

# **S&N PUMP CO.**®



**WE ARE YOUR  
ENGINEERED OFFSHORE  
PUMPING SOLUTIONS  
GLOBAL PARTNER**

SUBMERSIBLE PUMPS    DEDICATED OVERBOARD PRELOAD PUMPS    BOTTOM SUCTION PUMPS  
VERTICAL TURBINE PUMPS    SHROUDED BOOSTER PUMPS    HORIZONTAL PUMPS  
SANITARY/POTABLE WATER SYSTEMS    ANTI-FOULING SYSTEMS    FIRE PUMP SKID PACKAGES  
ELECTRICAL CONTROLS    SUBMERSIBLE POWER CABLES    RISER COLUMN PIPES

**COMPLETE PUMP SYSTEMS**



**TRIDENT HYDRO SYSTEMS**

**PUMP PACKAGING SPECIALIST**

A JOINT VENTURE BETWEEN  
S&N PUMP CO. AND KNIGHTHAWK ENGINEERING

## MISSION

S&N Pump Company's believes in supporting our customers with quality products and service today, tomorrow, and into the future. We provide Professional Engineered Solutions backed by 50+ years of experience in dedicated sea water supply. Our focus is on safety in design and operation, local content, and service to our customers through our worldwide facilities.

## VISION

S&N Pump Company's will accomplish our goal by providing safe, cost-effective, and reliable, single-source solutions for global seawater needs, as well as, continuing to build long term relationships with clients, vendors, personnel, and National and Provincial Governments and local communities. We will deliver operational excellence through comprehensive product knowledge, quality training, dedicative safety practices, 24 hour customer support, and community out-reach.

## ENVIRONMENTAL, HEALTH, AND SAFETY POLICY STATEMENT

S&N Pump Co. is committed to conducting business in a manner that protects the health and safety of employees, contractors and the general public while maintaining the quality of the environment in which it is operated.

Through management, leadership, and employee involvement, S&N Pump Co. pledges to:

- Recognize that no business objective is so important that it will be pursued at the expense of the environment or while compromising health and safety.
- Comply with all applicable environmental, health and safety laws, regulations and company policies in all of our operations.

- Ensure every employee and contractor understands they are responsible and accountable for environmental, health and safety performance while conducting their business activities.
- Continually improve environmental, health and safety performance results with a management system designed to establish goals and assess performance.
- Continually endeavor to manage environmental, health and safety risk through contingency planning, emergency preparedness, response and recovery programs and the training of our employees in environmental, health and safety compliance.
- Identify and eliminate potential hazards. Control and safely manage those hazards that can not be eliminated.
- Promote open communication throughout the organization, the community and with applicable regulatory agencies on environmental, health and safety matters.



## COMPANY



Established in 1954, S&N Pump Co. has packaged seawater lift pump systems and related accessories exclusively to the seawater market for offshore applications since 1957.

### INNOVATION, QUALITY, RELIABILITY

S&N Pump Co., knows what is important to their customers and understands the challenges of the industry. From design, selection, and preventative maintenance, S&N's experienced staff provide solutions that aim at improving operational efficiency by designing and optimizing pump systems for offshore water requirements.

S&N has developed strong customer awareness by focusing on specific application requirements, addressing the market on a personal, professional, and technical level and working closely with customers to identify difficulties encountered offshore. It is S&N's commitment combined with quality products and worldwide support that distinguishes them as the authority for sea water pump equipment.



#### FROM TOP TO BOTTOM:

S&N Pump Co. Fabrication & Repair Crew; S&N Pump & Rewind Crew & Office Staff; S&N Pump Africa, Lda. Crew & Office Staff; S&N Pump S.E. Asia Singapore, Ltd. Crew & Office Staff

## HISTORY

The significant advances made in Offshore Technology are the results of efforts made by pioneers that recognized the emerging need to advance offshore exploration.



When S&N Pump Co. began in 1954, it started with little more than an idea to continue the advancement and development of the Oil and Gas Industry. With an open mind and appreciation for the industry, Emmett Stewart cofound S&N Pump Co.

Stewart helped develop solutions for use of submersible pumps in offshore applications. In 1957, S&N successfully installed their first offshore submersible pump equipment. The

S&N spirit continues with the current owners of S&N Pump Co. In addition to delivering quality products, premium performance and service, Board of Directors; Karen Stewart-Draper, David Draper, and Executive Vice President of Operations; Richard Draper, have introduced innovative equipment in:

- Offshore Oil & Gas Drilling and Production
- In-situ Gold and Uranium Solution Mining
- Pollution Monitoring & Recovery
- Offshore Emergency Fire Protection
- Anti-Fouling Equipment

### GROUND BREAKING INTEGRATION

To continue as a world class independent provider of sea water pumping technology and reliable service, S&N formed alliances with two leading pump manufacturers: WILO EMU and DESMI A/S.

### WILO EMU

In the mid 1990's, S & N Pump Co. and WILO EMU, a German Submersible Pump and Motor Manufacturer, joined to manufacture the world's first seawater submersible equipment designed for the offshore market.

### DESMI

DESMI and S&N recently signed exclusive agreements to continue introducing DESMI's Marine Pumps to drilling contractors and shipyards constructing new drilling vessels. DESMI has been supplying marine centrifugal and transfer pumps to the offshore shipping industry for over thirty years.

### INNOVATION THE WAY AHEAD

The method of integrating advanced technology and innovative engineering allows S&N to fabricate the most reliable pump systems. S&N has designed custom enhancements that provide their clients years of reliable service.

It is their involvement in developing and implementing innovative pumping systems and monitoring programs that allows S&N to continually meet or exceed the highest expectations of their customers.

## GLOBAL REACH



It is S&N's vision to continue expanding their business to support regional areas with local services and local content. Understanding the local supply chain and culture allows S&N to respond quickly and efficiently. S&N has strategically opened their doors around the world to provide rapid and valuable support where customers are most in need.

