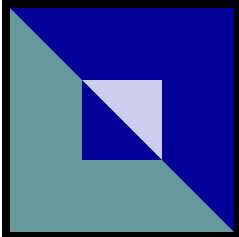


Kube Engineering Industry Guide

Power Industry

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Application Guide

Kube Engineering

Analytical Locations

Water Treatment/Steam Cycle/Cooling Water

Chlorine

- Influent Water Supply
- Condenser to Cooling Tower

Conductivity

- Influent Water Supply
- Demineralization Plant to Make-up
- Condensate Pump to LP Heaters
- Intermediate &LP Turbines to condenser
- HP Heaters to Economizer
- Condenser to Make-up and Demineralization
- Boiler to HP Turbines

Dissolved Oxygen

- Demineralization Plant to Make-up
- Condensate Pump to LP Heaters
- LP Heaters to De-Aerator
- De-Aerator to Feed Pump
- HP Heaters to Economizer
- Generator

Hardness

- Influent Water Supply
- Demineralization Plant to Make-up
- Condenser to Cooling Tower

ORP

- Influent Water Supply
- LP Heaters to De-Aerator
- Condenser to Cooling Tower

pH

- Demineralization Plant to Make-up
- HP Heaters to Economizer
- Condenser to Make-up and Demineralization

Sodium

- Demineralization Plant to Make-up
- Condensate Pump to LP Heaters
- Boiler to Super Heaters
- Intermediate &LP Turbines to condenser
- Condenser to Make-up and Demineralization

Turbidity/SS

- Influent Water Supply
- Demineralization Plant to Make-up

TOC

- Inlet water Supply
- Make-up to Condensate
- Intermediate &LP Turbines to condenser

Sodium

- Condenser to Make-up and Demineralization

Phosphate

- HP Heaters to Economizer

Ammonia

- HP Heaters to Economizer

Others

Hydrazine

- Demineralization Plant to Make-up
- HP Heaters to Economizer

Silica

- Demineralization Plant to Make-up
- HP Heaters to Economizer
- Boiler to Super Heaters
- Super Heaters to HP Turbines
- Re-Heater to Intermediate and LP turbines

Molybdate/Corrosion Inhibitors

Laboratory

Chloride

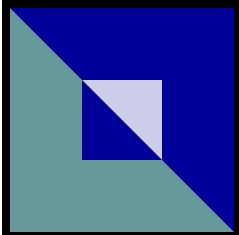
- Demineralization Plant to Make-up
- HP Heaters to Economizer
- Condenser to Cooling Tower

Copper

- Condenser to Make-up and Demineralization
- Condenser to Cooling Tower
- HP Heaters to Economizer

Iron

- HP Heaters to Economizer



Application Guide

Kube Engineering

Analytical

ISE Sensors

Ammonia

1. Boiler Water
2. High purity water
3. Waste Water



Ammonium

1. Boiler Feed Water



Chloride

1. Steam Condensate
2. Cooling Water



Chlorine

1. Water Treatment
2. Cooling Water
3. Wastewater



Conductivity/TDS

1. Water Treatment
2. Feed water
3. Boiler Water
4. Steam Condensate
5. Condensate Polishing
6. Cooling Water
7. Wet Scrubbers
8. Wastewater Treatment



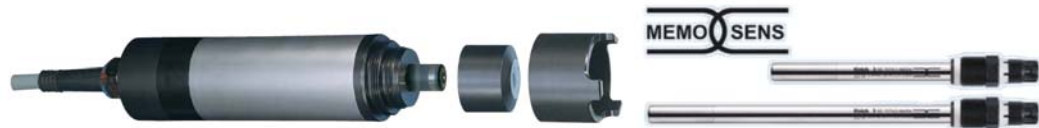
Copper

1. Feed water
2. Steam Condensate



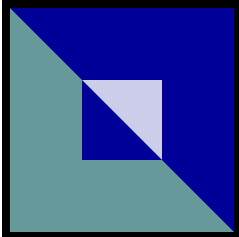
Dissolved Oxygen

1. Feed water
2. Boiler Water
3. Steam Condensate
4. Wastewater



PPM

PPB Digital



Application Guide

Kube Engineering

Analytical

Hardness, Calcium

1. Water Treatment
2. Cooling Water



Total Organic Carbon

1. Water Treatment
2. Condensate Polishing
3. Wastewater Treatment
4. Carbon breakthrough on heat exchangers
5. Carbide Cycle
6. Heat Recovery Steam Generator
7. Cooling Towers



