



Coker Drum De-Heading



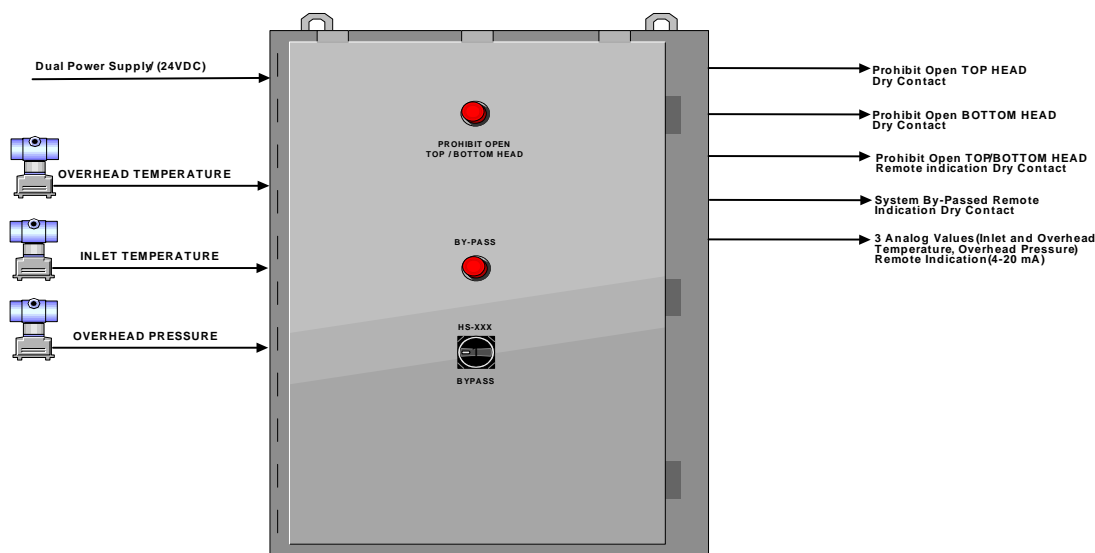
Coker drum de-heading poses challenges to safe and reliable operation of the Coker Unit. Safety issues are generally related to release of hydrocarbons to the atmosphere by opening the top or bottom head on an in-service drum. End users have often struggled with identifying the necessary Safety Instrumented Functions (SIF) to prevent these loss of containment events. Preventing these events by implementing the SIF's in the de-heading control system PLC means the system is classified as a Safety Instrumented System (SIS) requiring that it be implemented in a safety rated PLC. The **DIAMOND SIS®** Coker Drum De-Heading Safety System is a standalone SIS logic solver (*suitable for up to SIL 3*) designed to receive key process variables that are used to determine when the drum is in service. When preset conditions are not met the **DIAMOND SIS®** outputs prevent the de-heading of the top or bottom of the drum. Process inputs to the system are Overhead Pressure, Overhead Temperature and Inlet Temperature and outputs from the system are supplied to prevent opening of the Top/Bottom Head.

- This design greatly simplifies the SIS and allows the valve control system to be implemented in a non- safety rated PLC.
- Each Coker drum is monitored and protected by a stand alone safety system.
- The failure, maintenance or testing of any one safety system does not affect the operation of the other drums.



The **DIAMOND-SIS®** is a low-cost, stand-alone, non-PE logic solver (*suitable for up to SIL 3*). Rated for -30C to +75C and constructed using Class I Div II components the **DIAMOND-SIS®** can be installed in the harshest process units near the equipment under control. Field installation of the logic solver reduces implementation costs by 50% compared to safety-PLCs.

DIAMOND-SIS® receives analog inputs for each process variable and has adjustable trip points. Further, the number of inputs and voting architecture, 1oo1, 1oo2, 2oo2 or 2oo3, can be adjusted for each process variable to meet any SIL or reliability requirement. The **DIAMOND-SIS®** Coker Drum Safety System is flexible and can be customized for your specific application.



THE LOW COST ALTERNATIVE TO SAFETY PLC's

DIAMOND SIS®

KEY FEATURES

- 2003 version is certified to IEC 61508 SIL 3 in SH3 configuration
- High reliability
- Proven technology
- Rugged design
- Field mountable
- On-line testable & repairable
- Remote process variable & system status monitoring
- No programming
- Low installed cost alternative to a Safety PLC

SPECIFICATIONS

- Supply Power: User specified, 24VDC/110VAC/240VAC
- Input: 4-20 mA DC or discreet (dry contact)
- Output: 5 Amp resistive dry contact
- Accuracy: 1% of span
- Temperature: -40 to +80°C Storage / -30 to +75°C Operating
- Environment: All internal components rated Class I Div II Groups A/B/C/D
- Enclosure: NEMA 4X – choice of materials

ENGINEERING/DOCUMENTATION OPTIONS

Safety requirements specification for complete instrumented loop, including SIL Verification

ORDERING SELECTION

SH - P - SD - R - B - C - E *

(SH) Base System

- 1 Single Channel
- 2 Dual Channel
- 3 Triple Channel

(P) Power Supply

- 1 External 24 Vdc (default)
- 2 Simplex Power Supply 110/240VAC - 24 VDC
- 3 Dual Power Supply 110/240VAC - 24 VDC
- 4 UPS 110VAC - 24 VDC (30 min backup)
- 5 Simplex & UPS Combination

(SD) Manual Shutdown

- 1 Door Mounted ESD Pushbutton (Local)
- 2 Remote ESD
- 3 Both (Local & Remote ESD)

(R) Reset

- 1 Remote

(E) Enclosures

- 1 NEMA 4X Fiberglass
- 2 NEMA 4X 304 Stainless
- 3 NEMA 4X 316 Stainless

(C) Communications

- 1 Modbus RS485-serial
- 2 Repeated Signal Isolator (Discrete 4-20mA)
- 3 Ethernet (Modbus/TCPIP)
- 4 Repeated Signal Isolator (Discrete 4-20mA) for Hart Protocol

(B) Bypass

- 1 Local Bypass (Standard on SH1)
- 2 Remote Bypass

* -NS

Systems which include non-standard options.