### EXPANSION INTO NEW AREAS

#### U.K.

S&N Pump and Rewind, Ltd. was established in 1992 to specialize in the repair, refurbishment, and rewind of submersible and vertical turbine pumps and motors. S&N Pump and Rewind, Ltd. takes pride in being the only inde-

pendent repair and rewind facility in the U.K. that offers complete repairs of all types of deepwell motors and pumps.

#### AFRICA

S&N expanded their operations in 2002, forming S&N Pump Africa, Lda - an Angolan Company - Joint Venture with Industria Ibinda. Africa headquarters are located in Luanda together with a complete workshop facility occupying 12 Acres in Terra Nova, Cabassango, Cabinda. S&N Pump Africa takes pride in being the first Oil Service Company in Angola operating in the community and being the only independent pump and motor repair and rewind facility in Angola for the Offshore Industry.

#### SINGAPORE

In 2005, S&N formed S&N Pump S.E. Asia Singapore Pte. Ltd. to provide new and re-conditioned equipment as well as technical services to rigs operating in the S.E. Asia/Pacific region. Today, this facility services the bulk of the world's rigs operating in the Pacific Rim with complete repair, testing, and service.

#### DUBAI

In the third quarter of 2008, S&N Pump Co. opened S&N Pump Middle East FZE to provide immediate local service and support to existing and future customers working in the Middle East Region.

With their strategic global footprint, S&N is able to provide rapid and valuable support to regions where customers require the same dedicated service they receive from S&N Pump Co. - Houston.

S&N's active approach into the Oil and Gas community aims to reduce logistical expenses and operational downtime, in turn, presenting local job and income opportunities and satisfying local content demands.

## SEAWATER LIFT AND FIRE WATER PUMPS

S&N pumps are precision-built, hydraulically and dynamically balanced, and heavy-duty seawater rated. They are specifically engineered for each offshore application.

### SUBMERSIBLE PUMPS

S&N Pump Co. provides four standard lines of electric submersible pumps for seawater lift.

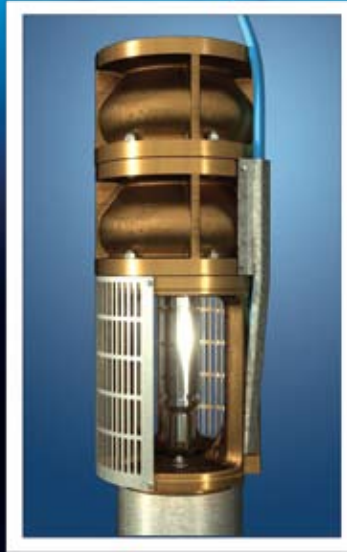
- Electric Submersible Pump
- Bottom Intake Pump
- Dedicated Overboard Preload
- Vertical Lineshaft Turbine

### APPLICATIONS

S&N Seawater Lift Pumps are used for various applications on the Jack-up, Semi-submersible, and Drilling and Production Platform rigs.

Applications include:

- Prefill Water
- Drill Water
- Potable & Sanitary
- Washdown Curtains
- Drill Water
- Diesel Fuel
- Cooling Water
- Firefighting Water
- Ballast Water
- Drilling Mud



**S&N Electric Submersible Pump**



**S&N Electric Submersible Bottom Intake Pump**

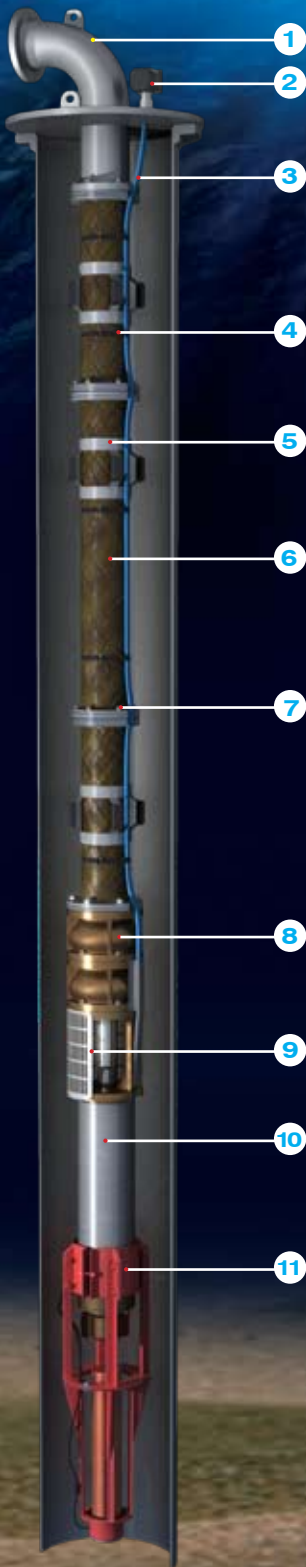


**S&N SONW Vertical Turbine Pump Bowl Assembly**



**S&N Dedicated Overboard Preload Pump**

# ELECTRIC SUBMERSIBLE PUMP SYSTEM



## 1. DISCHARGE HEAD ASSEMBLY

- Carbon Steel
- Stainless Steel
- Duplex Stainless Steel

## 2. JUNCTION BOX

- NEMA 4X
- Explosion Proof

## 3. SUBMERSIBLE POWER CABLE

Heavy-duty Seawater Rated

- Round
- Flat
- Armored
- Single-Core

## 4. CABLE BAND

Rubber bands with Stainless Steel Clips

## 5. COLUMN CENTRALIZER

- Stainless Steel Spring Centralizer with Polyurethane Pads
- Steel Integrated Centralizers

