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Stage II Vapor Recovery Tank Pressure Management/ In-Station Diagnostics

Tank Pressure Management

– *What's Been Done So Far*

- First System Certified in 1977
 - Last 3 100-Car tests 97-98% while maintaining a vacuum
- Membranes Demonstrated 4 Years Ago
 - Feasible, but not cost effective
- No regulatory drive to manage pressure, or test protocol

Tank Pressure Management

– *Potential*

- Existing VacuRite systems work with ORVR vehicles, 2% HC minimum @ 1.7 A/L
- Pressure Management with VacuRite- Vent @ 20% HC with 40% ORVR
- "Green Machine"- Hasstech's Membrane
 - **Cost effective, whole system or pressure management**
 - **Provides LIQUID return (Patent Pending)**
 - **Refining design while waiting for CARB rules**

In-Station Diagnostics

– *Existing Systems*

- Alarms and Indicators 1977
- Data Storage 1992
- Diagnostics and Off-Site Monitoring 1994

– *Potential*

- Unlimited
- Just add money!

HC Sensors

- Most have range <1% maximum. Does not fit application.***
- Some have higher range, but have exponential temperature effect***
- Others, such as Infrared, cost \$hundreds per monitoring point***

V/L Monitors

- *Primary issue is accuracy of vapor and liquid flow meters*
- *How often must you test the test equipment?!?*