

SAMPLING SYSTEMS

Simple, safe and reliable closed loop grab sampling systems to protect the operator and the environment.

SENSOR
SAMPLING SYSTEMS



What is SENSOR Sampling?

When you're sampling toxic or corrosive materials, accuracy and safety are top priorities. Sensor Sampling Systems are designed to provide accuracy while eliminating health risks to your employees as well as the environment. SENSOR Sampling Systems provide proven grab sampling designs for the hydrocarbon processing and chemical industries to mitigate potential hazards that exist with extracting representative samples. SENSOR is "Best In Class" with quality systems, expertise and service like no other company.

- Top grab sampling experts in the world
- 30+ years in designing and building systems for maximum safety
- Superb accuracy while protecting the operator and environment
- Vast knowledge of application intricacies
- Creative solutions for the most difficult and hazardous process media
- Hands-on field installation experience
- Expert technical startup, installation and post-sale support
- Customer education on the complexities and challenges of the collection process
- Plant and lab personnel training on safe operation and sample collection
- Experienced troubleshooting support including systems built by other manufacturers



Safe, Reliable Sample Collection

EPA regulations mandate the use of environmentally safe, closed loop and closed vent sampling systems. Our systems meet or exceed these strict EPA requirements while providing a safe, reliable method for collecting representative samples in a manner which minimizes exposure to the operator and the environment. SENSOR Sampling is dedicated to providing a simple and effective way to collect a repetitive, quality sample, while reducing emissions to create safe working environment.

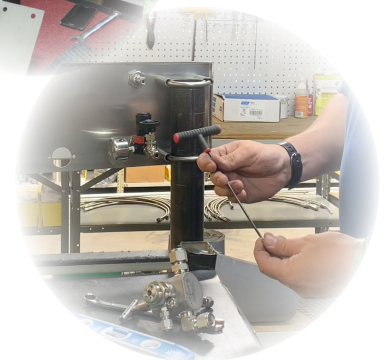
Why Closed-Loop Sampling?

- Representative samples
- Greater operator safety
- Zero emissions
- EPA compliant
- Minimal waste



Why SENSOR Sampling Systems?

- Zero emissions, zero dead volume sampling
- Complete system and application expertise
- Engineered to order systems
- Bottle versatility
- Replaceable needles
- Needle evacuation
- Easy to use and maintain
- Designed and built to proven SOR® quality system standards
- ATEX, TPED and PED



Base Systems

SENSOR Sampling Systems are designed and manufactured for your specific needs. These customizable, high quality systems are required to manage quality, yields and other important aspects of chemical and hydrocarbon processes.



BBSS

Basic Bottle Sampling System

- Simple, flow-thru valve design
- Zero dead volume
- Replaceable process and vent needles
- Available with SENSOR Needle Evacuation System (NES)

PIBSS

Pressure Isolating Bottle Sampling System

- Guaranteed repeatable sample volume
- Zero dead volume
- Replaceable process and vent needles
- Suitable for high process pressures
- SENSOR Needle Evacuation System (NES) standard



LGSS & VSS

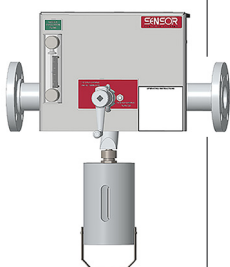
Liquefied & Vapor Gas Sampling Systems

- Safe, simple methodology for sampling high pressure liquefied gases and process gases
- Single handle operation
- Panel mounted pressure gauge
- Sight glass ensures safe cylinder outage on LGSS
- Ability to depressurize quick connects before removing cylinder

IVSS

Inline Valve Sampling System

- Wafer and inline configurations available
- Thread in or traditional needle bottle connection options
- Spring loaded lever handle with throttling capabilities
- Variety of connection sizes to mate up to existing piping



ISS/RSS

Inline/RAM Sampling Systems

- Available in wide variety of piping materials and end connections
- Suitable for high temperature, high viscosity service
- Available with open tube "stinger" or process needle
- Direct mount to process piping
- Variety of connections to mate up to existing piping or vessel

