Why SilcoNert™ 1020 Regulators?

CONCOA's revolutionary SilcoNert 1020 products boost performance and can dramatically reduce costs for industries that use reactive or corrosive gases by improving cycle times and analytical results.

More than mere coating or passivation, the proprietary SilcoNert process impregnates 316L stainless steel with an amorphous silicone layer bound into the metal crystal structure making it over one hundred times more inert.

When surface reactivity is a concern as with low level reactive mixtures of hydrogen sulfide, methyl mercaptan, nitric oxide, sulfur dioxide and reduced sulfur, CONCOA's new SilcoNert 1020 products are essential to ensuring rapid response and accurate results by virtually eliminating absorption and catalytic conversion.

SilcoNert 1020 regulators and switchovers:

- Improve analytical accuracy
- Avoid process delays
- Eliminate false data
- Reduce calibration time
- Improve test audits
- Reduce maintenance costs
- Reduce calibration costs

CONCOA®
PRECISION GAS CONTROLS

www.CONCOA.com

420 Series
Single Stage Regulators

430 Series
Dual Stage Regulators

515 Series Automatic
Gas Switchover Systems

SilcoNert 1020

Calibration

There are many processes where 316L stainless steel is no longer sufficiently inert or corrosive resistant. Refineries, petrochemical plants, and coal or gas power plants require rapid and accurate analysis of low level sulfur and mercury. A SilcoNert 1020 system will not absorb compounds in calibration standards giving faster calibration times with repeatable results. Calibration cycles in these environments can be reduced by as much as 70% and accuracy improved by as much as 17% (Figure 1), which results in significant savings (Figure 2).

Calibration Cycles

Figure 1

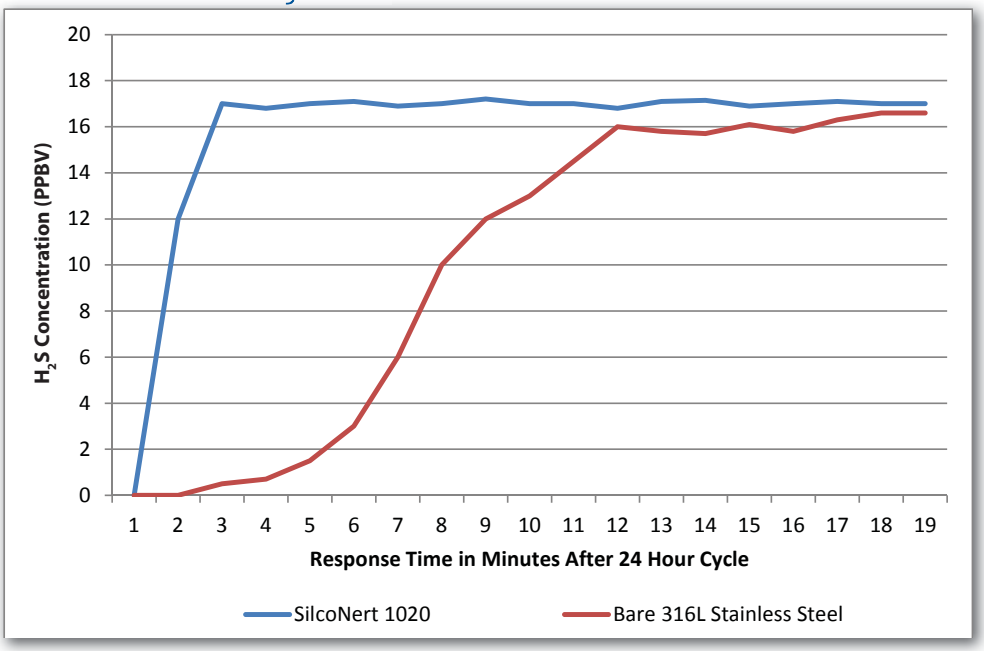

Figure 1 compares the response time of a calibration gas containing 17 ppbv of hydrogen sulfide delivered through a 316L stainless steel regulator and a CONCOA SilcoNert 1020 regulator after 24 hours. In this typical scenario, calibration was more than 10 minutes faster with SilcoNert 1020 than with 316L stainless steel.

