



Analytically Correct Engineered Systems

System Brief



# Liquid Sampling Vaporization

- 590 Series -

## Introduction

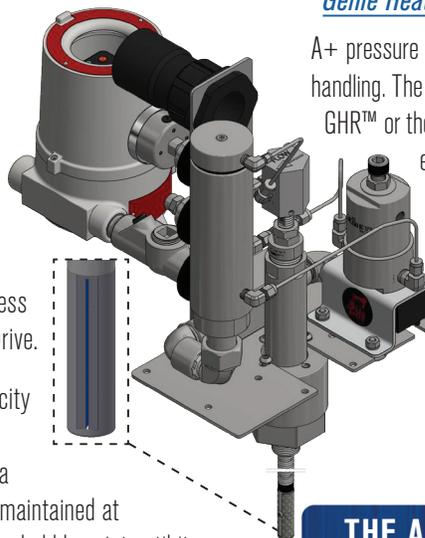
Analytically Correct Engineered Systems™ are tailored to the specific application and designed to ensure sample integrity is maintained throughout the sample extraction and preconditioning process. The Liquid Sample Vaporizer System is an ACES™ tailored for mixtures with a wide range of components like Natural Gas Liquids (NGL) and Liquefied Petroleum Gas (LPG). A key component of this system is the Model GV4 Genie® Vaporizer™. The GV4 is designed to flash vaporize a liquid sample solely by heat transfer without pressure reduction, and without disassociation of the phases or fractionation of the components. The regulator in the system reduces the pressure only after the sample has been completely vaporized by the GV4 and is heated primarily to compensate for the Joule Thomson (JT) cooling effect associated with reducing the pressure of a vapor. A typical Vaporizing Pressure Regulator (VPR) uses sudden pressure reduction to vaporize the sample and provides heat transfer to support the phase change caused by the pressure drop. This approach may be well suited to a relatively low flow rate of a pure liquid or a mixture with very few and very similar components but cannot be used to vaporize a relatively high flow rate of mixtures with a wide range of components, like Y-Grade.

The Liquid Sample Vaporizer System is composed of the GV4 and either the Model GHR™ or the Model JTR-H Heated Regulator™ in the small footprint of our patented vertical ACES™ insulated enclosure, all mounted on the Low Volume version of our Model 761™ probe. The low internal volume of the 761™ probe and the capillary inlet on the GV4 help to ensure minimal sample delay from the volume of liquid in the sample path. This system is especially well suited to supplying gas analyzers that can be field mounted near to the sample tap.

## ACES Component Breakdown

**Genie 761 Low Volume Probe™** The patented probe has a sample extraction entry point that faces upstream instead of the downward facing sample entry point of conventional probes. This coupled with small passageways, prevents phase disassociation before the sample is vaporized. The 761 technical specifications regarding the pressure rating, temperature limitation, process connections and lengths are the same as the 760 Direct Drive.

**Genie GV4 Vaporizer™** has greater heat transfer capacity than most vaporizing regulators and is designed to flash vaporize wide boiler mixtures that cannot be vaporized by a heated regulator. Its design allows the liquid sample to be maintained at pressure, above the bubble point and temperature below the bubble point until it enters the flash chamber where it is instantaneously vaporized without pressure reduction. The proportional temperature controller on the GV4 is mounted outside of the enclosure where the temperature display panel can be easily viewed.



### Genie Heated Regulators™

A+ pressure regulators are designed specifically for sample handling. The self-limiting heater block on either the single-stage GHR™ or the 4 stage JTR-H™ compensates for the JT cooling effect to help preserve sample integrity.

### Insulated Enclosure

This case allows the sample pressure and enclosure temperature to be monitored at a quick glance, without having to remove the enclosure. For complete access to system components, one or both sides can be completely removed.

<< Model 593 shown

**Power Requirement:** 250W @ 110 VAC or 1,000W @ 240 VAC

**Electrical Connection Approval:** CSA: Class 1, Division 1, Group C&D, T3

Should you need assistance in selecting the appropriate components for your application, please consult the factory.

## THE A+ SYSTEM OF COMPONENTS

- Genie® 761 Low Volume Direct Drive™ Probe
- Genie® Heated Regulators™:  
Model GHR™ or JTR-H™
- Genie® GV4 Vaporizer



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