## 6. COLUMN PIPE

- Carbon Steel
- Fiberglass
- Stainless Steel
- Duplex Stainless Steel
- Copper Nickel

## 7. HARDWARE

- Stainless Steel with Teflon Coating
- K-500 Monel

## 8. PUMP BOWL ASSEMBLY

- Zinc-Free-Bronze with Nickel-Aluminum Impellers and Stainless Steel Shafting
- All Stainless Steel Construction
- All Duplex Stainless Steel Construction

## 9. INTAKE SCREEN

316 Stainless Steel

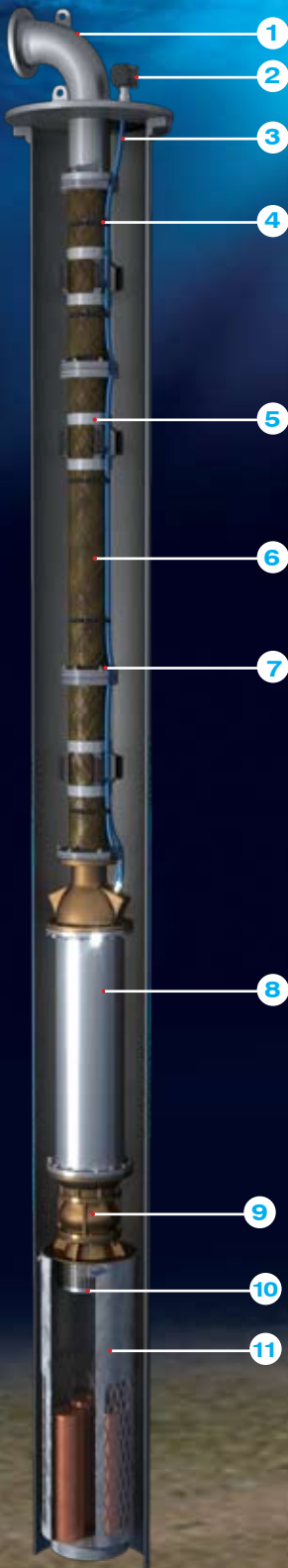
## 10. MOTOR SHROUD

- Zinc-Free Bronze
- Stainless Steel

## 11. SNSAFE™ SYSTEM

- Pump Mounted Clamp-on
- Suction Screen Mounted
- Inline System
- Multiple Port Tank System

# ELECTRIC SUBMERSIBLE BOTTOM INTAKE PUMP SYSTEM



## 1. DISCHARGE HEAD ASSEMBLY

- Carbon Steel
- Stainless Steel
- Duplex Stainless Steel

## 2. JUNCTION BOX

- NEMA 4X
- Explosion Proof

## 3. SUBMERSIBLE POWER CABLE

Heavy-duty Seawater Rated

- Round
- Flat
- Armored
- Single-Core

## 4. CABLE BAND

Rubber bands with Stainless Steel Clips

## 5. COLUMN CENTRALIZER

- Stainless Steel Spring Centralizer with Polyurethane Pads
- Steel Integrated Centralizers

## 6. COLUMN PIPE

- Carbon Steel
- Fiberglass
- Stainless Steel
- Duplex Stainless Steel
- Copper Nickel

## 7. HARDWARE

- Stainless Steel with Teflon Coating
- K-500 Monel

## 8. MOTOR SHROUD

- Zinc-Free Bronze
- Stainless Steel

## 9. PUMP BOWL ASSEMBLY

- Zinc-Free-Bronze with Nickel-Aluminum Impellers and Stainless Steel Shafting
- All Stainless Steel Construction
- All Duplex Stainless Steel Construction

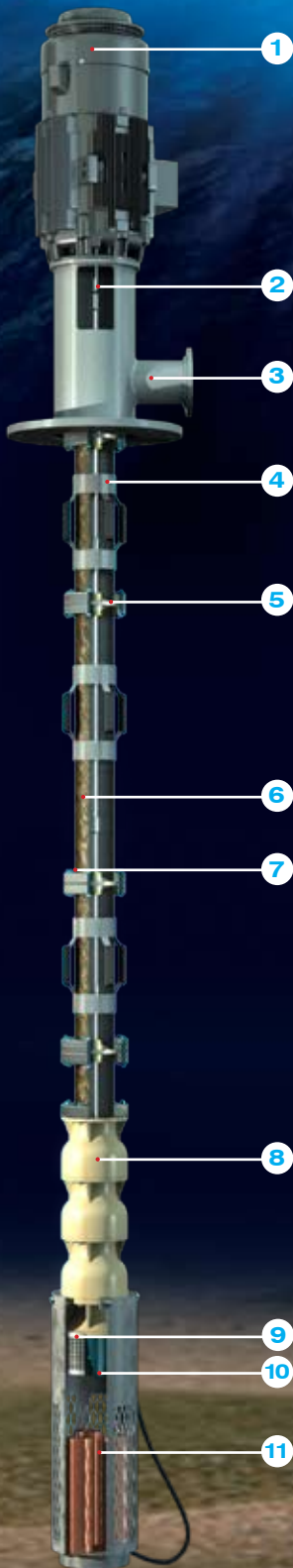
## 10. INTAKE SCREEN

316 Stainless Steel

## 11. SNSAFE™ SYSTEM

- Suction Screen Mounted
- Pump Mounted Clamp-on
- Inline System
- Multiple Port Tank System

# ELECTRIC VERTICAL TURBINE PUMP SYSTEM



## 1. ELECTRIC MOTOR

- Vertical Hollow Shaft
- Vertical Solid Shaft

## 2. SHAFT

- 316 Stainless Steel
- 17 4PH
- K-500 Monel

## 3. DISCHARGE HEAD

- Carbon Steel
- Stainless Steel

## 4. COLUMN CENTRALIZER

- Stainless Steel Spring Centralizer with Polyurethane Pads
- Steel Integrated Centralizers