Savings

Figure 2

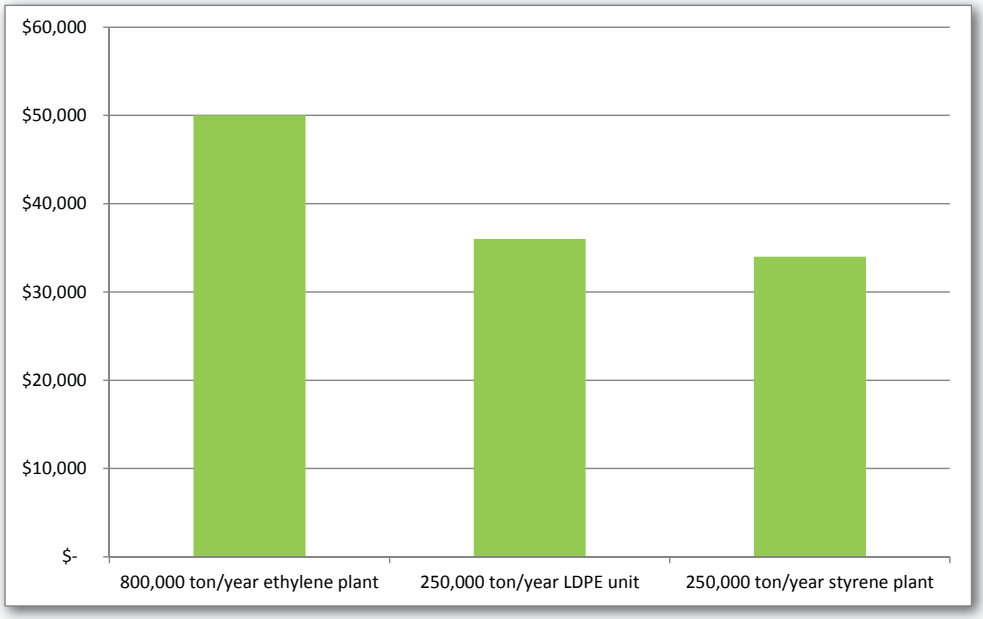

Figure 2 shows possible savings from improved process control afforded by SilcoNert 1020 in a variety of petrochemical facilities.

SilcoNert 1020 Advantages

- Improve H_2S sample accuracy
- Eliminate H_2S absorption
- Eliminate cross reaction of sulfurs
- Resist corrosion 100 times better than 316L stainless steel
- Eliminate mercury absorption
- Improve low sulfur diesel analysis
- Calibrate faster every day
- Improve Relative Accuracy Test Audits (RATA) results
- Avoid EPA penalties

Applications

- H_2S analysis ppm to ppb levels
- Reduced sulfur analysis
- Low sulfur diesel
- Refinery stack monitoring
- Natural gas testing
- NO/SO_2 monitoring
- Mercury analysis
- Odorant testing
- Stack gas monitoring
- Automotive exhaust testing
- International Society of Beverage Technologist (ISBT) CO_2 testing

Regulators

420Series
Single Stage Regulator

- All wetted surfaces SilcoNert 1020
- Metal to metal diaphragm seal
- 1x10^{-9} scc/sec helium leak integrity
- Delivery pressure ranges: 0-15 psig through 0-500 psig
- Max inlet pressure: 3000 psig (210 bar) or 4500 psig (310 bar) optional

Intended for primary pressure control of reactive or corrosive calibration gases where minor fluctuations in outlet pressure due to diminishing inlet pressure can be tolerated. Available with a wide selection of inlet and outlet options including diaphragm valves, compression tube fittings, and protocol purge through protocol alarm stations, all with the same SilcoNert 1020 wetted internals.

430Series
Dual Stage Regulator

- All wetted surfaces SilcoNert 1020
- Metal to metal diaphragm seal
- 1x10^{-9} scc/sec helium leak integrity
- Delivery pressure ranges: 0-15 psig through 0-250 psig
- Max inlet pressure: 3000 psig (210 bar) or 4500 psig (310 bar) optional

Intended for primary pressure control of reactive or corrosive calibration gases that require precise and constant outlet pressure control, regardless of inlet pressure variation. Available with a wide selection of inlet and outlet options including diaphragm valves, compression tube fittings, and protocol purge through protocol alarm stations, all with the same SilcoNert 1020 wetted internals.

Mixtures which benefit from SilcoNert 1020 regulators

Mixture Minor Component	Concentration to use SilcoNert 1020
Hydrogen Sulfide (H_2S)	< 25 ppm (any if with other sulfurs)
Carbonyl Sulfide (COS)	< 200 ppm (any if with other sulfurs)
Carbon Disulfide (CS_2)	<200 ppm (any if with other sulfurs)
Dimethyl Disulfide (DMDS)	<200 ppm (any if with other sulfurs)
Ethyl Mercaptan	<200 ppm (any if with other sulfurs)
Methyl Mercaptan	<200 ppm (any if with other sulfurs)
Other Mercatanes	<200 ppm (any if with other sulfurs)
Mercury	Any concentration
Nitric Oxide (NO)	<10 ppm
Sulfur Dioxide (SO_2)	<10 ppm
Hydrogen Chloride (HCl)	Any concentration
Chlorine (Cl_2)	Any concentration

Continuous Supply

515 Series
Automatic Switchover

- All wetted surfaces SilcoNert 1020
- Metal to metal diaphragm seal
- $1x10^{-8}$ scc/sec helium leak integrity
- Delivery pressure ranges: 0-15 psig through 0-400 psig
- Max inlet pressure: 3000 psig (210 bar)

1020

Provides continuous supply of reactive or corrosive calibration gases with a selection of four switchover pressures and can be ordered with an integral line regulator for constant control of downstream pressure. Available with a wide variety of SilcoNert 1020 inlet options and can be ordered with or without a remote alarm option.

Corrosion Resistance

Figure 3

Material	Weight Loss (g)	Corrosion Rate (g/hr cm^2)	MPY (mils per year)
Hastelloy C-22	0.008	$1.69x10^{-6}$	0.673
316L Stainless Steel	0.309	$6.93x10^{-5}$	29.94
SilcoNert 1020	0.003	$6.65x10^{-7}$	0.287

Figure 3 shows material corrosion after 72 hours in a 6N HCl solution. The superior corrosion resistance of SilcoNert 1020 is remarkable at nearly 1/100th the corrosion rate of bare 316L stainless steel. This drastically reduces the long term costs of systems in corrosive or reactive process mixtures like those found in gas pipeline odorant applications.

It Just Makes Sense.

Figure 4

Figure 4 above shows the difference between an untreated 316L stainless steel test sample and a SilcoNert 1020 test sample exposed to an acid chloride solution per ASTMG 61.

SilcoNert

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