Phosphate (PO4)

1. Feedwater
2. Boiler Water
3. Cooling Water



Sodium (Na+)

1. Water Treatment
2. Steam Condensate
3. Condensate Polishing



PPB



PPM

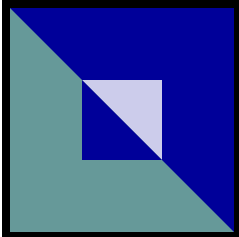
Total Dissolved Solids

1. Water Treatment
2. Feedwater
3. Boiler Water
4. Steam Condensate
5. Condensate Polishing
6. Cooling Water
7. Wet Scrubbers
8. Wastewater Treatment

Turbidity/Suspended Solids

1. Water Treatment
2. Feedwater
3. Cooling Water
4. Wastewater Treatment





Application Guide

Kube Engineering

Analytical

pH/ORP

1. Water Treatment
2. Feedwater
3. Boiler Water
4. Steam Condensate
5. Condensate Polishing
6. Cooling Water
7. Wet Scrubbers
8. Wastewater Treatment

VAN LONDON
Est. 1961



pHoenix Co.

"When Accuracy Matters"

GXV

Introducing our new pH glass formula with unparalleled performance. This new pH glass formula, GXV, can replace all other formulas, streamlining inventories and eliminating wasted time trying to select the best electrode for the job. The GXV formulation is perfect in low ionic strength solutions as well as high pH applications and is specially formulated to have lightening fast response time with superior accuracy and repeatability. The sample pH is registered in less than 10 seconds, the result is correct to within 0.02 pH units, and the pH value is reproducible over the entire pH range from 0 to 14 pH.

For the best pH glass formula on the market, **Just Think Green!**

• Specifications •

- pH Range : 0-14
- Response Time: 10 Seconds from pH7.00 to pH 4.01
- Glass Membrane Impedance: 20 Mohm at 25 °C



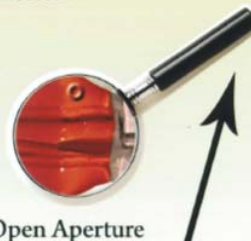
Z-GEL Hi Performance Reference Fill

Van London-pHoenix Co. proudly introduces a new innovation in pH electrode technology, Z-Gel.

Z-Gel provides a more stable matrix compared to other gelled electrode reference systems, providing reliability in contaminated samples. The Z-Gel allows for lower maintenance and extended life, thus reducing overall cost.

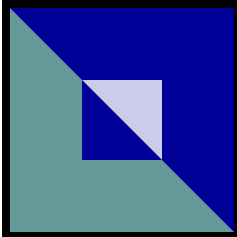
Z-Gel also allows Van London-pHoenix to incorporate new designs for existing products, such as the Open Aperture Junction featured here....

A variety of Van London- pHoenix sensors are available with Z-Gel, please contact our sales team for details at (713) 772-6641 or e-mail us at info@vl-pc.com



Open Aperture





Application Guide

Kube Engineering

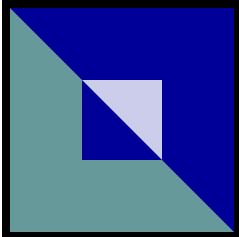
Thermal



Applications:

- Pump Protection– Dual switch points may be set to alarm low flow or high temperature
- Monitor flow rates and consumption of hydrogen and carbon dioxide on a dryer.





Application Guide

Kube Engineering

Sight Gauges



Specific Gravity Analyzers

Jogler Specific Gravity Analyzers (SGAs) are a dependable and accurate method for measuring and sampling process liquid levels in virtually any application:

- Acids
- Caustics
- Co-generation
- Light Hydrocarbons
- Beverages
- Etc.