## 5. RETAINER BEARING

- Bronze
- Stainless Steel

## 6. COLUMN PIPE

- Carbon Steel
- Fiberglass
- Stainless Steel
- Duplex Stainless Steel
- Copper Nickel

## 7. HARDWARE

- Stainless Steel with Teflon Coating
- K-500 Monel

## 8. PUMP BOWL ASSEMBLY

- Cast Iron
- Nickel Aluminum Bronze
- Duplex Stainless Steel

## 9. SUCTION SCREEN

- 316 Stainless Steel

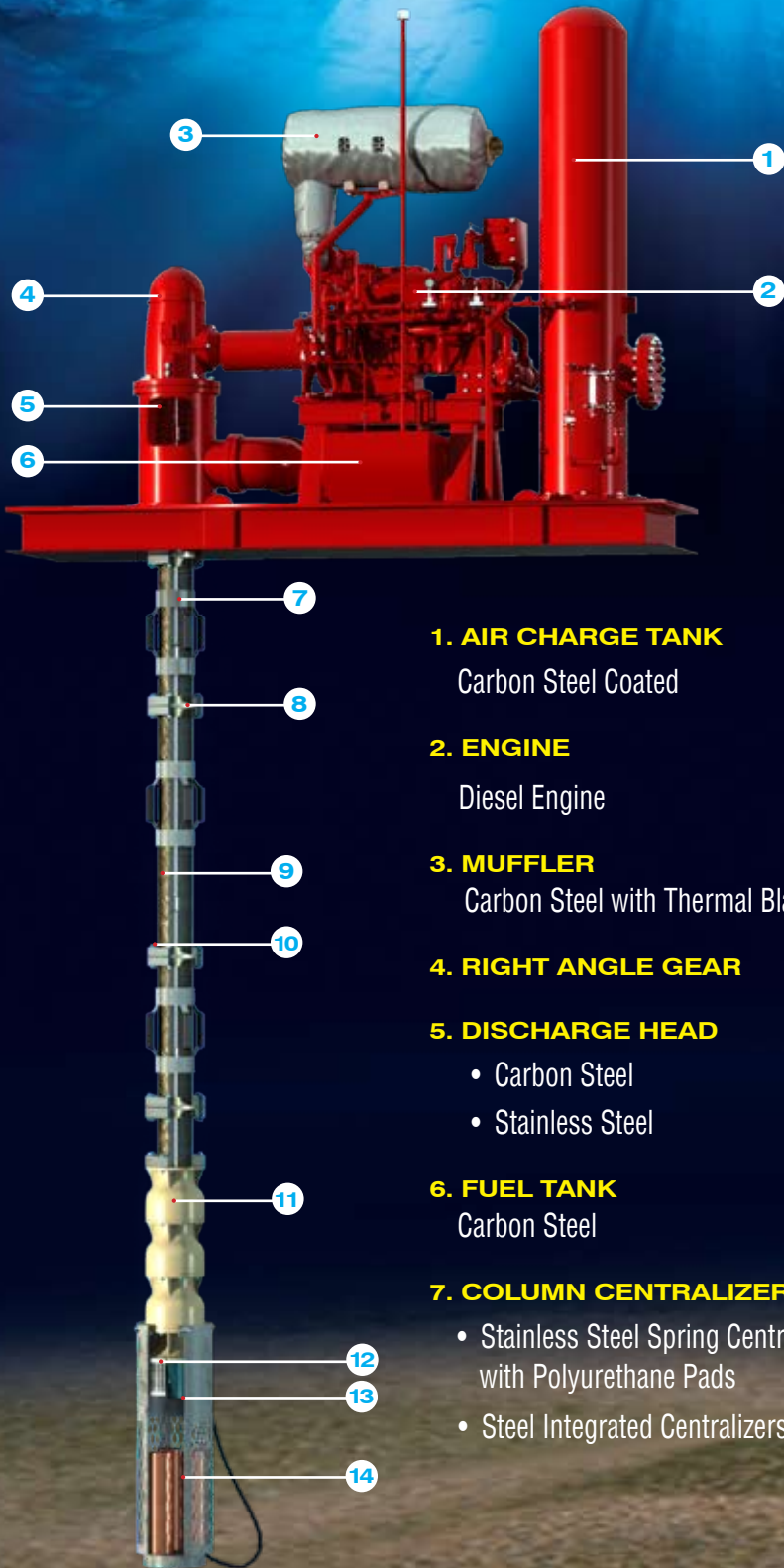
## 10. SUCTION BELL

- Cast Iron
- Nickel Aluminum Bronze
- Duplex Stainless Steel

## 11. SNSAFE™ SYSTEM

- Suction Screen Mounted
- Pump Mounted Clamp-on
- Inline System
- Multiple Port Tank System

# DIESEL FIRE PUMP SYSTEM



## 1. AIR CHARGE TANK

Carbon Steel Coated

## 2. ENGINE

Diesel Engine

## 3. MUFFLER

Carbon Steel with Thermal Blanket

## 4. RIGHT ANGLE GEAR

## 5. DISCHARGE HEAD

- Carbon Steel
- Stainless Steel

## 6. FUEL TANK

Carbon Steel

## 7. COLUMN CENTRALIZER

- Stainless Steel Spring Centralizer with Polyurethane Pads
- Steel Integrated Centralizers

## 8. RETAINER BEARING

- Bronze
- Stainless Steel

## 9. COLUMN PIPE

- Carbon Steel
- Fiberglass
- Stainless Steel
- Duplex Stainless Steel
- Copper Nickel

