, charge until the sight glass just clears. Then accurately weigh in the additional pounds of refrigerant specified in the chart. There is also a charging tag on the unit. The pounds specified on the tag supercedes this IOM. This will provide adequate charge for all ambient operation. The actual charge should not exceed the calculated systems capacity. After system charging and room pull down is complete , test the ability of the system to successfully pump down. Raise the room thermostat setting to close the liquid solenoid. The system must pump down and shut off at the low pressure cutout setting. Unblock the condenser coil and return the room thermostat to the desired setting.

The first two to three hours of operation after start-up is a critical time. Do not just start-up and walk away. Watch for floodback and adjust the expansion valve if necessary. Observe system pressures. Check all fans on the evaporator and condensing unit to be sure they are operational and turning the proper direction. Record the pounds of refrigerant charged into the system. Check the compressor oil level frequently. On low temperature systems the fan delay control may cycle the evaporator fans. To keep the fans on until the room pulls down, it may be necessary to jumper the fan delay control. Check voltage and amperage at the compressor. Voltage must be within 10% of the specplate rating. Amperage should be approximately equal across all three lines. Check the piping for vibration and add supports if needed. Check electrical conduit for vibration and route to prevent contact with tubing. Don't forget to remove the fan delay jumper if one was used. Also, fully open the suction valve.

BONARIQFIELD PUPLICATIONS

INTRODUCING APPLIANCES MANAGEMENT TIPS (APPLIMAT)

APPLIMAT is the short form of Appliances Management Tips. We thought it wise that customers / end-users of Appliances deserves more care, attention, enlightenment and education in terms of managing their appliances hence this publication, APPLIMAT.

OUR VISION

The vision of APPLIMAT is to create a more reliable and accessible manufacture's platform through which home appliances users are properly educated and guided on how to manage their appliances more effectively to avoid damages that may occur out of wrong usage application, mistakes or ignorant.

OUR MISSION

The mission of APPLIMAT is to provide a wide range of Appliances Management Tips on behalf of the manufacturers via our website www.bonariqfield.com and other social media platforms as well as electronic & print media with the ultimate purpose of rendering technical support services to the end-users where necessary.

OUR OBJECTIVES

The objective of APPLIMAT is to directly impact on the end-users of all brands of appliances as a way of giving them sense of value for their money by the manufacturers / brand owners.

SOURCE OF PUBLICATION

APPLIMAT is a technical support publication of **BONARIFIELD GLOBAL SERVICES**, a registered company in Nigeria that provides expertise in the field of Technical Services in this part of the world. We ventured into this publications haven identified common problems associated with the use of appliances in Nigeria.

APPLIMAT 7 KEY POINTS

We have identified common problems associated with the use of appliances in this part of the world. Many end-users of appliances do complain they are not satisfied by the performance and efficiency of their appliances in respective of the brands. Thousands of users still have their appliances at various service centers for both major and minor repairs and this may have taken months or even years without priority attention by these services center, and as a result of this unprofessional approach, thousands of users are crying out and lamenting for technical help just to have their appliances working as it should. The question remains that, if the service centers cannot solve their problems then who can?

HOWEVER, THERE ARE TWO KINDS OF FAULTS IN EVERY APPLIANCE:

a. **Minor Faults**: requires simple repairs at home.
b. **Major Faults**: requires major repairs with parts at the service centres.

c **Minor Faults** can be prevented by the customer if properly educated on how to manage each home appliance and may not need to be moved to service centre.

d **Major faults** require the attention of a trained service centre engineer if the equipment is not movable.

As an end-user, there are things you need to know before and after purchasing /buying your choice appliances.