Jogler SGAs present accurate visual verification of liquid density, can be cross-checked against temperature and are compatible with most requirements. Also, they require only small amounts of product for Specific Gravity Measurement:

The hydrometer sleeve and sight tube are made of heavywall borosilicate and the sight chamber is sealed with Teflon Superseals. The Jogler SGAs are equipped with 0.25" FNPT valves for flow control and sampling and the hydrometer is high-visibility and accurate. Installation and maintenance are engineered for simplicity and ease of use.



Armored Level Gauges and Magnetic Flag Level Gauges



Armored Sight Flow Indicators

NEW

VAN LONDON
Est. 1961



pHoenix Co.

"When Accuracy Matters"



Ultra Low Level Sodium Ion Selective Electrode

The **NEW** Low Level model NAB1602 Sodium ISE is designed to monitor sodium levels in the range where conventional sodium electrodes are inaccurate. The monitoring of sodium levels in power plants is essential, as sodium impurities present in the ppb range cause stress corrosion cracking in high pressure steam turbines and stainless steel generators.

Features

- Measures sodium in low ppb range
- Glass body adaptable to various electrode holders
- Easy to install, easy to operate
- Low Maintenance
- Low operating cost
- On-Line measurement
- Compatible with any modern ISE meter, or on-line ISE analyzer
- Quick response to changes in concentration allows alarm and control functions when used with an ISE analyzer

Specifications

- **Concentration Range:** 0.1 ppb to 10 ppm
- **Resistance:** < 200 Mohm
- **Reproducibility:** +/- 5%
- **Samples:** Aqueous solutions only
- **Membrane:** Glass bulb
- **Dimensions:** 110mm length, x 12mm diameter
- **Connector:** BNC, DIN, Radiometer or US Standard
- **Cable Length:** Three foot Standard
- **Reference Solution:** Ammonium Chloride

NEW

VAN LONDON
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pHoenix Co.

"When Accuracy Matters"

ONE SENSOR FOR EXTREME HIGH AND LOW TEMPERATURES

Our **NEW TempH** sensor is specially designed for temperature extremes from -20 to 135 degrees Celsius. Most sensors exposed to these extremes will shatter but the **TempH** sensor is capable of both extreme high and extreme low temperatures without cracking or boiling the internal fill solution.

This is the perfect solution to prevent temperature related probe failure during usage, shipment, autoclave or storage.

The problem with standard probes is that they use aqueous salt solutions such as KCl or KNO₃ which have an operational temperature range of -5 to 100 degrees Celsius. Our unique designs and formulations allow for a significantly increased temperature operating range and R&D is underway to push these ranges even further.

Drift and accuracy problems commonly found when using basic electrodes are virtually eliminated. The pH sample is registered within 60 seconds, the result is correct within 0.05 pH units and the pH value stays constant at any given temperature.

The **TempH** electrode series can be manufactured in a wide variety of styles suitable for laboratory, industrial or biotech applications.

- pH Range: 0 to 14
- Membrane Type: Glass
- Bulb Resistance: < 100 MΩ @ 25°C
- Reference Resistance: < 50 KΩ
- Reference Type: Double Junction
- Response Time: < 60 Seconds @ 25°C

Temperature Compensator: Specified by Customer

Lead Length: Specified by Customer

Connector Type: Specified by Customer



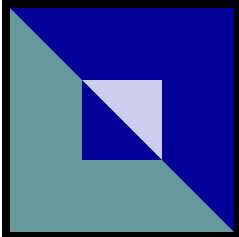
Van London-pHoenix Co.
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Houston, Texas 77081
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Toll Free: (800) 522-7920
Web: www.VL-PC.com
e-mail: info@vl-pc.com
We Speak Spanish & Vietnamese



Cooling Tower



Total Organic Carbon (TOC) Analyzers



Application Guide

Kube Engineering

Flow Applications

RECOMMENDED PRODUCTS

Desalination Volumetric Flowmeters (**Vortex**)

-Measures flow for the supply of DI water in the water/steam circuit for desalination.

Electromagnetic Flowmeter for raw water supply.

Ultrasonic flowmeter for control of water volumes in main cooling water system.