HPSS

Heavy Products Sampling System

- Removable Cartridge Designed Valve allows easy maintenance without removing the entire Flanged Spool Assembly
- Steam Heated Dispense Tube ensures that any residual remains hot and fluidized until it can be purged
- Steam Purge after each sample collection eliminates the chance of plugging
- Condensate-free steam flush assembly with the use of a unique 3-way needle valve and steam trap
- Twist Lock Purge Adapter ensures residual material that is purged out is contained instead of spraying out inside the enclosure



Specialty Systems to Meet Your Needs

In addition to our base systems, SENSOR Sampling also offers application specific sampling systems that have been tailored for specialty applications. Below are just a few examples of the many unique systems that SENSOR has designed to support our customers needs. If you have a specialty application please contact customer service for assistance designing your sampling solution.

TFSS

Tank Farm Sampling System

allows for collection of samples in remote applications where there is often an absence of a fast-loop and no electricity, instrument air or, other utilities commonly found in process units.



DTSS

Detector Tube Sampling System

allows samples from gas streams to be quickly spot tested for the presence of trace gases using detector tubes.

SHCSS

Steam & Hot Condensate Sampling System

allows for collection of liquid samples from boilers in a manner that not only condenses the sample but also mitigates operator burn risk.



DHSS

Diesel Hydrotreater with High Levels of H₂S

allows for diesel samples with high levels of H₂S to blow down into the sample bottle with low pressure nitrogen, making the process safe and reliable.

RBRSS

Resin Batch Reactor with Load Cells

allows for the collection of resin from a batch reactor by supporting the spring return sample assembly with the reactor. The steam-heated enclosure is separately supported by a pipe stand mounted to grade which allows the weighing system to work properly without interference from the operator.



Meeting the Challenges of Hydrofluoric Acid

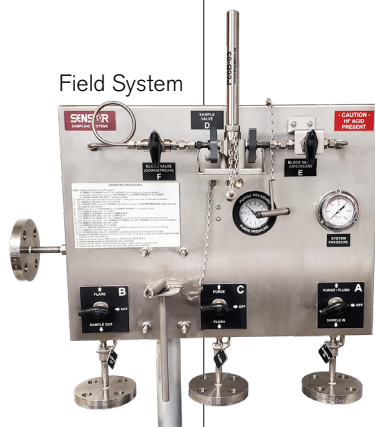
Sampling Hydrofluoric Acid Requires a High Level of Experience!

Hydrofluoric (HF) acid is one of the most challenging and dangerous process medias to sample. Not only does it require special materials of construction for corrosion resistance, but it is also incredibly toxic in small amounts and presents the potential for significant injury or worse. Collecting samples of HF acid requires a unique grab sampling system and professionals with a high degree of understanding on how to sample HF acid while maintaining safety in the alkylolation unit.

SENSOR Sampling understands the complexities of the HF acid sampling process.

We know...

1. How to obtain a good representative sample.
2. How to collect a good sample without exposure to the operator or a release to atmosphere.
3. How to prevent waste to minimize environmental footprint.
4. How to safely transport the sample from the field back to the lab.
5. How to properly collect a sample for the lab.
6. How to unload the sample in the lab to obtain desired moisture and purity results.
7. How to design a system for good sample collection as well as proper cleaning and consistent operation.



Field System

FHFSS

Field Hydrofluoric Acid Sampling System

is a specialty cylinder-valve system specifically designed for collecting samples of hydrofluoric acid.



Carrying Case



Lab System

LHFSS

Lab Unloading Hydrofluoric Acid Sampling System

is produced specifically to extract the field collected HF acid in the laboratory to perform moisture and purity tests. The unit provides protection of the lab who is performing these potentially dangerous tasks.