## 10. HARDWARE

- Stainless Steel with Teflon Coating
- K-500 Monel

## 11. PUMP BOWL ASSEMBLY

- Cast Iron
- Nickel Aluminum Bronze
- Duplex Stainless Steel

## 12. SUCTION SCREEN

316 Stainless Steel

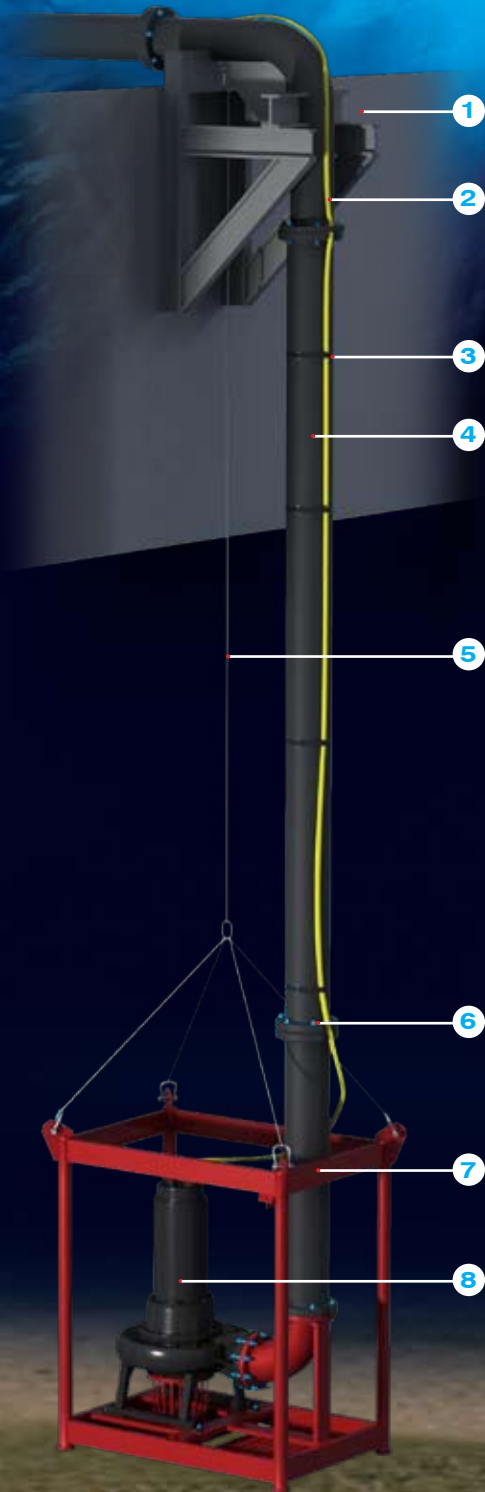
## 13. SUCTION BELL

- Cast Iron
- Nickel Aluminum Bronze
- Duplex Stainless Steel

## 14. SNSAFE™ SYSTEM

- Suction Screen Mounted
- Pump Mounted Clamp-on
- Inline System
- Multiple Port Tank System

## DEDICATED OVERBOARD PRELOAD PUMP SYSTEM



### 1. HEAD ASSEMBLY

- Carbon Steel
- Stainless Steel
- Duplex Stainless Steel

### 2. SUBMERSIBLE POWER CABLE

Heavy-duty Seawater Rated

- Round
- Flat
- Armored
- Single-Core

### 3. CABLE BAND

Rubber bands with Stainless Steel Clips

### 4. HOSE

10" Non-Collapsible Hose

### 5. WIRE ROPE SUPPORT CABLE

316 Stainless Steel

### 6. HARDWARE

- Stainless Steel with Teflon Coating
- K-500 Monel

### 7. PROTECTIVE CAGE

Fabricated Steel with Seawater Coating

### 8. PRELOAD PUMP

- FA25
- FA20
- FA15

## SUBMERSIBLE EQUIPMENT AUTOMATED LIFT REEL

**SEAL™** Reel is the latest development in fully-automated pumping system design. The compact, heavy-duty equipment delivers seawater through a dual high-impact hose configuration. A Seawater Lift Pump is attached to the end of the hose and deployed into the water through the delivery reel.

The reel incorporates a sea floor ballast weight system with 180 degree jib crane for pump set and hose stabilization. Standard design utilizes a dual 6" x 200' hose. It is capable of operating up to 200HP equipment. It has a built in orifice pipe loop with valve control for preloading. It is easily operated by a single worker, utilizing a 25' Pendant Station to pump control panel. It can be used as a secondary pump or emergency pump system.

**SEAL™** features real-time remote monitoring and electrical instrumentation for motor protection and overall system efficiency.

### **BENEFITS INCLUDE:**

- Improved Worker Safety
- Increased Productivity
- Reduced Downtime
- Lower Maintenance Costs



**SEAL™ Single-Pump Deployment**



SEAL Control Panel

**SEAL™ Dual-Pump Deployment**

## HIGH EFFICIENCY MARINE PUMPS

DESMI centrifugal pumps are used as cooling, ballast, fire, and bilge pumps for fresh water and sea water. The pumps are available with capacities up to 4000 m<sup>3</sup>/h and delivery heads up to 220 mWC.

### VERTICAL IN-LINE CENTRIFUGAL - TYPE DSL

Capacity Range:  
Up to 4000 m<sup>3</sup>/h  
Pressure Range:  
3-40 mWC



### VERTICAL IN-LINE CENTRIFUGAL - TYPE NSL

Available in spacer as well as monobloc design with or without bearings.

Capacity Range:  
2-1800 m<sup>3</sup>/h  
Pressure Range:  
5-220 mWC



For the pumping of viscous liquids such as lubricating and fuel oil, ROTAN gear pumps are the right choice.

