INVENTION
UNIQUE DESIGN &
EXTRAORDINARY CRAFTSMANSHIP
# Table of Content

- Advanced Control Systems .................................................. 2
- Quality Policy ........................................................................ 3
- Industry Standards ................................................................. 3
- Advanced Control System Software ........................................... 4-7
- Standard Drilling Choke Control Panel ....................................... 8
- Emergency Shutdown System .................................................... 9
- Flowhead Control Panel ......................................................... 9
WOM’s Advanced Control System is Copyright protected and patent pending.

**Application**
- Choke and Kill System
- Buffer Manifold Control
- Managed Pressure Drilling (MPD)
- MPD Interlocking System
- PRV Control System
- Single Set Point Choke Control System
- ESD Systems
- Wellhead Control System
- Flowhead Control System
- Liquid Seal Monitoring System

**PLC/HMI Features**
- 15”/19” HMI
- Widescreen-TFT-Display
- 16 Million Colors
- Proficient Interface, MPI/profibus DP Interface
- Panel Mount Design
- Dual Power Supplies with Redundancy Module
- DP/DP Coupler
- Integrated Display on PLC Faceplate for Controller Status
- Driller Interface
- Data Logging and transfer
QUALITY POLICY

The primary purpose of Worldwide Oilfield Machine, Inc. is to provide products and services that meet the customer’s needs and provide them with value. This philosophy will create gainful work for our employees and a profit for our stakeholders. Worldwide Oilfield Machine, Inc. is dedicated to providing the best possible product and/or service to its customers by having well-trained, enthusiastic employees and the effective implementation of this management system.

It is the POLICY of Worldwide Oilfield Machine, Inc. to:

• Operate in a safe, consistent and economical manner
• Maintain conformance to the documented quality management system, including the applicable industry codes, standards and/or specifications and customer-specified requirements
• Maintain compliance to statutory and regulatory requirements
• Prevent nonconformities at all stages of design and manufacturing by implementing the requirements of this manual and supporting procedures
• Ensure customer satisfaction
• Foster an environment of continual improvement
• Communicate this policy throughout Worldwide Oilfield Machine, Inc. and ensure that it is understood
• Aggressively pursue the Mitigation of Systemic Risk™ through the implementation of this management system
• Monitor and periodically review the management system, including stated objectives, and this policy for suitability and effectiveness

INDUSTRY STANDARDS

• API 16C Monogram License
• DNV-OS-E101
• ABS CDS
• ATEX
• IECEx
• CSA
• Norsok
ADVANCED CONTROL SYSTEMS SOFTWARE

The WOM Control System software is equipped with intelligence that allows mechanization of the well control manifolds. The software’s diagnostic configuration resides inside the WOM PLC/HMI. The software (PLC/HMI) is written using Siemens TIA portal and includes the following features:

- **Intergrated System Diagnostics**
- **Fast error localization and error analysis**
- **Identical visualization of error messages in the TIA Portal, on HMI, on the Web server and on the PLC CPU in plain text format**

There are six features remarkably distinguished by the use of the WOM Control System software.

- **Alarm/diagnostics Processing**
- **Calibration**
- **Datalogging**
- **Interlocking Valves**
- **Dynamic Gauges**
- **LQS Monitor**

Remote Control Panel
■ Features
  • Dynamic pressure/ temperature gauges
    WOM offers dynamic gauges with the ability to switch between Psi/Bar and °F/°C, ability to change scale for higher resolutions when needed, alarms, high and low operational ranges are displayed via copyright protected graphics
  • Pump stroke Counter Monitor
    The pump stroke counter (PSC) indicates the stroke count, strokes per minute, and flow rate in GPM/ LPM/BPM for each mud pump. Additionally, for each pump, the stroke count can be cleared back to zero by pressing the corresponding CLR button. There is also a TOTAL section in the PSC display.
  • Datalogging
    In real-time, data is logged from the PLC to the HMI SD Card(s). Data logging is uninterrupted even during data transfer to a USB memory stick.
  • Choke speed control slider
    Virtual speed control slider via touchscreen HMI allows the driller to manipulate choke actuation speed during a well control event.
ADVANCED CONTROL SYSTEMS SOFTWARE

- Features
  - **Liquid Monitoring System (LQS)**
    The system monitors the differential pressure between the liquid seal and the mud gas separator. The WOM control system software notifies the operator via internal and external audible/visual alarms when the liquid seal is in danger of being breached. As an option, WOM offers a controlled automated “dump” sequence.

  - **Gate valve control graphics**
    The top half of the screen displays the state of the gate valves. The bottom half of the screen displays the automated valve control OPEN/CLOSE buttons.

