

# Dynamic Annular Pressure Control™ System

**Measure, manage and control bottomhole pressure** with the unmatched stability and precision of the The Dynamic Annular Pressure Control™ (DAPC™) system.

The DAPC system is a single, simplified, automated pressure control solution that delivers new levels of stability for increased levels of drilling performance and safety in hard-to-drill environments. Increased stability also drives reductions in rig time and expense spent managing unplanned well control events.

The ability to control and stabilize bottomhole pressure within small operating windows through narrow pressure margins has expanded development drilling and extended the productive life of mature fields.

Active pressure control with real-time hydraulics analysis combined with an automated choke manifold and an on-demand backpressure pump enable drilling in areas too costly or technically difficult due to lost circulation, wellbore instability, kicks and ballooning.

## Active Pressure Control

The DAPC system provides safety critical control of bottomhole pressure within pre-set drilling windows to safely maintain wellbore stability and avoid lost circulation, kicks, and ballooning.

An Integrated Pressure Manager actively controls a choke manifold to manage the annular backpressure at the level required to maintain the bottomhole pressure within pre-set, safe limits. The pressure manager also is able to call upon its own dedicated pump to circulate mud and actively supply backpressure when the drilling flow rate drops to insufficient levels.

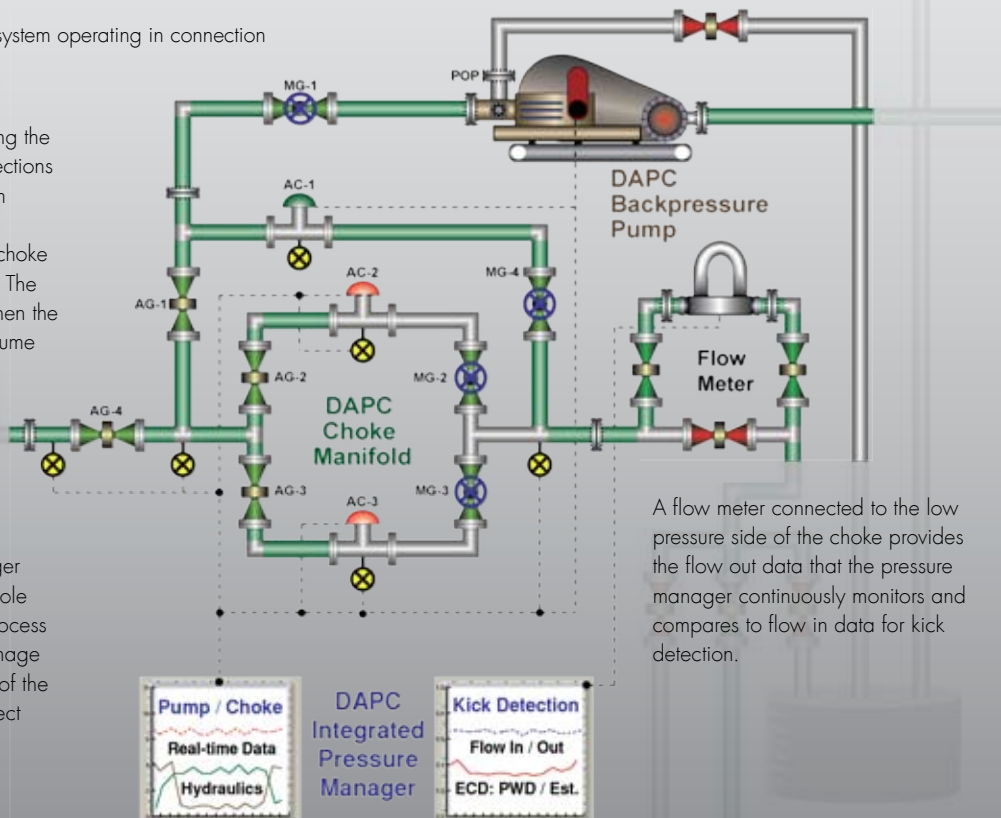
Capable of making immediate adjustments to the choke manifold the pressure manager is able to instantly respond to well control events before they reach potentially damaging levels.