APPLIMAT 7 KEY POINT QUESTIONS

1. WHERE TO BUY?
2. QUESTIONS TO ASK BEFORE BUYING?
3. WHAT TO KNOW BEFORE AND AFTER BUYING?
4. WHAT ARE THE VOLTAGE INTAKE /INPUT OF THE PRODUCT BEFORE BUYING?
5. HOW TO USE AND PROTECT AFTER BUYING?
6. THE WARRANTY POLICY, TERMS & CONDITION?
7. HOW TO INSTALL & WHO TO INSTALL AFTER BUYING TO AVOID INSTALLATION ERROR?

a. Can I return these appliances if I don't get the expected performance?

b. In the cause of using this appliance if I discover this wasn't exactly what I wanted that you convinced me against my wish can I return it for a change?

b. If I encounter any after purchase problems and call for change would you respond and change it immediately?

d. What are the functions and features of this appliance and if I don't have it function exactly as you have explained what would be your reaction when I complain?

e. Do you have a service center with trained and qualified engineers / technicians?

1. WHERE TO BUY: Appliances are the most essential needs in every home, offices, companies & industries etc. (various types of electronics and mechanical equipments) Television, UPS & Inverter Systems, Computers, Refrigerators, Air –Conditioners, Production Machines, Washing or Drying Machines etc. Note, appliances are not just for decoration; they are essentially needed to meet our basic day to day lifestyle in terms of attaining ease and comfortable living. Knowing the right place to buy our home appliances is as important as knowing the right school to enroll our children. So when you buy your appliances at the right place you would not experience any future trouble using it or after purchase faults. So first thing you must know is the right place to buy your appliances (where to buy).

2. QUESTIONS TO ASK BEFORE BUYING: Though you may know the right place to buy but if you do not ask the right questions you may as well buy the wrong appliances. It could be very devastating and annoying to use your hard earned money to purchase the wrong thing at the right place. Note, when you walk into any appliances showroom the first thing you must have at the back of your mind is that the marketers there are not your friends. Yes, they might smile with you, laugh and crack jokes but it does not end there. What the marketers need is your money; to have you buying their products. In this case, they would have to convince you using their powerful marketing prowells, but the question is, are you buying what you really wanted or you are just bowing to the marketer's pressure. Your questions should be based on the following:



3. WHAT TO KNOW BEFORE AND AFTER BUYING: Find out if you are directly dealing with the company or if you are dealing with an individual marketer mediating in between you and the company as a third party. The implications are that this third party mediator might withhold the promo benefits from you because of your ignorance. So you must know the following facts before buying:

- Is this product on promo?
- What do I stand to benefit if I buy this product?
- Can I see the promo flyers from the company?

If you don't get reasonable answer please do not patronize them go to somewhere else where you can be properly informed and of course you should know when a marketer is been economical with the truth to you. It is always advisable to carry out personal findings directly from the manufacturer of the appliances you wish to buy; doing this will give you better edge to prevail on the marketers when you arrive at the showroom. In this case you should be the one telling them what you want and how it should be with boldness.




4. WHAT IS THE VOLTAGE INTAKE (INPUT) OF THE APPLIANCES: Note that voltage output is very important to the performance of every appliance. Therefore you must ensure that your voltage is good enough to power your appliances to avoid power surge (bad voltage output) capable of damaging your appliances. The maximum required voltage in this part of the world is 220-240 volts, while the minimum is 180-200 volts. In some cases, you might require a stabilizer, this is basically for all the appliances that requires minimum of 200 volts to run. However, there are appliances that are designed to run with low voltage eg, appliances with inverter card and step down device that requires only 110 – 120 volts. Please, note that such appliances does not require any additional voltage booster, they only require power surge protectors, AVR or step down devices which in most cases are inbuilt. However, if you can keep to these principles be rest assured that your home appliances will stand the test of time and you will surely have value for your money as well.

5. HOW TO USE AND PROTECT AFTER BUYING: Take your time to go through the manufacturers' manual, answers to all your questions are already provided by the manufacturers in the manual. If you can read the manual carefully and understand the instructions therein then you would be able to protect your appliances at all time. But situations where you find it difficult to use the manufacturers' manual then please always call on the services center for all your questions and you will get technical support. You do not call on freelance technicians to work on your appliances while it is still under warranty to enable you protect your appliances warranty coverage after buying; make sure you ask for the direct service center number to call whenever you encounter any problem using your appliances.

