SAMKUN CENTURY CO.,LTD.

- ★WATER TREATMENT EQUIPMENT (BWTS, F.W. GENERATOR, F.W.SUPPLY UNIT, H.P. PUMP UNIT, etc.)
- ★ON SHORE PLANT (WATER TREATMENT SYS, WASTE WATER TREATMENT SYS)







CEO Message



First of all, we would like to cordially express our gratitude for your continuing interest and support.

Samkun Century was established in 1989, and has since advanced the innovation of new technology for more than 20 years. Our willingness and ability to take on new challenges have driven our corporate success while contributing to the development of the marine equipment industry.

We have persevered in our efforts to supply the best quality and service to our clients while always following the motto, " Always, like the beginning". We will strive to make positive changes in the environment and contribute to humanity and society for future generations.

Thank you.

President JUNG IL KANG



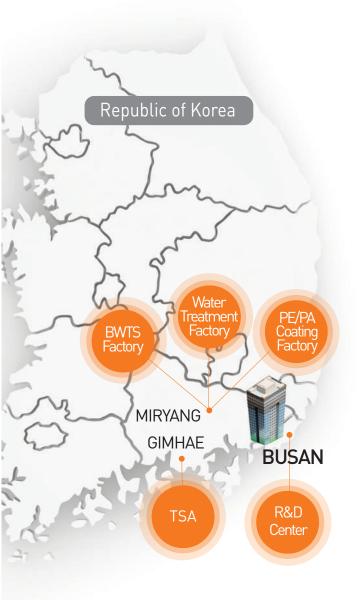
History of Samkun Century





Local Factory Network







R&D Center

- ► Technical Design
- ▶ Research & Development

8F, Sporex BD, 13, Geumgok-daero 285beon-gil,

Buk-gu, Busan

Tel: 82-55-338-3030 Fax: 82-55-332-7123

E-Mail: sk@samkunok.com



BWTS/Water Treatment Factory/PE/PA/Rubber Coating Factory

- ▶ BWTS
- ▶ Pipe Spool
- Sterilizer (UV,Ozone,Silver Ion, Auto Chlorinator)
- ► Fresh Water Supply
- ► PE/PA Coating
- ► Rubber Coating

405, Miyul-ro, Samnangjin-eup, Miryang-si, Gyeongsangnam-do

Tel: 82-55-338-3030 Fax: 82-55-325-0808

E-Mail: sk@samkunok.com



TSA Coating Factory

► Metalizing (TSA)

228, Yeocha-ro, Sangdong-myeon, Gimhae-si, Gyeongsangnam-do Tel: 82-55-335-3030 Fax: 82-55-312-0685

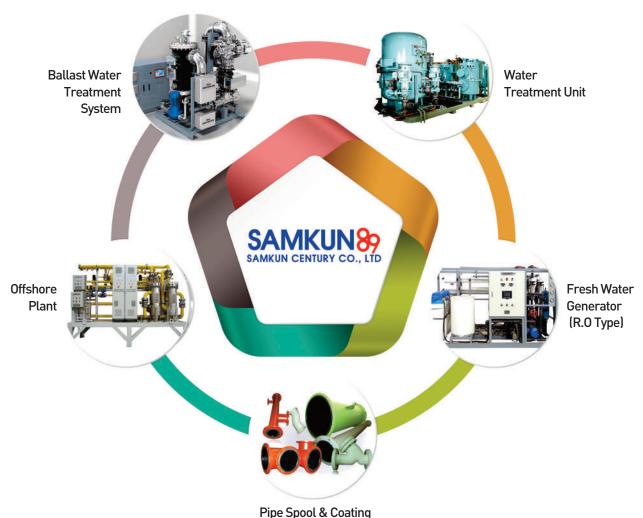
E-Mail: pnc@samkunok.com



Samkun Century has been a professional company based on steady growth and solid profit structure.



We have advanced the development of new technologies and have established a solid foothold in the marine equipment industry based on a solid profit structure. We started in water treatment equipment specializing by including many kinds of sterilizer for 30 years. Since then, to strengthen our competitiveness in the global market, our company has diversified into offshore plants, ballast water treatment systems, coating, painting and pipe spools.



