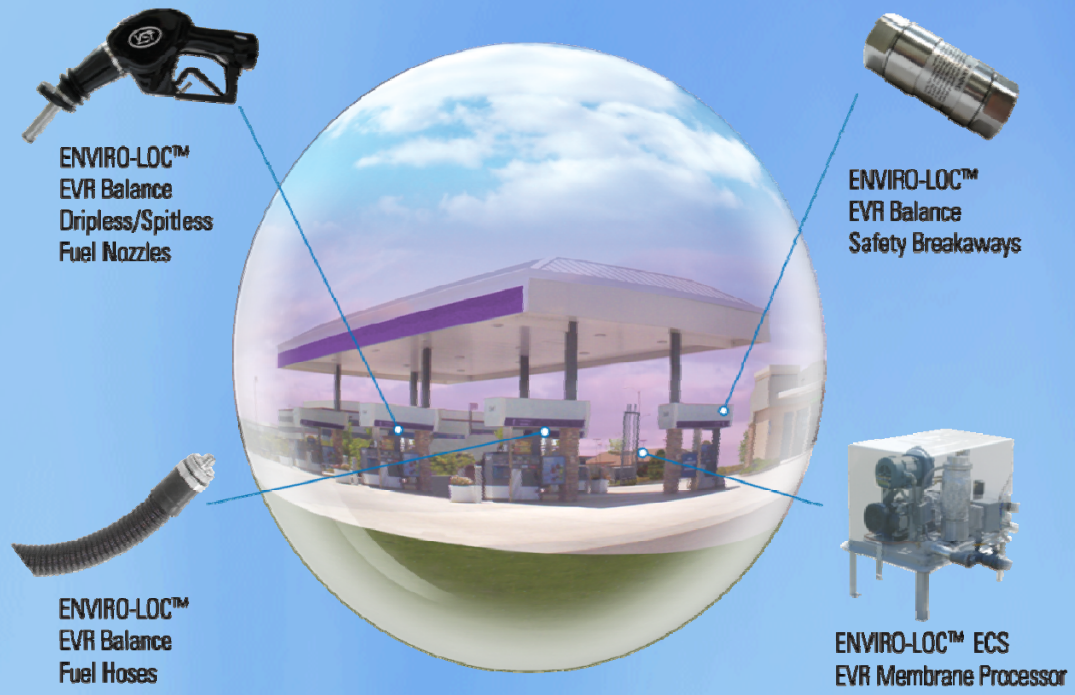


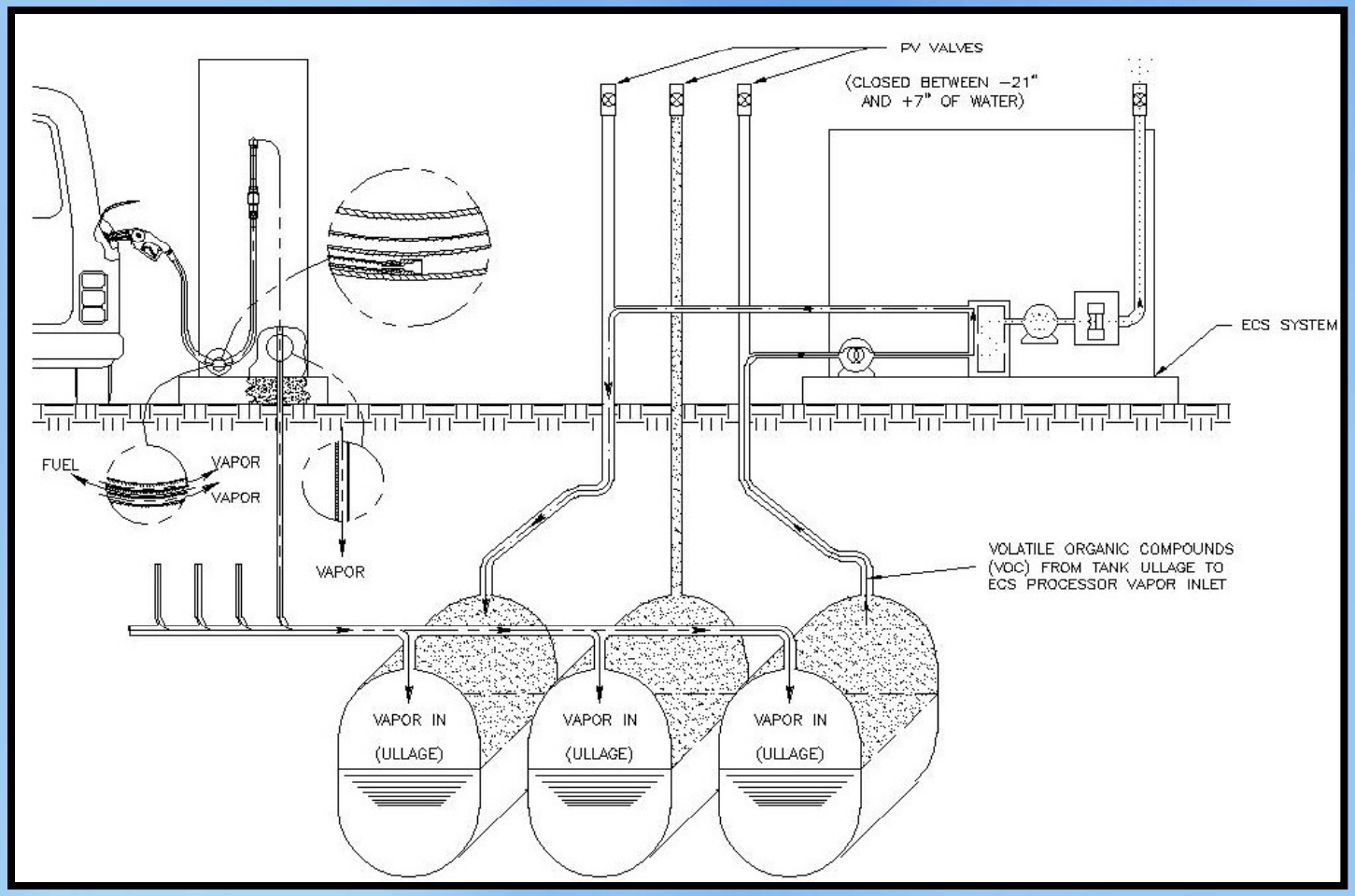
VST EVR Total Balance System Solution

Phase II EVR Conference

February 14, 2008

Overview

EVR Total Balance System



Performance:
EVR Balance Nozzles

Nozzle Category	Current USA Standards	CARB EVR Requirement	CARB Test Results
A. Liquid Retention	No known standard	≤ 100 ml. per 1,000 gal. dispensed	**≤ 14.759 ml. per 1,000 gal. dispensed**
B. Spillage	≤ .42 lbs per 1,000 gal. dispensed	≤ .24 lbs. per 1,000 gal. dispensed	**≤ .016 lbs. per 1,000 gal. dispensed**
C. Spitting	No known standard	≤ 1.0 ml. per refueling	**Zero**
D. Drops/refueling	No known standard	** ≤ 3 drops per refueling	**≤ 2.375 drops per refueling**
		** (included in spillage totals)	