Ultrasonic flowmeter for DI applications

- due to a low conductivity, turbine rotors, vanes and bearings will suffer from lack of lubrication. Mags usually have problems with low conductivity, Vortex meters suffer erosion of vortex shedding strut and orifice plates are subject to erosion on the sharp-edge profile.
- Cooling lines
- Raw Sewage lines
- Water Distribution
- process where system shutdown is impossible



1/2" to 1 1/2" transducer

Visual Flow Indicators and switches

-Typically used in cooling circuits, test rigs, pumping skids.

Lubrication Flow Monitoring

Vortex Shedding-

Bearing oil Cooler or water flow.

Condensate motor cooling

Cooling boiler feed pumps

Gas compressor cooling

Service and spray water

Steam turbine fluid cooler

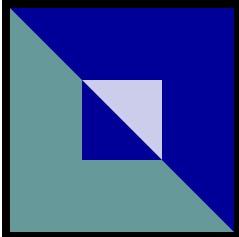
Turbine Bearing Cooling

Water for Heat Exchangers and Scrubbers

Flue Gas Scrubber (Preso)



2" and larger transducers



Application Guide

Kube Engineering

Actuators

Application	Actuator	Direction	Size	Travel	Positioner	Valve
Extraction Steam		667 Reverse		70 2"		
Induction Steam		1052 Rotary		40 90 Deg		
I/P Desuperheater		667 Reverse		34 3/4"		
H/P Desuperheater		667 Reverse		34 3/4"		
H/P Dump	585R	Piston		100 2-3/4"		
HP-I/P Letdown		667 Reverse		45 1-1/4"		
Cond Hotwell Make-up		667 Reverse		30 3/4"		
H/P Letdown Enjector		667 Reverse		34 3/4"		
L/P Drum Level		667 Reverse		45 1-1/2"		
Cooling Tower Blowdown		667 Reverse		30 3/4"		
High Heat Valve		1052 Rotary Direct		40 90 Deg		
Low Heat Valve		1052 Rotary Direct		33 90 Deg		
Inlet Heat Valve		1052 Rotary Direct		40 90 Deg		
I/P to Hot Water Heater		667 Reverse		45 1-1/2"		
Cooling Tower Make-up		667 Reverse		45 1-1/8"		
Condensate Dump to Tank		667 Reverse		30 3/4"		
Condensate Make-up		667 Reverse		30 3/4"		
Nox Tank Make-up		667 Reverse		40 3/4"		
HP Drum Level		667 Reverse		45 1-18"		
L/P Steam Dump	1052K	Rotary Direct		60 90 Deg		
CTG ARU Cond Return		667 Reverse		30 3/4"		
AARU Condensate Return		667 Reverse		30 3/4"		
Gas Comp Unloading		657 Reverse		30 3/4"		
Attemperator		667 Reverse		30 3/4"		
Gas Comp Recirc		657 Reverse		30 3/4"		

CVS

Controls Ltd.



Figure 1: CVS Type 657 Actuator



Figure 1: CVS Type 667 Actuator



Design CVS V-100 Valve Body Shown with CVS Type 1051 Actuator



Figure 1: CVS Series EW Valve Body



Figure 1: CVS Series HPX Valve with Type 667 Actuator



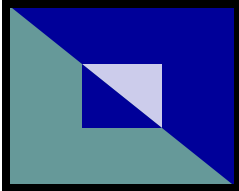
Figure 1: Typical CVS Series H Design Body with Trim and Seals



Electric Quarter Turn Actuators



Electric Spring return Fail-safe Actuators



Application Guide

Kube Engineering

Misc Equipment



Your Single Source Solution

- Bulk Transfers
- Waste Removal and Transportation
- Sediment Removal
- On-Site Chemical Storage
- Decontamination Services
 - Clarifiers
 - Containment Areas
 - Storage Tanks

Collection, transportation and recycling of settled solids.

- Lagoon clean-out
- Lagoon closure
- Digester clean-out
- Material transfer between lagoons or facilities

EMERGENCY SERVICES

- Chemical spills
- Certified Confined Space Entry and Rescue
- 24/7 Emergency Response
- Hazardous Material Acceptable