



For immediate release!

Press release contacts:

Technical contact:

Angela Summers

P: 281-922-8324 x14

E: asummers@SIS-TECH.com

Company contact:

Shauna Ponton

P: 281-922-8324 x43

E: sponton@SIS-TECH.com

SIS-TECH Introduces a Unique Solution for Safe and Reliable Coker Drum Switching & De-Heading Applications

HOUSTON, TEXAS (October 2006) – SIS-TECH is a premier provider of safety instrumented system products, training, consultation, and engineering services to the process industry. Using its Diamond-SIS™ non-programmable logic solver, SIS-TECH has developed a truly unique solution for ensuring Coker drum switching and de-heading operations are safely and reliably performed.

Traditional solution:

According to an Occupational Safety & Health Administration (OSHA) article titled *Hazards of Delayed Coker Unit (DCU) Operations*, "No one system has proven effective in eliminating all incidents associated with incorrect valve activation due to mistaken coke drum or module identification; however, the following actions have been reported as beneficial:

- Provide interlocks for automated or remotely activated valve-switching systems.
- Provide interlocks for valves that are manually operated as part of the switching/decoking cycle to avoid unanticipated valve movement."

The *Delayed Coker Communications Forum* (www.Coking.com) is not affiliated with any refinery or vendor but exists for the purpose of facilitating communications and promoting safety and reliability among companies operating Coker units. Among the topics listed on the *Delayed Coker Communications Forum* is the pros and cons of installing and using limit switches on pneumatic and electric valve actuators. The goal of installing limit switches is to create an interlock matrix that users believe helps avoid operators and/or automated sequences from inadvertently opening an in-service drum, thereby releasing hydrocarbons to the atmosphere or allowing hydrocarbons to enter an open drum.

Though the use of valve limit switches seems appropriate, replies posted on the *Delayed Coker Communications Forum* Web site caution that reliability is difficult to achieve when adding limit switches to existing valve actuators. Several replies even go so far as to suggest foregoing the attempt to install



12621 Featherwood Drive • Suite 120 • Houston, Texas 77034

Tel: (281) 922-8324 • Fax: (281) 922-4362

www.SIS-Tech.com



external limit switches and simply replace all the valve actuators with integral limit switches – a very costly solution.

Applying New Thinking:

SIS-TECH engineers, working in cooperation with Coker unit experts from several major companies, set out to find an alternative to using limit switches to avoid the inappropriate operation of valves used in the switching/decoking cycles.

The team identified the following in-service and open drum events that could lead to dangerous hydrocarbon incidents during Coker drum switching and de-heading operations.

In-Service events:

- Vent valve opening
- Blowdown valve opening
- Drain valve opening
- Top head opening
- Bottom head opening

Open drum events:

- Overhead to Fractionator valve opening
- Inlet feed valve opening

SIS-TECH engineers analyzed these events and determined that the most reliable, simplest, and most cost effective solution was to design a solution that protects each Coker drum individually, thus eliminating the complexities associated with multiple Coker drum applications and at the same time addressing the valve limit switch reliability issues.

SIS-TECH's Diamond-SIS™ Coker drum switching solution continuously monitors three key process variables to accurately and reliably detect when a Coker drum is in-service. The Diamond-SIS uses hardwired logic to monitor and control movement of five valves based on specific combinations of three process variables.

Diamond-SIS Coker Drum Solution Inputs & Outputs

Inputs:

- Overhead pressure
- Overhead temperature
- Inlet temperature

Outputs:

- Vent drain valve
- Top/Bottom head valves
- Blowdown valve
- Overhead to Fractionator valve
- Inlet feed valve

What makes SIS-TECH's solution different than simply implementing the above logic using conventional relays is that the Diamond-SIS is designed and built as a certified safety instrumented system (SIS) suitable for applications requiring up to SIL 3 (Safety Integrity Level) and flexible enough to accommodate 1oo1 (read as 1 out of 1), 1oo2, 2oo2, or 2oo3 voting schemes.

[As noted above, the OSHA report states that interlocks that prevent unanticipated valve movement during manual, automated, or remotely activated switching/decoking cycles have proven beneficial.](#)



SIS-TECH's Diamond-SIS solution simply and reliably mitigates the risks of Coker drum switching and de-heading activities.

ABOUT SIS-TECH:

SIS-TECH, founded in 1999 by Dr. Angela Summers, is comprised of an engineering entity, SIS-TECH Solutions LP, and a product entity, SIS-TECH Applications LP.

SIS-TECH's slogan, "We're proven-in-use®" is the result of its extensive list of alliance customers ranging from large corporations to small specialty manufacturers in the refining, chemical, petrochemical, gas processing, and production industries.

SIS-TECH Solutions LP focuses on providing cost competitive engineered solutions that are designed in accordance with international safety standards such as IEC 61511/ISA 84.01-2004.

SIS-TECH's consultants apply risk based assessments to design complete lifecycle solutions that meet or exceed the intent of the latest international good engineering practices as well as incorporating the client's operability and reliability goals.

SIS-TECH's engineered solution offerings include, Compliance Programs, Risk Analysis, Alarm Management, Design, Verification, Programming, Commissioning, Validation, Training, Proof Test Supervision, and Hot Cutover Assistance.

SIS-TECH Applications LP commercializes technology based on the unique designs developed by SIS-TECH Solutions' consultants and engineers.

SIS-TECH products use field-proven components to achieve the high reliability and integrity required of today's instrumented system application, while providing cost effective, proven performance.

SIS-TECH products are available for specific applications, such as Burner Management Systems (BMS), High Integrity Protection Systems (HIPS), Automated Testing Packages, and Diagnostic Packages.

To learn more about SIS-TECH, visit http://www.SIS-TECH.com/sis_tech_home.html