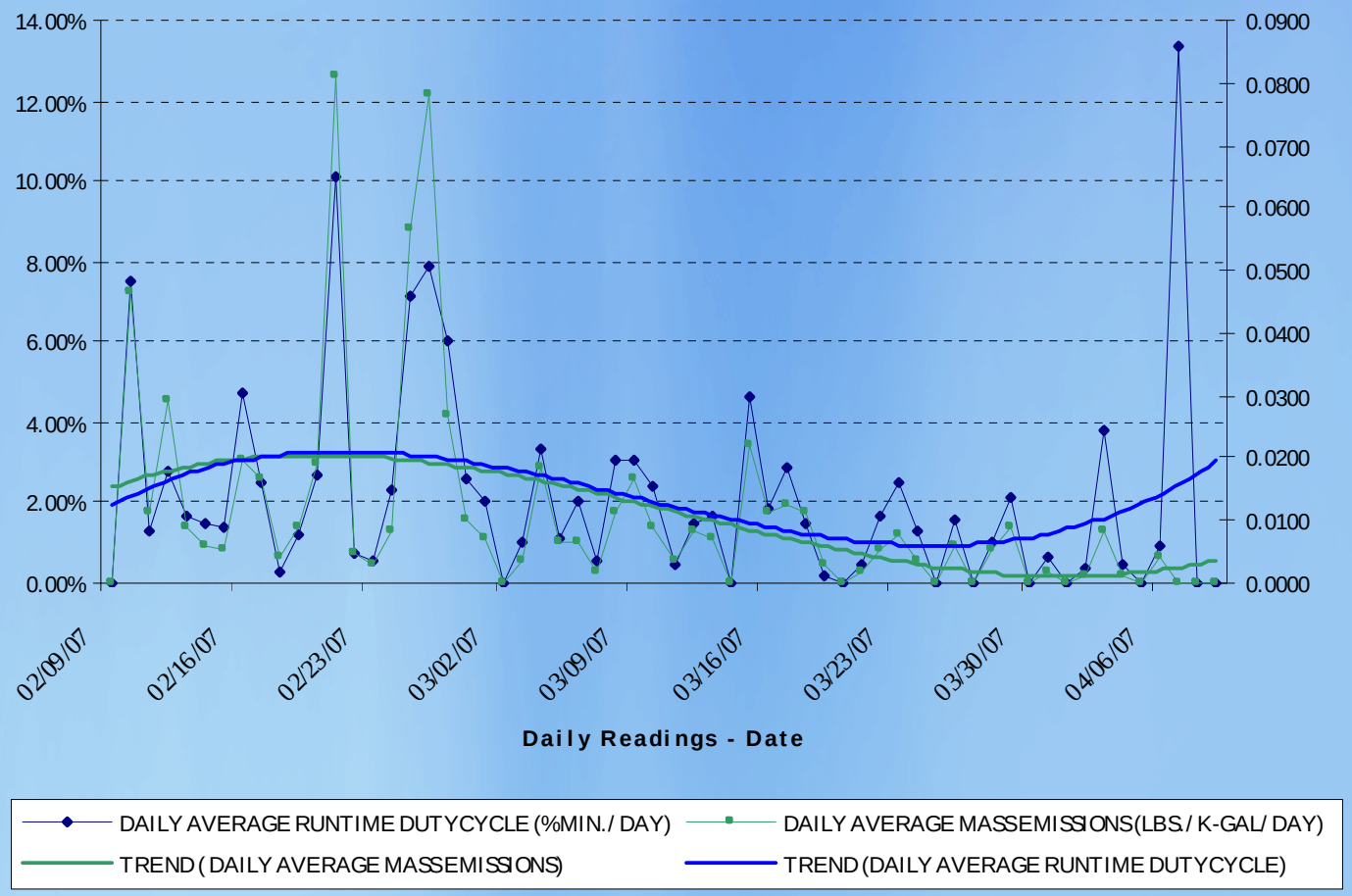
Performance:

200-Car Test Results

Vehicles Tested		TP-203-2 Efficiency	Emission Factor (lbs/10^3 gal)
Conventional	127	98.8%	0.09
ORVR	73	96.2%	0.04
Combined	200	98.5%	0.07