ARA PLASMA BWTS



IMO Regulation

D-2 Ballast Water Performance Standard

 \triangleright Over $50\mu m$: Less than $10inds/m^3$ \triangleright $10-50\mu m$: Less than 10inds/ml

▶ Bacteria

→ Escherichia Coli : Less than 250cfu/100ml → Intestinal Enterococci : Less than 100cfu/100ml

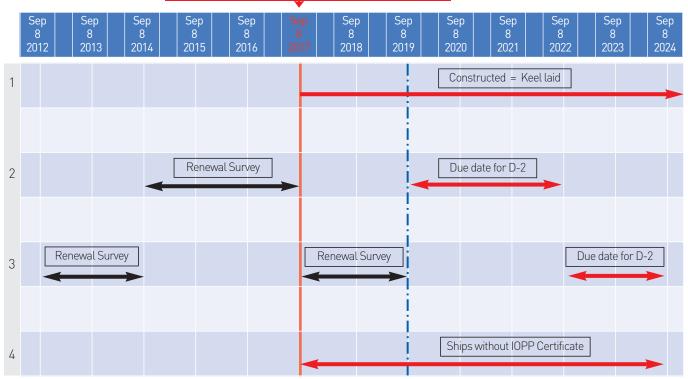
→ Vibrio Cholerea: Less than 1cfu/100ml

Ballast Water Treatment Implementation Schedule

New Ships should have BWTS or BWMS installed starting from 2017. 09. 08

Existing Ships (2017. 09. 08) D-2 Implementation Schedules

ENTRY INTO FORCE OF BWMS CONVENTION



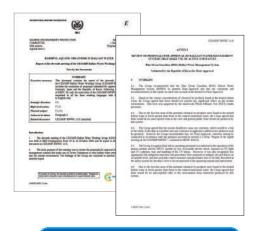
- 1. Ships constructed on or after 8 September 2017 shall comply with the D-2 standard for ships delivery (Constructed = Keel Laid).
- 2. In the case where a previous IOPP renewal survey had been completed between 8 September 2014 and 7 September 2017, the ships shall comply with the D-2 standard by the first IOPP renewal survey after entry into the force of the Convention.
- 3. In the case where a previous IOPP renewal survey had been completed between 8 September 2012 and 7 September 2014, the ships shall comply with the D-2 standard by the second IOPP renewal survey after entry into the force of the Convention.
- 4. Ships not subject to the IOPP renewal survey (normally less than 400GT) shall comply with the D-2 standard by 8 September 2024.





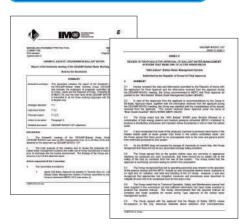
ARA PLASMA BWTS, which was developed by the SAMKUN CENTURY Company, acquired Basic approval for the ballast water treatment system during the MEPC 60 (MEPC 60/2/15) in March 2010 and Final approval during the MEPC 61 (MEPC 61/2/5) in September 2010.

Basic Approval (Mar. 2010)





Final Approval (Oct. 2010)



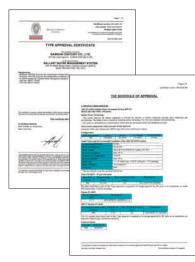




KR Class (Dec.2013)



BV Class (Feb.2015)



RS Class (July.2017)



USCG AMS & USCG T/A LOI



ARA PLASMA BWTS



Filtration



- It removes large particles and organisms larger than 50 µm in ballast water.
- It automatically removes any substances in filter cartridges by housing an internal pressure increase.
- It is highly accurate and reliable.
- ► Specification (for 250m3/hr)
 - Mesh size : 50 μm
 - Design pressure : 6.6 bar
 - Max. working temp: 50 °C
- Power Source : 3 Phase, AC380/440V 50/60Hz

Low Voltage Plasma



- It generates plasma underwater by using a low-voltage generator.
- A pressure shock wave is produced by a high-energy plasma arc.
- Shockwave destroys targeted micro-organisms by causing physical damage to their cell membranes underwater.
- ► Specification (for 250m3/hr)
 - Power Source Input: 3Phase, AC380/440V 50/60Hz
 - Output: 2kW
 - Plasma chamber: Carbon steel & PE coating

MPUV



- It has a high performance in disinfecting bacteria and viruses.
- ► There are no formations of residual toxins or harmful substances.
- ► Uses a wavelength of UV-C(200~280nm) to sterilize microorganisms.
- ► Specification (for 250m3/hr)
 - UV sensor: 0~500mW/cm²
 - Temperature sensor : PT-100
 - Wiper Seal : EPDM
 - UV chamber: STS 316L