### DESMI ROTAN GP

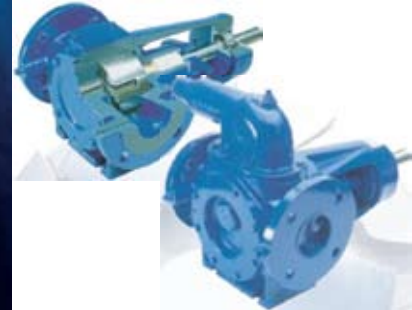
GP monobloc pumps are typically used for handling clean oils. The simple and compact construction makes it a low-cost pump, often used in modified versions by OEM customers. GP pumps are designed for use with IEC-flange motors.



Capacity Range: Up to 50 m<sup>3</sup>/h  
Speed: Up to 1750 rpm  
Differential Pressure : Up to 16 bar  
Suction Lift: Up to 0.5 bar vacuum while priming  
Viscosity Range: Up to 7,500 cSt  
Temperature: Up to 150°C

### DESMI ROTAN HD

HD pumps are specially designed for difficult applications and those involv-



ing high viscosity oils. The pumps are known by their sturdy and simple construction and are also available in carbon steel/stainless steel.

Capacity Range: Up to 170 m<sup>3</sup>/h  
Speed Range: Up to 1750 rpm  
Differential Pressure: Up to 16 bar  
Suction Lift:  
Up to 0.5 bar vacuum while priming  
Up to 0.8 bar vacuum while pumping  
Viscosity Range: Up to 250,000 cSt  
Temperature: Up to 250°C

## ANTI-FOULING PRODUCTS

The accumulation of various types of fouling organisms in a pump caisson or pump suction cause a reduction in output, cavitation, and over-heating; resulting in premature pump failures. The **SNSAFE™** (S&N Environmentally Sensitive Anti-Fouling Equipment) is designed to reliably and safely inhibit marine growth fouling in seawater pump systems on ocean going vessels, offshore platforms, offshore drilling rigs, and shoreline installations.

Marine growth fouling in seawater pumping systems is the cause of many operational problems:

- Reduced pump life due to clogged intake areas
- Accelerated corrosion on metal surfaces after barnacles attach
- Compromised downstream equipment due to restricted piping manifolds
- Frequent cleaning of caissons, piping, and strainers

### SNSAFE™ SYSTEM ADVANTAGES:

- Minimal Maintenance
- Superb Fouling Prevention
- Pre-calculated Anode Life
- Environmentally Safe
- Low Operating Costs
- Replaceable Anodes



Typical Barnacle Growth in Seawater Piping



Pump Mounted Cage SNSAFE™ System



Strainer Mounted Cage SNSAFE™ System



FROM TOP TO BOTTOM:  
SNSAFE™ Electrolysis Tank System; SNSAFE™ Inline System

## SNSAFE™ CASE HISTORY

### PUMP MOUNTED CAGE SYSTEM

The Pump Mounted Cage System is attached directly to the submersible motor. It treats seawater from the anode assembly up through the pump, riser pipe and all topside piping. This is the most economical system for complete protection.

The SNSAFE™ Pump Mounted Cage System was designed to prevent bio-fouling on a 40HP 250GPM S&N Electric Submersible Firewater Pump System. The firewater pump with SNSAFE™ system was inspected six months and eleven months after installation with no visible signs of marine growth.



New Cage Mounted System



No Marine Growth After 6 Months



No Marine Growth 11 Months Later



Results without SNSAFE™ in 25 days

### STRAINER MOUNTED SYSTEM

The Strainer Mounted System is ideal for seawater pump systems that draw suction through sea chest strainers. Special adapters fit the anodes to the strainer lids for easy replacement.

Four Strainer Mounted Systems were purchased to replace the Sodium Hypochlorite Systems in place. Each SNSAFE™ system treated 3800 gpm of sea water supply from the sea chests with a designed anode consumption life of three months in each system.



## PROJECT SERVICES

S&N specializes in designing pumping systems that offer exceptional performance and lower overall costs through custom-tailored solutions.

### ENGINEERING

Based on the end-user's present and future production needs, S&N Application Engineers consult with the customer to select the best components manufactured for seawater conditions.

### FABRICATION AND PACKAGING

S&N's fabrication team takes pride on providing high-quality workmanship, industry leading accuracy, and timely delivery. Every phase of S&N's fabrication and packaging is closely monitored to ensure product specifications are met with full consideration and in compliance with high safety standards.

S&N offers a wide variety of fabrication options including pattern cutting, helix-arc welding, and coating.

#### CAPABILITIES INCLUDE:

- Electric Submersible Pump Packages
- Horizontal Skid Mounted Electric and Diesel Engine Driven Pump Packages
- Vertical Turbine, Electric, and Diesel Engine Driven Pump Packages
- Firewater Jockey Pump Systems
- Sanitary & Potable Water Pressure Sets
- **SNSAFE™** - Anti-Fouling Systems
- Multiple Pump Caissons with Rail System
- Bearing Retainers
- Permanent and Temporary Water Curtain Pump Systems



**FROM TOP TO BOTTOM:**  
Welding; Custom Fabricated Multiple Caisson Railing;  
Custom Fabricated Spider Bearing Retainers; Spring  
Centralizers

## TECHNICAL SERVICES

When the offshore oil and gas industry looks for service, it demands the highest quality. With over fifty years of experience and long-standing recognition, S&N customers are guaranteed technical expertise.



**FROM TOP TO BOTTOM:**

View of Rig from Platform, Servicemen installing S&N Seawater Lift Pump

As a global company, S&N can provide service support anywhere in the world. S&N has the resources to offer immediate solutions to critical breakdowns or assistance during planned maintenance.

S&N offers worldwide field service, seven days a week, 24 hours a day.

### TROUBLESHOOTING

S&N technicians can quickly and efficiently identify and troubleshoot malfunctions including systems both upstream and downstream; helping minimize downtime so that rig operations can be resumed as quickly as possible.