  - **Automated valve sequence**
    As an option, WOM can provide automated sequences for opening/closing valves on selection of particular operational modes. In addition, an automated “dump” sequence is provided to assist the operator in redirecting well returns from the MGS to the overboard flow lines.
- **Features**
  - **Alarms Graphics**
    Alarms are displayed via split screen and color coded to represent severity/status. Upper half (Alarm History Screen) shows historical record of all alarms regardless of its current state. Lower half (Active Alarm Screen) shows active alarms only. All alarms are displayed with time/day stamp.
  - **As a minimum, WOM displays the following on choke control systems:**
    - Manifold Pressures and temperatures
    - Visual indicator(s) for all Alarms
    - Strip Tank Level Indication
    - Choke(s) Position (% Open)
    - Pump Stroke Count (PSC), SPM, and flow rate
    - Low Hydraulic HPU reservoir Level Indicator
    - Operational Mode – Local/Local Interlock/Remote Mode
  - **Interface with drillers control system**
STANDARD DRILLING CHOKE CONTROL PANEL

■ Configurations/ Options:
  • Stand Alone/Floor Mount
  • Blind HPU
  • Remote Wall Mount

■ API 16C Drilling Conformance
  • Emergency Operation Provisions
    • Nitrogen Connection
    • Hand Pump
  • Rig Air Connection
  • Choke Pressure
  • Stand Pipe Pressure
  • Choke Position Indicator
  • PSC
  • Primary and Back Up Pump
  • Accumulator
    • Increase Choke Speed
    • Smooth Choke Operation
    • Emergency Power Source
  • Choke Speed Control
  • Power to close Choke from fully open within 30 seconds

■ Stainless Steel Cabinets Type 316SS
■ 316SS Internal Hard Tubing
■ Suitable for Zone 1 and Zone 2
EMERGENCY SHUTDOWN (ESD) SYSTEM

WOM’s ESD system provides a fast acting functional safety shutdown in case of a hydrocarbon escape or other safety issues. This system located on the rig floor is designed to actuate SSV valves installed on or near the flowhead. The control panel includes:

- One ESD local control; installed on the control panel face
- Maximum five (5) Remote ESD control stations
- Hi-pilot pressure set point; pilot device
- Low-pilot pressure set point; pilot device
- Fusible plug
- One High Pressure hydraulic hose 100 feet, rated for 6,000 psi
- Air Hose(s) for Remote Stations, 100 feet

Custom configurations available upon request.

FLOWHEAD CONTROL PANEL

WOM’s Flowhead Control Panel located on the rig floor allows for remote shut-in of the well at the flowhead. The system is designed to actuate a maximum of two (2) double acting hydraulic gate valves and two (2) fail-safe actuated valves as follows:

- Two (2) hydraulic operated fail-safe actuated wing valves
- One (1) hydraulic operated swab valve
- One (1) hydraulic operated master valve

Custom configurations available upon request.
WORLDWIDE OILFIELD MACHINE - CONTACT US

Worldwide Oilfield Machine, Inc. - USA
11809 Canemont St.
Houston, Texas 77035 USA
Phone: +1 (713) 729-9200
Fax: +1 (713) 729-7321

Worldwide Oilfield Machine Ltd. - UK
7 St Machar Road
Aberdeen AB24 2UU
Scotland, UK
Phone: +44 (01224) 484400
Fax: +44 (01224) 489740

Worldwide Oilfield Machine, Inc. - Turkmenistan
Yimpash Business Centre
Turkmenbashy Shayoly 54
Office #308 3rd Floor
Ashgabat – Turkmenistan 744000
Phone 1: +99-365 820130
Phone 2: +99-365 309757

Worldwide Oilfield Machine, Inc. - Asia Pacific - Singapore
17 Gul Way
Singapore 629194
Phone: +65 6690 1700
Fax: +65 6656 3859
Fax: +65 6558 7562

Worldwide Oilfield Machine, Inc. - Indonesia
#11-08  One Pacific Place
Sudirman Central Business District
Jl. Jenderal Sudirman Kav. 52-53
Jakarta 12190
Phone: +65 6690 1792

Worldwide Oilfield Machine, Inc. - Korea
#1012, 481-10, Byucksan Digital Vally-II,
Gasandong, GumchonGu
Seoul, Korea 153-803
Phone: +82-2-854-6806

Worldwide Oilfield Machine, Inc. - Subsea - USA
11400 Tanner Rd.
Houston, Texas 77041 USA
Phone: +1 (713) 937-8323
Fax: +1 (713) 937-8574

Worldwide Oilfield Machine Pvt. Ltd. - India
Gat No. 778, at Post Velu
Pune Satara Rd.
Tal. Bhor, Dist. Pune 412 205. India
Phone 1: +91-8308210300
Phone 2: +91-8308215300

Worldwide Oilfield Machine M.E. - U.A.E
Jebel Ali Free Zone (JAFZA) South,
Plot# S61302, Near Gate#12, P.O. Box: 32478
Dubai (UAE)
Phone: +971-4  81 63 600
Fax: +971-4  81 63 601

Magnum Technology Center - U.A.E
Plot no. S61301,
Jebel Ali Free zone (South),
Dubai (UAE)
Phone: +971-4  88 06 911

Disclaimer. This catalog is published for informational purposes only. All previous catalogs are not valid and should not be used as a reference in any form.
Revised March 2017