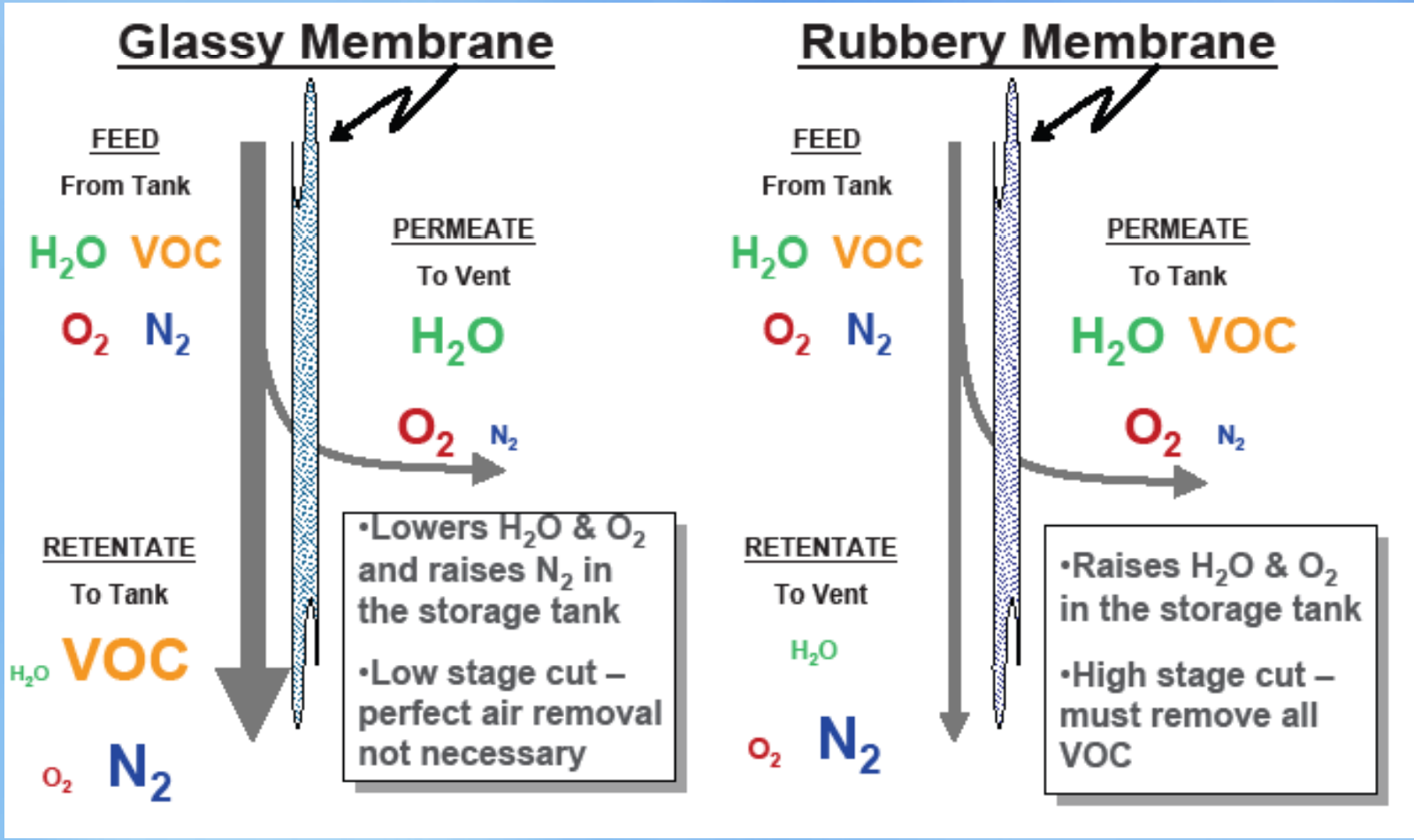
Performance: Membrane Processor

Run Time vs. Mass Emissions



Performance: Membrane Processor

Effect of Membrane Properties in Gasoline Emissions Reductions



ECS Membrane Processor

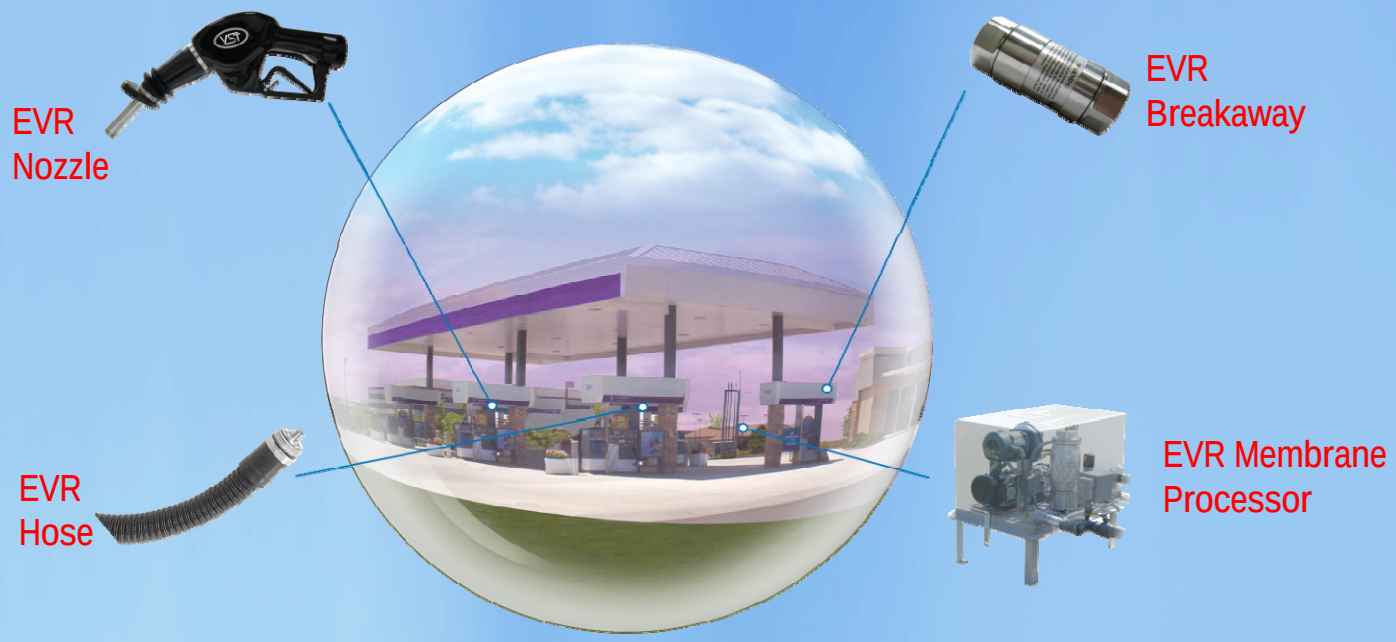
ECS Membrane Processor

Folsom, CA Installation

Features and Benefits

Immediate Compliance

- Immediately meet the CARB regulations for system back pressure, including the installation of ISD flow meters and vapor shear valves.



Features and Benefits

Easy Retrofit

- The VST front-end hardware will fit on any existing balance dispenser, so there's no need to modify a balance dispenser.

- The VST balance system does not trigger major modifications to the GDF; therefore, the components can be installed incrementally or all at once.

Features and Benefits

Station Throughput

- VST's EVR equipment may be installed at facilities with gasoline throughputs of any size as long as an EVR Phase II system with ISD is installed by the ISD deadline.
  - Go to www.vsthose.com to see CARB letter dated 12-11-07.
- For specific engineering details, see the Executive Order at www.vsthose.com.

Features and Benefits

Low Cost of Ownership

- The VST EVR front-end hardware will fit on any existing balance dispenser, so there's no need to modify a balance dispenser.

- The VST EVR balance system does not trigger major modifications to the GDF; therefore, the components can be installed incrementally.

- Installing the system in stages allows you to better control your cash flow by spreading out compliance upgrade costs.

Features and Benefits

Low Cost of Ownership