Control Panel



- ▶ Users conveniently operate "ARA PLASMA BWTS" by touchscreen.
- ▶ The status of each module and any alarm messages are easily monitored in realtime.
- ▶ The Control panel consists of four parts; monitoring & operating, main switch, emergency stop switch and cabinet ventilators.
- ► Specification (for 250m3/hr)
 - Control panel type : PLC type (Auto)
 - Power Source : AC 230V, 1Phase & DC 24V
 - Frequency: 50/60Hz
 - Color : Munsell no. 7.5BG 7/2

SHOP TEST







MODEL

No	Model	Capacity
1	ARA-011	$100\mathrm{m}^3/\mathrm{hr}$
2	ARA-017	$150\mathrm{m}^3/\mathrm{hr}$
3	ARA-028	$250\mathrm{m}^3/\mathrm{hr}$
4	ARA-039	$350\mathrm{m}^3/\mathrm{hr}$
5	ARA-063	550 m³/hr
6	ARA-092	$800\mathrm{m}^3/\mathrm{hr}$
7	ARA-126	1,100 m³/hr
8	ARA-150	1,300 m³/hr

ARA PLASMA BWTS

Advantages

Eco-Friendly

- No chemical substances used
- No by-products generated
- No neutralizing agents used, therefore no secondary pollutants

Convenience

- Simple maintenance
- Easy installation to newly constructed and existing vessels
- Easy operation by an automatic control system

Cost-Effective

- Competitive Price
- Compact size with minimal foot print
- Low Power Consumption

Advantage

- Exceptional performance of the ARA PLASMA BWTS in high levels of turbidity
- Differentiation of leakage sensor in MPUV chamber
- Use of inner polyethylene coating pipes

Safety

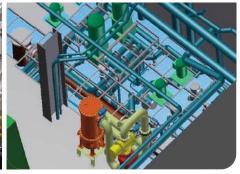
- Safety for the marine environment
- Safety for your assets and people



1. Pre-survey & Design







2. Installation on-board







3. Commissioning & Training







Offshore Plant Division

Since 1989, Samkun Century has manufactured and supplied Fresh water & Portable water treatment systems to our clients. We have always strived to be innovative by developing new products; products like our UV sterilizer, Re-hardening Filter, and Silver Ion sterilizer.

And because of our drive for excellence, we now supply technologyintensive Fresh Water Supply Units.



(TOTAL PAZFOR FPSO)





(TOTAL PAZFOR FPSO)

HIGH PRESSURE WASHING PUMP UNIT

HYDROPHORE TANK (TOTAL PAZFOR FPSO)







SEA WATER AUTO FILTER

INVERTER TYPE HYDROPHORE SYSTEM

PRESSURE VESSEL





P. P COVER

GREASE TRAP

SEA WATER SUPPLY PLANT (SEA WATER AUTO FILTER)





	OWNER	PROJECT	SHIPYARD
1	BP	Atlantis Rig	DSME
2	CHEVRON	Agbami FPS0	DSME
3	SEA DRILL	Drill Rig	DSME
4	ODFJELL	Semi-sub Rig	DSME
5	PETROSERV	Drill Rig	DSME
6	ODFJELL	semi-sub Rig	DSME
7	TRANSOCEAN	Drillship	DSME
8	GRUPO R	Drill Rig	DSME
9	ODFJELL	DP Moored Rig	DSME
10	TMT	Drillship	DSME
11	ODBRECHT	Drillship	DSME
12	PETROSERV	Drill Rig	DSME
13	TOTAL	Pazflor FPS0	DSME
14	TOTAL	CLOV FPSO	DSME
15	RWEI	Wind Turbine Installation Vessel	DSME
16	STATOIL	Semi-rig	DSME
17	EXXONMOBIL	ARKUTUN-DAGI Fixed Platform	DSME
18	TRANSOCEAN	Drillship	DSME
19	ATWOOD	Drillship	DSME
20	VANTAGE	Drillship	DSME
21	ODBRECHT	Offshore Pipe Laying Support Vessel	DSME
22	SEA DRILL	Rig	DSME
23	PETRONAS	LNG FPS0	DSME
24	TRANSOCEAN	Drillship	DSME
25	TRANSOCEAN	Drillship	HHI
26	GLOBAL SANTA FE	Drillship	ННІ
27	DOCKWISE, NETHERLAND	Semi sub heavy transport vessel	ННІ
28	DEAW00 ENGINEERING	SHWE Field	ННІ
29	WOODSIDE ENERGY LTD.	NRB PLATFORM	ННІ
30	NOBLE	Drillship	HHI
31	DIAMOND	Drillship	HHI
32	SEA DRILL	Semi sub drilling rig	HHI
33	DOLPHIN	Drillship	HHI
34	ROWAN	Drillship	HHI
35	SEA LION	Multi Purpose Offshore Construction Vessel	ННІ
36	EDDA	Offshore accommodation Vessel	HHI
37	DIAMOND	Drillship	HHI
38	TOTAL	Moho Nord FPU	HHI
39	COROCORO	FPS0	SHI
40	ENFIELD	FPS0	SHI