Options and Accessories from a Single Source

Needles

- SENSOR Sampling offers consumables and spare parts. This makes it more convenient for you to get what you need from one source, saving you time and resources. If you need something that you don't see listed, please contact the factory and let our expert staff help you.
- Easy to replace
- Each needle can be replaced independently of the others, providing an economical advantage, unlike some competitors whose needle assemblies are welded as one piece or concentric in design
- Wide variety of sizes; available in Hastelloy® C276, A20 and titanium
- Design allows zero dead volume when NES is used
- Solid point vent needle to prevent plugging due to coring of septa
- The **CONCENTRIC Needle** design combines the function of the dual-needle system is one concentric combination of two different sized needles, one within the other. Process travels through the inner needle into the bottle and the displaced air and vapors are vented back through the annulus between the two needles and plumbed to a safe location. The process/vent is available in three sizes: .065"/.109", .083"/.148" and .109"/.203".



Bottles, Caps & Septa

- [Bottle](#) shroud can be designed to accommodate virtually any type and size of sampling container
- [Caps and septa](#) range from 20mm to 38mm in size.
- Bottles are available in clear, HDPE or Boro from size 1 oz. to 32 oz. - other sizes available
- Components may be purchased separately or as a fully assembled set.



Needle Evacuation (NES)

- Removes residual process from valve and needle assemblies to eliminate drips and plugging
- Rotameter verifies vent needle is not plugged to ensure safe operation
- Purges sample container to eliminate moisture
- Zero dead volume. No process left in the sample port after sampling
- Reduces maintenance cost by eliminating corrosion and plugging

Sample Coolers

- Can be designed to meet virtually any process parameters
- Fixed volume coolers available to prevent cooling the "loop"
- Air and water coolers available

Emission Filters

- Absorb vent gases when no vent to flare is available
- Disposable design available
- Indicators available to visually see when carbon is spent

Enclosures

- Available with or without heating options
- Back plate design for ease of maintenance
- Windows available
- Insulation available



Optional Testing

- X-ray
- Dye penetrant
- PMI

TOO many more to list . . .

If you don't see what you are looking for, just ask!

Solutions for Most Applications

Closed loop Sampling Systems are designed and built for specific applications including; naphtha, heavy gas oil, resid, hydrotreaters, desalters, H₂S detector tube, vacuum tower bottoms, refinery gas, hydrogen, propane, butane, pentane, ethylene, EDC, VCM, HCL, H₂SO₄, NaOH, HF, phosgene, organic acids, HCN, ethylene oxide, propylene oxide, olefins, styrene monomer, ethylbenzene, organic alkyls, amines.

Application	Sampling System
Diesel Hydrator	Pressure Isolating Bottle (PIBSS)
Heavy Liquids	Heavy Products (HPSS)
	RAM (RSS)
High Pressure Liquefied Hydrocarbons	Liquefied Gas (LGSS)
High Pressure Oil Production	Liquefied Gas (LGSS) with Custom Manifold
High Vapor Pressure	Liquefied Gas (LGSS) with Return
Hydrofluoric Acid	Field Hydrofluoric Acid (FHFSS)
	Lab Unloading Hydrofluoric Acid (LHFSS)
Phosgene	Single Handle Bottle (SHBSS)
Liquefied Gases & Vapors	Liquefied Gas (LGSS)
	Vapor (VSS)
Low Pressure Steam	Steam & Hot Condensate (SHCSS)
Low Vapor Pressure Liquids	Inline (ISS)
	Basic Bottle (BBSS)
	Pressure Isolating Bottle (PIBSS)
Raw Crude, Asphalt and Desalted Crude	Heavy Products (HPSS)
Resid with H ₂ S	RAM (RSS) with Jacketed Fixed Volume and Spring-Return Handle
Resin Batch Reactor on Load Cells	RAM (RSS) Spring-Return Handle and Steam-Heated Enclosure
Small Batch Chemical Applications	Inline Valve Sampling System (IVSS)
Spot Sampling for Trace Gases	Detector Tube (DTSS)
Steam Condensate	Steam & Hot Condensate (SHCSS)
Sulfuric Acid	Basic Bottle (BBSS)
Tank Farms	Tank Farm (TFSS)





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Registered Quality System to ISO 9001

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