In addition, the pressure manager is able to respond to different contingencies by utilizing the manifold's ability to switch between the system's redundant main chokes (see illustration) and auxiliary choke.

Illustration showing the DAPC system operating in connection mode (rig pumps off).

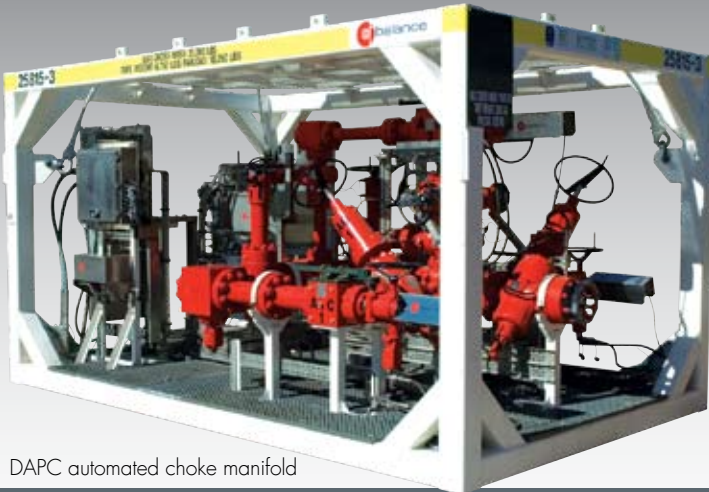
To maintain constant BHP during the transition from drilling to connections (rig pumps on to off) the system stabilizes the backpressure by pumping drilling fluid into the choke manifold through choke AC-1. The system reverses the process when the rig pumps are turned on to resume drilling.

The Integrated Pressure Manager stabilizes and controls bottomhole pressure using safety critical process technology to monitor and manage backpressure by direct control of the pump and choke manifold, direct link with real-time hydraulics analysis, and continuous kick detection.



A flow meter connected to the low pressure side of the choke provides the flow out data that the pressure manager continuously monitors and compares to flow in data for kick detection.

# AUTOMATED BOTTOMHOLE PRESSURE CONTROL



DAPC automated choke manifold

Automated Pressure Drilling™ with the Dynamic Annular Pressure Control™ (DAPC™) system provides bottomhole pressure measurement, management, and control at a speed manual methods cannot achieve.

The ability to immediately respond and stabilize pressure mitigates the risks of potentially critical well events and eliminates the fluctuations that cause them.

The DAPC system actively manages and precisely controls bottomhole pressure, enabling operators to confidently reduce cost, increase safety, and improve drilling.

## Dynamic Annular Pressure Control™ (DAPC™)

### System Features

- Safety critical process technology
- Early kick detection
- Automated choke operation & switching
- Redundant, fast acting chokes
- Automated backpressure pump
- On-demand backpressure supply
- Real-time hydraulics modeling
- Continuous model calibration\*
- Remote operation and control
- Pressure stability within +/- 50 psi
- Programmable alarms and trend monitoring

### Service Benefits

- Save rig time
- Reduce drilling cost
- Improve safety
- Reduce formation damage
- Extend casing depth
- Reduce lost circulation & influx
- Eliminate stuck pipe
- Increase wellbore stability
- Improve drillability of mature fields
- Expand drilling in depleted fields
- Drill stranded reserves

### Service Applications

- Depleted fields
- Narrow margins
- Tight gas sands
- Shallow gas hazards
- Horizontal re-entry
- Wellbore stability & lost circulation
- Slim coiled tubing drilling
- Liner drilling
- Fractured carbonates
- HPHT

## Automated Pressure Drilling™ Services

- Speed** Measure, manage and control BHP at a speed unachievable with manual methods.
- Control** Actively reduce risk and cost and confidently increase safety and stability.
- Instant** Instantly respond to critical well events caused by changing conditions.
- Stability** Greater stability raises the level of drilling performance in hostile environments.
- Better** Automated Pressure Drilling™ gives you a better way to boost 'drillability'.



DAPC automated backpressure pump



At Balance™  
11767 Katy Freeway, Ste. 1030  
Houston, TX 77079

[www.atbalance.com](http://www.atbalance.com)  
281.558.3182