Field technicians are trained to perform, supervise, direct, and coordinate:

- System Surveys
- Inspection
- Hook-up
- Commissioning
- Troubleshooting
- Equipment Operations
- Equipment Transportation
- Equipment Installations
- Equipment Removals
- Start-up and Commissioning

### TESTING

S&N provides full scale in-house performance testing on new and existing equipment. Performance testing establishes field condition and ensures equipment efficiently meets its operational requirements.

### AUTHORIZED TESTING & REPAIR SERVICE STATIONS:

- Houston, Texas
- Great Yarmouth, England
- Cabinda, Angola
- Singapore
- Dubai



**FROM TOP TO BOTTOM:**

Seawater Lift Pump Performance Test; Testing Vertical Turbine on S&N's Test Pit; Hydrostatic Testing on Column Piping

## MAINTENANCE AND REPAIRS

S&N technicians repair most types of equipment, including pumps, motors, controls, valves, and seals.

Through visual and dimensional examinations, S&N personnel can recommend safe and cost-effective repairs that guarantee high quality repair and maintenance practices that focus on extending equipment life.

### REPAIR SERVICES FOR:

- Mechanical Submersible & Centrifugal Pump and Motor Overhauls
- Electrical Motor Rewinding
- Line Boring for Multistage Pumps
- Certified Repair Welding
- Parts Manufacturing and Sourcing
- Special Machining: Lathe, Milling, and Drilling
- Fabricated Systems

### PARTS & STOCK

S&N stocks back-up equipment for every customer. When a rig moves from one region to another, S&N transfers back-up equipment to the closest warehouse for emergency standby.



**FROM TOP TO BOTTOM:**  
Seawater Lift Pump Repair; Electrical Splicing; Machining; Back-up Inventory

## POWER SUPPLY AND SUBSEA CONNECTORS

The operating cost and reliability of pumping systems can be improved by utilizing electrical components that provide motor control and protection.

### POWER SUPPLY CABLES

S&N offers a variety of heavy-duty, submersible cables available in round, flat, armored, or single core - rated for submergence up to 1,000 feet with an overall rated temperature of 90 °C.

### SUBSEA CONNECTORS

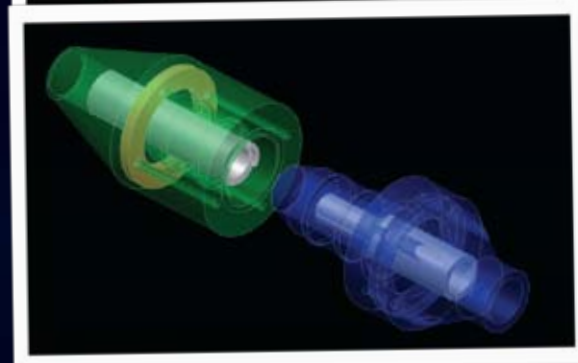
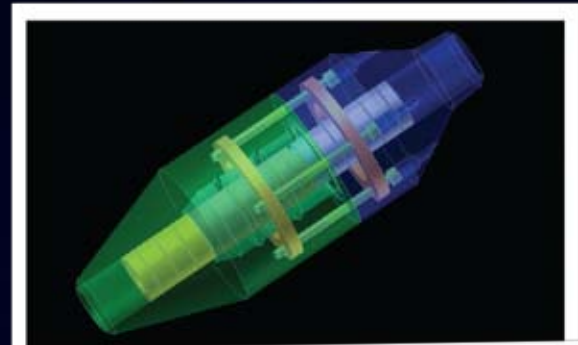
SNConnectors™ are high-quality subsea connectors specially engineered for deepwater connection. They eliminate problems associated with field power cable splices and bulky internally connected power cables.

#### SNCONNECTOR™ ADVANTAGES:

- Eliminates field splices and long curing times of epoxy type splices
- Eliminates fluid wicking to internal components of motor with damaged power cable



Spools of Hydro-flex Cable



Male Pin and Female Socket  
SNConnector™

## ELECTRICAL CONTROLS



The Protector® provides superior mechanical strength, superior shock, vibration resistance and enhanced thermal transfer characteristics which eliminates electronic failure caused by the constant

barrage of surges, spikes, and impulses. It has a number of outstanding qualities that are independent of voltage ratings:

- Response time less than one nano second
- Tight nominal clamping
- Low internal capacitance
- Sine wave tracking
- EMI/RFI Filtering
- Low let-through voltages
- High peak surge currents



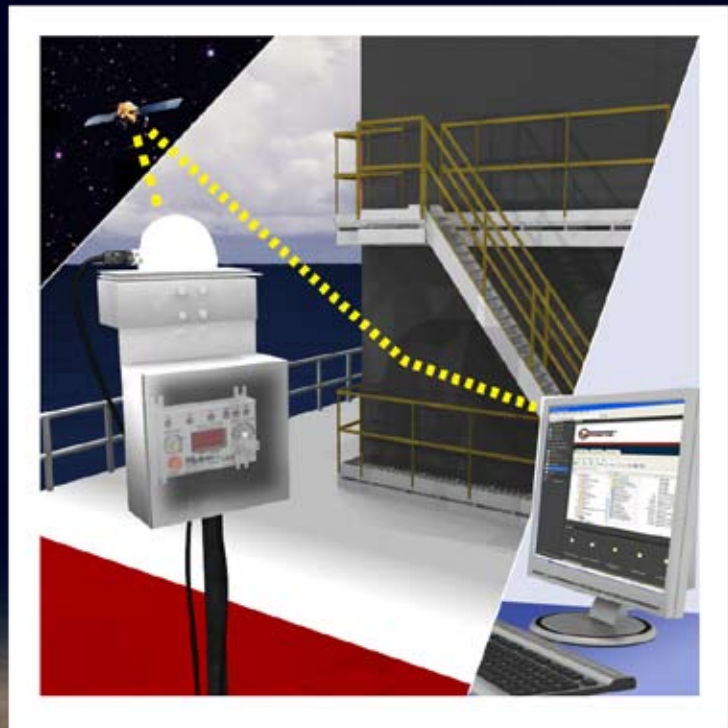
The MotorSaver® Model 777 is a fully programmable electronic overload relay designed to monitor and protect 3-phase motors from overload,

under load, jams, under voltage, over voltage, single phasing, voltage and current unbalance, ground fault, rapid cycling, and phase reversal.



