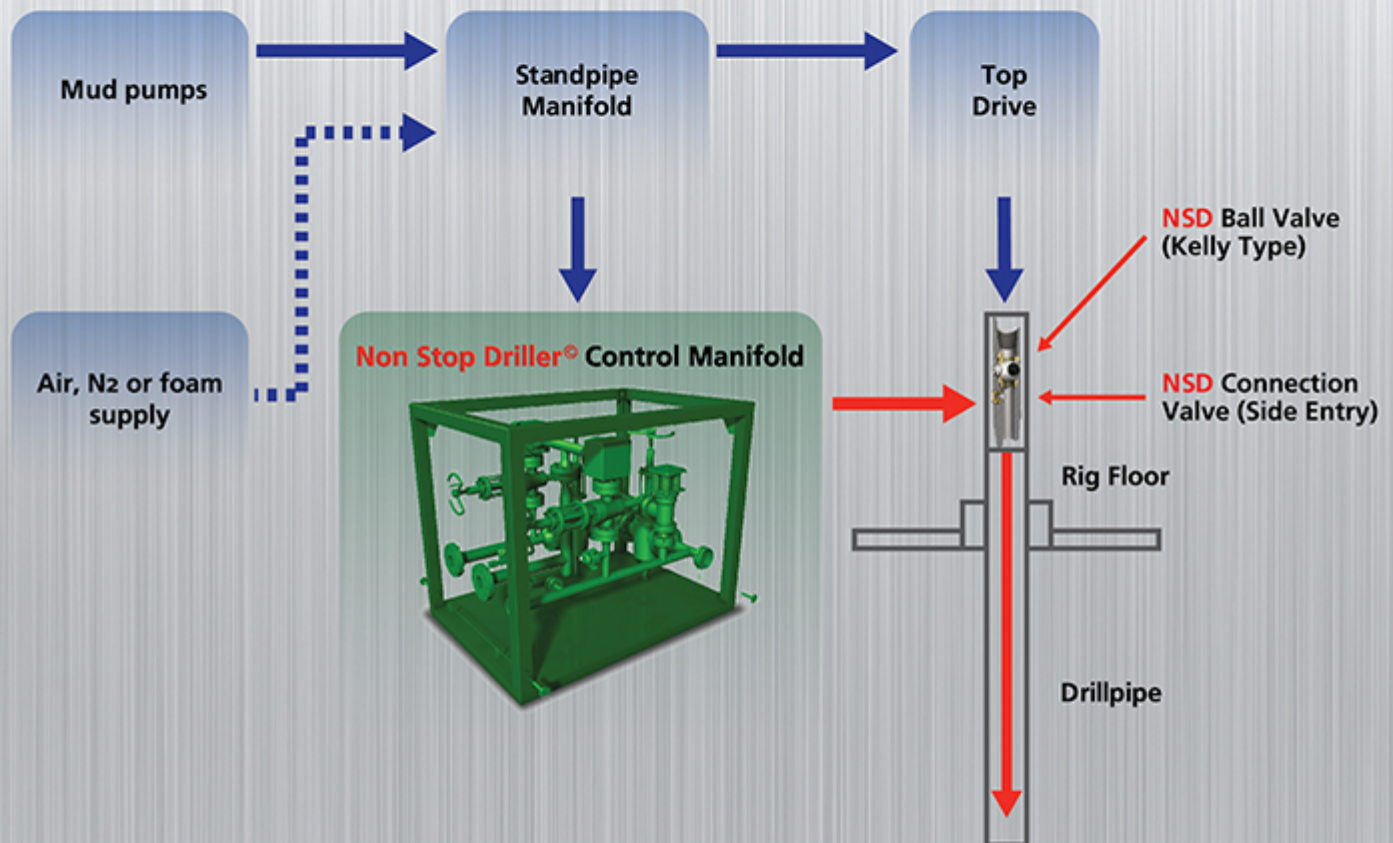
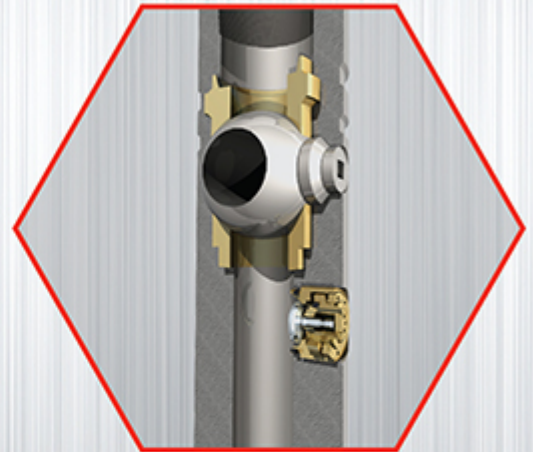


# Non Stop Driller<sup>®</sup>

The **Non Stop Driller<sup>®</sup>** Sub consists of a Ball Valve and a custom designed high-pressure side entry Connection Valve.

- ✓ Fastest & simplest operational system on the market
- ✓ No hammer unions on Quick Connect, improved safety
- ✓ NSD Subs design pressure is 10k psi (with 15k psi under development)
- ✓ Subs designed for 600gpm through Ball and Connection Valves
- ✓ Torque & tension capacity exceeds drill pipe rating
- ✓ NSD Valves easily removed and serviced without complex tooling
- ✓ NSD Connection Valve has double seals
- ✓ Secondary lock mechanism on **Non Stop Driller<sup>®</sup>** Connection Valve
- ✓ **Non Stop Driller<sup>®</sup>** Ball Valve - full bore access for ball drop tools, FPI, wireline access, back offs, etc – with no lips to hang up on



## Non Stop Driller<sup>®</sup> Sub

All drill pipe connection sizes, connection types and H2S rated Subs as required for your drill string can be prepared at short notice

- ✓ Saves time circulating hole clean prior to a connection
- ✓ Saves time re-establishing steady circulation after connection
- ✓ Saves time dealing with drilling problems, like hole cleaning, kick / loss, stuck pipe, hole collapse, etc
- ✓ Substantially reduces overall connection time
- ✓ Rig pump circulation is never stopped during switch over from Top Drive to NSD sub, and back
- ✓ NSD is the only continuous circulation sub system available for 6 5/8" drill pipe



MPO has patents pending on the **Total Control Driller<sup>®</sup>** system and on the **Non Stop Driller<sup>®</sup>** system



Take **Total Control** of your Well



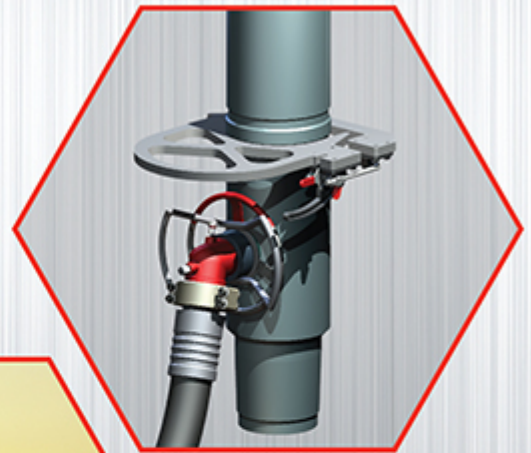
# