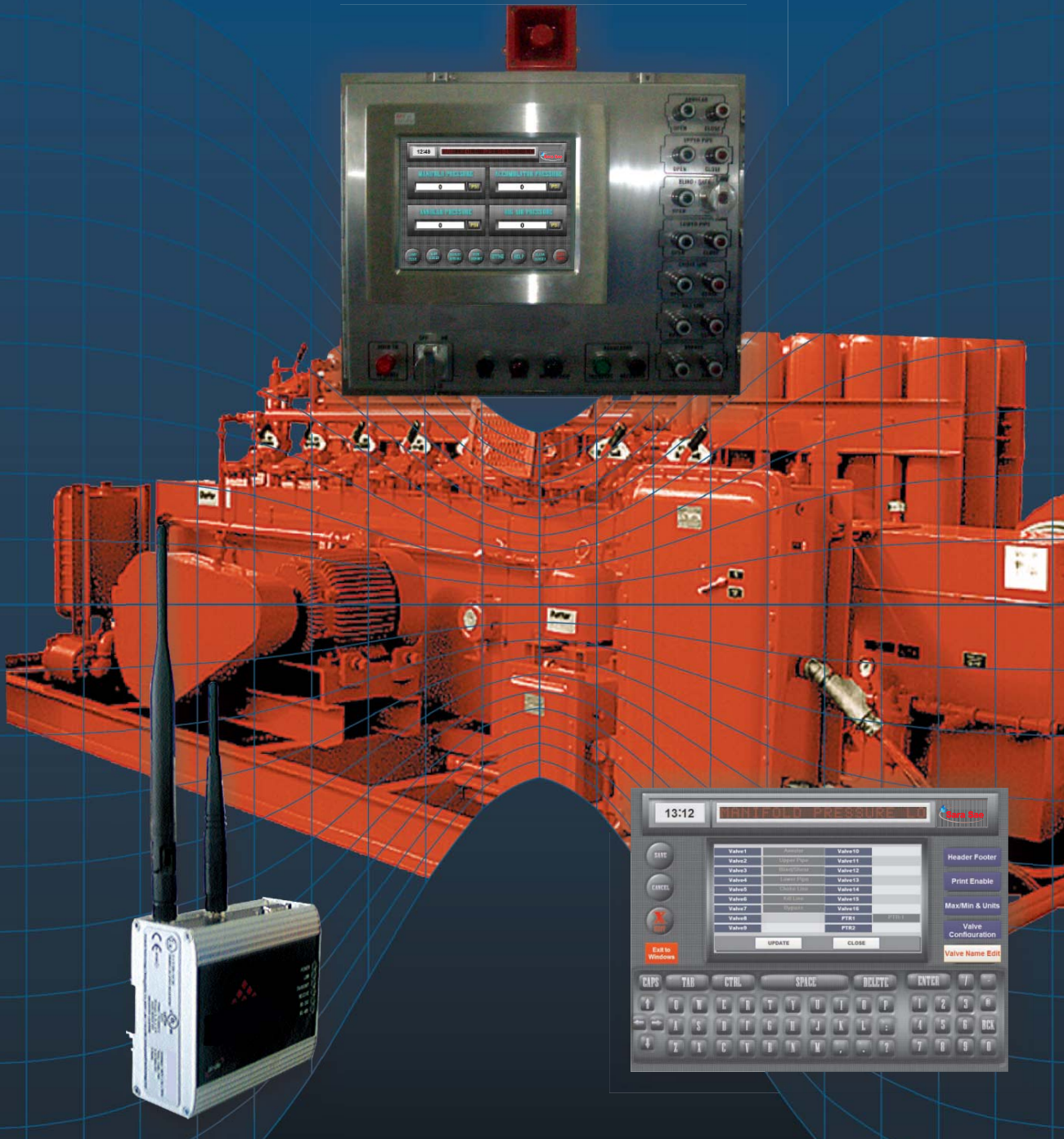# SMART CONTROL

PLC Based, Touchscreen Driven, Remote Panel System for BOP Accumulator Unit

Smart Control

Sara Sae

SMART CONTROL

PLC Based, Touchscreen Driven, Remote Panel System for BOP Accumulator Unit

Main Screen

Analog Gauges

Administration

Alarm Log Calender

Background

• Handles high temperatures up to 60°C

The display panels currently used in the accumulator system were first designed in the 1980's. Due to the level of technology available, the panels were controlled by pneumatic, electrical, or both power sources.

On pneumatic panels, control was received via valve operation of the cylinders on the Accumulator Unit. Electric lights in the panels functioned as valve indicators.

Electrical panels used a system of relays and contacts that were configured to establish the valve operation logic.

• Easy rig up and rig down

These panels functioned well for some time, but contained various intrinsic flaws. As Accumulator Unit safety became increasingly important, the remote panels required quicker response time and the ability to log and diagnose problems before they occurred.

Accordingly, a new panel design with faster and smarter control capability was needed. Sara's Smart Control keeps the best features and reliability of its predecessors, while overcoming the flaws that were inherent in the older panels.

Features

- Explosion Proof construction for Class I Div.I Or Class II Div.II
- Air Cooler for high temperature conditions (up to 60°C)
- Logging of Functions and Alarms
- Air and Battery backup
- Minimum rig uptime
- No air hose

- System can be retrofitted on existing units
- System can set secondary pressure units
- System can set minimum and maximum gauge readings
- Time zones can be set for accurate logging
- Impact resistant IR touchscreen
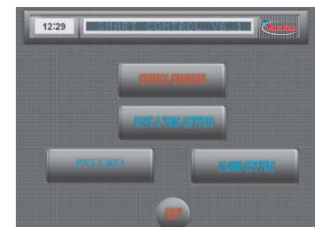- Help Screen included for diagnostics without opening the panel

Functions

- Visual indication of valve positions
- Audible and visual Low Alarm
- Pushbuttons from Open/Close function, with Master Pushbutton for two-handed operation
- Pushbuttons for High Low function of Bypass Valve
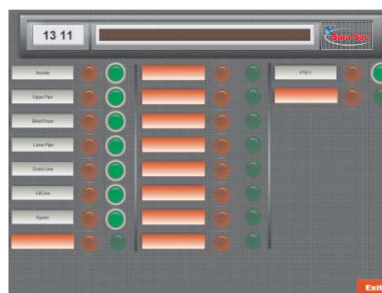- Pushbuttons to increase/decrease the Annular Regulator Pressure setting

Options

- Wireless capability for remote communications
- Permits remote monitoring of Unit Status
- Communications via Optical Fiber Cable
- Screen displays with reduced sun glare
- Communication via Co-axial Cable
- Communication via Ethernet, touchscreen or gauges.

Alarm Setting

Valve Configuration

Trends View

Diverter Mode permits two-handed operation on the touchscreen.

Comparision: Old Technology Panesl and Sara's Smart Control Panels

REQUIREMENT	OLD PANELS	SMART CONTROL PANELS
Quick valve operation	Response in seconds for air to travel from panels to valve	Milliseconds response due to cable, fiber or wireless
Ease of installation during rig up and rig down	Large bulky air-hose bundle and large cable diameter for indication	Wireless system
Security of use	Two-hand operation	Two-hand operation
Valve position	Feedback from pressure switch, which even presets on 90% valve open	Positive feedback from proximity switches, which will only indicate once valve is 100% open
Display of pressure	Analog gauges	Analog and digital values
Indicating lights	Conventional bulbs that fuse due to heat	LED with 10,000 hours life; reduced electricity consumption

"Smart Control" Panel — Additional Features Not Found in Conventional Panels

- Alarm setting can be set and displayed in gauges
- Alarm logs for up to 5 years
- Function fail alarms are all logged
- Power alarms are displayed and logged
- Single software for multiple panels, configurable by user
- Sunlight visibility; can be viewed in direct sunlight
- Pressure vs time trends for pressure monitoring; all pressure trends are logged
- Alarm values easily set by user

- Hardware diagnosis permitted, so problem is eliminated before it occurs
- Pressure is always visible at night if rig power is off
- Statistical analysis of all alarms
- Value operation report; logs up to 5 years
- Shear RAM operation lockout is physical and on screen
- Multiple languages to choose from
- Password protection prevents unauthorized settings

Tested to MIL-810F IP66 Rated

The above tables and information display comparisons between conventional panels and Sara's "Smart Control" panels. These wireless "Smart Control" panels may be set-up quickly and later dismantled without laying or disconnecting cables or hoses.
"Smart Control" panels are very rugged, utilizing touchscreen displays without a film surface. In its place, infra-touch technology is employed with tempered glass covering the display. The unit's electronics meet or exceed military requirements, as compared to industrial electronics.
Sara's "Smart Control" panels are next generation panels that offer ease of use and reliability, requirements for panels for safety equipment like Accumulator Units.

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