The SNMonitor™ is a fully integrated remote monitoring system that offers the industry flexible, maintenance-free pumping systems. Together with the MotorSaver® Model 777, the SNMonitor's SCADA controller captures and sends data from the remote site to a desktop application allowing technicians to analyze operating data before damage occurs. An operator can control motors, view, and record the following operating parameters:

- Line - Line Voltages (Recordable)
- Line Currents (Recordable)
- Last Faults (Recordable)
- Restart Delay Timers
- Power Factor (Recordable)



**SNMonitor™ utilizes the MotorSaver® Model 777 to send data via satellite to S&N's desktop application for pump system monitoring**

## S&N PUMP CO. CONTACTS

**S&N Pump Company  
Headquarters**  
8002 Breen Dr.  
Houston, Texas 77064  
T: 281-445-2243  
F: 281-445-4061

**S&N Pump Company  
Sales Office**  
10 Lumsden Park  
Cupar, Fife KY15 5YL  
Scotland  
T: 44-1334-650769  
M: 44-7793-325450

**Executive V.P. Operations**  
Richard Draper  
richarddraper@snpump.com

**V.P. of Marketing**  
Matt Chamberlain  
mattchamberlain@snpump.com

**Director of Sales - Europe**  
Andrew Irons  
andrewirons@snpump.com

**Engineering Manager**  
Bob Hays  
bobhays@snpump.com

**Project Manager**  
Bruce Guillot  
bruceguillot@snpump.com

**V.P. of Production/HSE**  
Billy Helveston  
billyhelveston@snpump.com

**Purchasing Manager**  
Grace Gonzales  
gracegonzales@snpump.com

**Service & Repair Sales**  
Paul Langland  
paullangland@snpump.com

## TRIDENT HYDRO SYSTEMS

Trident Hydro Systems (THS), a joint venture between S&N Pump Company and Knighthawk Engineering, combines S&N's 50+ years experience providing engineered pumping solutions and equipment to the offshore oil and gas industry and Knighthawk's 15+ years providing engineered solutions to a worldwide industrial base.

### SERVICES

- Field Installations
- Start-up
- Troubleshooting
- Custom Fabrication & Packaging

### PACKAGING

THS specializes in custom designed engine and motor driven skid packages with equipment related to the oil and gas drilling, production, petrochemical, and power industries.

### CAPABILITIES

- Engine Driven & Electric Motor Driven Vertical Turbine Pump Packages
- Engine Driven & Electric Motor Driven Horizontal Pump Packages
- Pump System Ancillary Equipment

### Trident Hydro Systems

8002 Breen Dr.  
Houston, Texas 77064  
T: 281-598-3970  
F: 281-445-4061  
www.tridenthydro.com

### V.P. Global Sales

Todd Murphy  
toddmurphy@tridenthydro.com

### Directing Manager

Wade Butaud  
wadebutaud@tridenthydro.com

## WORLDWIDE CONTACTS

### **S&N Pump & Rewind, Ltd.**

#### **Service/Repair**

Swanston Rd.  
Great Yarmouth, Norfolk  
NR30 3NQ U.K.  
T: 44-1493-332834  
F: 44-1493-331787

#### **Managing Director**

Ricky Turner  
buyer@snpump-rewind.co.uk

#### **Works Manager**

John Haggarty  
repairs@snpump-rewind.co.uk

#### **Accounts**

Petula Holland  
accounts@snpump-rewind.co.uk

### **S&N Pump Africa, Lda**

#### **Sales/Service/Repair**

Estrada do Tando Zinze  
Terra Nova, Cabassango  
Cabinda, Angola;  
P.O. Box 588  
T: 244-9131-44413  
E-fax: (001) 832-218-5090  
M: 244-9131-45773/774

### **S&N Pump Africa, Lda**

#### **Sales**

Rua Dack Doy # 19  
Bairro Azul, Luanda, Angola  
T: 244-9125-08642

#### **Managing Director**

Estevao Mambo  
mambo@snpump.com

#### **Director of Sales**

Karen Draper  
karendraper@snpump.com

#### **Engineering Manager**

David Draper  
daviddraper@snpump.com

#### **Operations Manager**

Paul Humphrey  
paulhumphrey@snpump.com

### **S&N Pump S.E. Asia**

#### **Singapore Pte Ltd**

#### **Sales/Service/Repair**

Block 28C Penjuru Close  
#01-07  
Singapore 609131  
T: 65-6265-7846  
F: 65-6265-7847

#### **Director**

Miko Gipson  
miko@snpump.com

#### **Sales Manager**

Jordan Yeong  
jordanyeong@snpump.com

#### **Technical/Service Manager**

David Hale  
davidhale@snpump.com

### **S&N Pump Middle East FZE**

#### **Sales/Service**

P.O. Box 262785  
Jebel Ali South, Dubai  
U.A.E.  
T: 971-4-8864854  
F: 971-4-8864856  
M: 971-55-7105776

#### **Technical/Service Manager**

David Hale  
davidhale@snpump.com

## Your one stop service center

- full factory authorized service centers worldwide for S&N Offshore Pumps
  - factory trained repair technicians and service engineers
    - on-site inventory OEM spare parts
  - equipment function and performance testing
    - complete repair and fabrication shop
  - complete welding and fabrication equipment
    - worldwide 24/7 on-call technical support