- The VST hanging hardware system is a robust, but simple design, with no A/L monitoring so there are fewer alarms and therefore lower maintenance costs.

- VST will offer a high-quality, re-built nozzle program.
  - There will be all news parts in the casting
  - Same extended warranty as a new nozzle

- Hanging hardware components are easily replaced by owner/operators, saving an expensive service call.

VRED Collection Sleeve

VRED Collection Sleeve

Performance:

VRED Face-Seal Test

Features and Benefits

Low Cost of Ownership

- The VST EVR Total Balance Solution does not require expensive vapor pumps, which *eliminates*:
  - Initial equipment cost
  - Installation cost
  - Maintenance cost
  - Replacement cost
  - Energy cost ($200.00 per month to operate)

Features and Benefits

Processor Location Flexibility

- The processor can be mounted:
  - On the ground
  - On the roof
  - On a canopy

Contractors

- Who are they?
  - VST permits only factory-trained Authorized Service Contractors (ASC's) to perform work on the VST EVR system.
- Where do I find them?
  - VST ASC's may be found on the VST website at www.vsthose.com.

Contractor Training?

- If you want to become a VST ASC, go the VST website for a list of the locations throughout California who offer the training.

- Contractor training began January, 2008.

The Future

1. ISD
   - All testing is complete
   - CAPCOA has begun the 30-day review
   - We anticipate availability in the March 15 – April 1 time frame

2. Single vent piping proposal for our existing system
   - Under engineering review with CARB

3. ECS II

ECS II

- Single vent
- Weight < 100 lbs.
- Mounting options
  - Vent
  - Ground
  - Roof
  - Canopy
- Installed at a test site
- Pushing to have it available by the end of 2008