	OWNER	PROJECT	SHIPYARD
41	TANK PACIFIC	Drillship	SHI
42	STENA	Drillship	SHI
43	MOSVOLD	Drillship	SHI
44	TANK PACIFIC	Drillship	SHI
45	NEXUS	FPS0	SHI
46	PETROBASS	Drillship	SHI
47	STENA	Drillship	SHI
48	PRIDE	Drillship	SHI
49	STENA	Drillship	SHI
50	TANK PACIFIC	Drillship	SHI
51	SAIPEM	Drillship	SHI
52	SCHAHIN	Drillship	SHI
53	BP	SKARV FPS0	SHI
54	VASHI	ONGC	SHI
55	QGOG	Drillship	SHI
56	SEA DRILL	Drillship	SHI
57	TEEKAY	Petrojarl Knarr FPS0	SHI
58	OCEAN RIG	Drillship	SHI
59	MAERSKDRILLING	Drillship	SHI
60	SEA DRILL	Drillship	SHI
61	ENSC0	Drillship	SHI
62	OCEAN RIG	Drillship	SHI
63	STATOIL	FSU	SHI
64	QGOG	Drillship	SHI
65	SEA JACKS	WTIV	SHI
66	ENSC0	Drillship	SHI
67	STATOIL MARINER	FSU	SHI
68	PDC	Drillship	SHI
69	STATOIL	Drilling Jack-up	SHI
70	SHELL	Prelude LNG FPS0	SHI
71	TOTAL	Egina FPS0	SHI
72	TECHNIP	Pipe Layer	SHI
73	1000	FSU	STX
74	NOBLE	Drillship	STX
75	PETROSERV	FDPSO Dynamic Producer	STX
76	CHEVRON MODEC	FPS0	SINGAPORE
77	OCEAN APEX	Semi sub mersible drillship	SINGAPORE
78	SEADRILL	Drillship	SINGAPORE
79	PETROBRASS / TANKPACIFIC	FS0	CHINA

Water Treatment Division



FRESH WATER SUPPLY PLANT

- ▶ Simple Construction
- ► Easy Installation
- ▶ Easy Maintenance
- Easy Operation The fresh water supply unit supplies fresh, warm and cold drinking water to the crew and consists of a technical system of a water tank, sterilizer, re-hardening filter(mineralizer), calorifier and pumps.
- ► Capacity: 1,000 ~ 10,000 L/hr

AUTO CHLORINATOR (STERIIZER)



The function of the Auto Chlorinator is to provide chlorine to water in order to sterilize water which contains a variety of bacteria, bacillus, etc. HOCL & OH Radicals are formed when chlorine dissolves in water. And they have a strong oxidizing power to destroy microorganisms during disinfection . This method can disinfect water with ease and over long periods of time.

► Capacity: 1,000 ~ 50,000L/hr

UV STERILIZER



The UV sterilizer of Samkun Century has a superior operating system. It protects mineral components, but disinfects typical viruses, colitis germs, and bacteria in water. Emission of ultra violet rays: 253.7nm

(Most effective wavelength for removing bacteria)

► Capacity: 1,000 ~ 30,000L/Hr





F.W GENERATOR (RO Type)

Reverse Osmosis is most commonly known for its use in drinking water purification from seawater, removing salt and other substances.

Reverse Osmosis is the process of forcing a solvent through a membrane from a region of high solute concentration to a region of low solute concentration by applying a pressure in excess of the osmotic pressure.