6. THE WARRANTY POLICY, TERMS & CONDITION: As long as you want to enjoy your after purchase warranty, you must as well try to keep to the warranty terms & conditions. You must not invite a third party technician to work on your appliances while still under warranty as it will amount to abuse of warranty Policy. Also ensure that you do not patronize roadside appliances sellers where you cannot enjoy good warranty. Ask questions to know everything you have to know concerning your appliances warranty duration, as to know whether the product warranty covers 1 year, 2 years or 3 years warranty duration. Do not just buy your appliances and walk away, ensure to know the warranty policies, terms and conditions. And make sure that all of these reflects on the receipt.

7. HOW TO INSTALL & WHO TO INSTALL AFTER BUYING TO AVOID INSTALLATION ERROR: To avoid installation error, the first question you must ask after buying your appliances is who to install and how to install. This is basically for those appliances that require professional installations, such as: Production Machines, Washing & Drying Machines, Air conditioning units, Industrial and Side-by-side Refrigerating units with flow jets, Industrial UPS & Inverter Systems (AC/DC Power Solutions), LED / Flat-screen Television sets etc. insist on getting the best installer to avoid after

AIR-CONDITION INSTALLATION: The installer must ensure proper and un-noticeable slopping of the split indoor unit to enable the water drains freely through the water hose. The installer must ensure proper joint coupling to avoid leakage of refrigerants.

REFRIGERATOR INSTALLATION: Anytime you transport your refrigerator from the show room or service center to your resident, do not power it immediately. Allow it to settle down for about 5 hours to enable the capillary D oil flow back into the compressor mechanism and ready to start proper when powered. In the case of refrigerator that uses flow jet (side-side) you need a professional installer to install the flow jet correctly otherwise the flow jet could develop fault and get damaged.

WASHING MACHINE INSTALLATION: Installation of your washing machine is not a total job of a plumber. A plumber is required for the water inlet & outlet piping but he must be guided by a real professional in the field who determines the best way to install the machine based on manufacturers recommendation & installation standard.

LED/FLAT SCREEN TELEVISION: LED/flat screen Televisions usually require wall brackets to install them on the wall. The same method as explained above is also applicable especially if you want them on the wall and professionally done too.

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NEXT SEGMENTS INCLUDE:

To Feature On TV, Radio, Social Media and Magazines.

· Visit Service centers for technical tips and enlightenments with the service center technicians/engineers. Also inspect the service center and their facilities, find out how they have been relating with appliances users so far.

· Visit users for interactions and tips on how to manage their appliances more effectively also to know how they have enjoyed using the appliances in their possession no matter the brand.

· Conduct a monthly chat rating for different appliances manufacturers by identifying with their product and brands as a way of attracting more users to buy products that top our monthly chat rating.

· Meet with key players in the manufacturing industries to chat the way forward as well as their achievements so far etc.

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CLIENTS

Bonariqfield, either as main or sub-contractor has worked for the following clients and many more. Bonariqfield is capable of delivering wide rage of technical Services both in Nigeria and other West African counties

RACHAEL HOTEL
SAMSUNG ELECTRONICS
SIMS Nigeria Limited
ERICSSON
Ecobank The Pan African Bank
EMERSON
La Sien BOTTLING COMPANY LIMITED
MONI PULO (PETROLEUM DEVELOPMENT)
CCECC
CHAPEL OF GOD INT'L WORSHIP CENTRE
O.B. LULU-BRIGGS FOUNDATION CARE FOR LIFE
intels Integrated Logistic Services
ShopRite
MULTI-LINKS Telkom Touching Lives
SLOT ..all about image
NDDC
NEXT CASH & CARRY
minerva HealthCare & Medical Tourism
updc
RIFITEL NIGERIA LIMITED RNL
CETCO OILFIELD SERVICES
GARDEN CITY MALL
PORT HARCOURT MALL
THE REDEEMED CHRISTIAN CHURCH OF GOD
DELTAAFRIK ENGINEERING LTD
NDBDA Niger Delta Basin Development
airtel
MTN
GTBank

OUR PEOPLE

Our business is built on integrity, honesty, fair dealing and legal compliance, and we expect our team members to live these values every day.






OUR GALLERY

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