► Capacity: 5 Ton/day ~ 200 Ton/day

SILVER ION STERILIZER



The bactericidal effect of silver has been useful knowledge since ancient times. Silver foils were used for treating wounds and silver vessels made it possible to store water. We supply a silver ion sterilizer which removes microor ganisms by a catalytic

Capacity: 1,000 ~ 30,000L/Hr

OZONE GENERATOR (STERIIZER)



Ozone has been used for disinfection of drinking water in the municipal water industry for over 100 years. Ozone can be used for water and air treatment. When ozone disinfects or breaks down harmful bacteria or pollutants, there are generally no by-products. In a short period of time, all odors are simply removed.

Water Treatment Division



MINERALIZER (RE-HARDENING FILTER)

The water which is generated by a freshwater generator, can not be used as drinking water directly, because of its pH value, hardness, and insufficient mineral components.

Therefore using a mineralizer, increases hardness, pH-value, and mineral components.

- Maintenance -
- Dolomite&re-hardening materials are usually changed 3 times per month
 - (If the pH-value is lower than 6.5, a recharging activity must be per formed)
- ► Capacity: 1,000 ~ 30,000 L/hr

Hydrophore system of VFD (Variable Frequency drive)



A specific type of hydrophore system is needed for the efficiency of maintenance and saving energy. Most conventional hydrophore tanks is too heavy and occupies too much space.

A VFD system is used to control process flow without the use of a separate controller. Suitable sensors and electronics are used to interface the driven equipment with the VFD.

HYDROPHORE TANK



The Hydrophore tank is a pressurized vessel that is used for drinking or the technical water supply.

The hydrophore tank is a welded steel interior which is specially coated with epoxy (PE coating or Rubber coating), a manhole is provided on the tank for inspection or the cleaning of the interior.

All products test the welding point by penetration inspection.

The Hydrophore unit is available in sizes from 100L to 5000L.





HOT WATER CALORIFIER

In the galley, every time hot water is needed, our Hot Water calorifier is the perfect solution. It is used for showers, cooking, feeding

Calorifiers supplied for ships are specially designed to be durable from corrosion and vibration, with a long life span, and easy mainte-

► Capacity: 50 ~ 30,000 L/hr ► Temperature : 30~ 97 °C

AIR DRYER





AIR DRYER (HEATLESS TYPE)

REFRIGERATED AIR DRYER

Excessive water, and atmospheric contaminants in compressed air can cause a variety of operational problems for users of compressed air. These include freezing of outdoor airlines, corrosion in piping and equipment, malfunctioning of pneumatic process control instruments, fouling of processes and products, and more.

To prevent these problems, an air dryer is used for removing water vapor from compressed air.

HEATER



LO PRE-HEATER

It makes proper viscosity of lubricating oil for the purifier and ME/GE by heating lubricating oil at a constant temperature.

FO PRE- HEATER

Pre-heating lowers the viscosity of heavy fuel so that it can be properly atomized by the burner.

M/E JACKET PRE-HEATER

It keeps cooling water at a constant temperature, when the engine is stopped due to repairs. This is the way to prevent problems which can occur by lowered temperature.

Water Treatment Division



DRINKING WATER FOUNTAIN

The Drinking water fountain is composed of a compressor, condenser, evaporator, silver ion filter, etc. The drinking water provided from the drinking water fountain is directly connected to the fresh water line. Also, the drinking water fountain is able to provide healthy and fine tasting water due to a Silver Carbon Filter which consistently sterilizes its contents. Silver carbon is added to improve the continuity of sterilization.

- ▶ Floor stand type
- ▶ Wall mount type
- ▶ Cold water fountain
- ▶ Hot & Cold water fountain

HOT WATER BOILER



The Hot Water boiler is a small electronic appliance used for boiling water and maintaining it at a constant temperature in the galley.

- ▶ Capacity: 10L
- ▶ Wall mount type

GREASE TRAP



The Grease Trap separates the grease and solids from waste water in the galley.

It is typically small enough to be installed beneath or adjacent to a sewer line.

▶ Capacity: 20GPM





FAN HEATER

The Fan heater works by using a fan to pass air over a heat element.

The Portable type is for ease in moving with a stainless steel heating element and all devices provide a dual protection against overheating.

It has a built-in thermostat and regular power, and a powered whole metal casing cover to resist rust.

- ▶ Heating element : Stainless Steel
- ▶ Adjustable thermostat control Overheat protection
- ▶ With Fan & Cooling
- ▶ Free standing & Portable type

EMERGENCY EYE WASH & SHOWER

The Emergency eye wash & shower is essential equipment when using chemicals and hazardous substances.

Its purpose is to reduce workplace injury and keep workers away from various dangers.

- ▶ Durable Excellent raw material / Anti corrosion
- ▶ Reliable High quality
- ▶ Easy Installation



Onshore Plant Division

Water Treatment System for Onshore Plant



▶ Main product : CPP SYSTEM

▶ Project : S-0il Residue Upgrading Complex Project

Client: S-OIL



















INSTALLATION VIEW





Main product : Demineralized Water Package

▶ Project : NSRP Complex Project ▶ Client : KOLON e Engineering

Onshore Plant Division

Water Treatment System for Onshore Plant



▶ Main product : Side Steam Filter & Portable Water System

▶ Project : S-0il Residue Upgrading Complex Project

Client: S-OIL









INSTALLATION VIEW





Main product : Demi Water Treatment System

▶ Project : S-0il Residue Upgrading Complex Project

Client: S-OIL

Waste Water Treatment System for Onshore Plant









UNIT MODULE (SKID)







FRESH WATER SUPPLY PLANT





F.O. SUPPLY UNIT (FOR M/E)







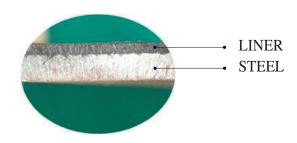
Coating Division



The Coating division supplies outstanding products which have both excellent mechanical properties from steel pipes and rust prevention properties from plastic. The Coating is resistant to seawater and organic solvents, and also doesn't contain dioxins and VOCs (Volatile organic compounds).

We maximize technical efficiency to expand usage of PE/PA coating from sea to land based on our core PE, PA Coating Technology.

PE COATING (POLYETHYLENE)





PE Coating has been applied to Ships, Off shore plants, Power Plants, Water-Supply pipes, and Steel tube plants. Main products especially have coated steel pipes for Vessels, Offshore plants and covered-steel pipes.

Applications

- Sea water line for Ship
- Offshore Plant
- Power Plant

- ▶ Cable Tray
- Water Pipe for Industrial
- Water Supply & Sewage Pipe
- ▶ Chemical Plant



Coating Division

Samkun Century has a steel fabrication shop, Shot shop, Painting shop, and coating shop, and perform from various designs to construction based on accumulated technological Know-how and experience.

RUBBER COATING

This material has a large number of excellent characteristics. Our Rubber is flexible and resilient, strong, and easy to manufacture. Our rubber coated products have many advantages such as excellent anti-chemical properties, anti-corrosion properties and outstanding adhesion.





METALIZING COATING









PA COATING (POLYAMIDE)

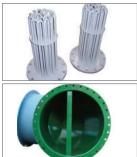
The best merits of PA Coating are its high physical intensity and low gas permeability. Therefore, PA coating is suitable for high-quality products and is also capable of working on complicated compositions. At the same time, it is harmless to humans.



TEFLON COATING

Teflon has unlimited application range from the general manufacturing industry, to high-tech semiconductors, to even the aerospace industry.







Worldwige Neiwork



EUROPE

Greece

Sea Power Hellas Tel: 30-2104284170

Netherlands

Hyundai Engine Service Tel: 31-10-447-3457

Norway

GMC Maritime AS Tel: 47-518-48000

Russia

Taenam Global Tel: 82-51-973-8068

AMERICA

USA (East)

All Marine Spares International Tel: 1-203-487-0422

USA (West)

Sammar Supply Co, Tel: 1-909-628-9400

Brazil

Metalock

Tel: 55-13-3226-4686

ASIA

Singapore

Paterson Integrated Engineering Tel: 65-6760-0928

Taiwan

Richtop Enterprise Tel: 86-7-5312365

Japan

Ushio Reinetso Co., ltd. Tel: 81-898-34-1203

MIDDLE EAST

Arab Emirates

Tensosys Fzco Tel : 971-4-324-7502

Oman

Petrohouse Tel : 968-248-15738

AFRICA

Nigeria

Platinum Samandy Ventures Tel: 234-807-407-2031

















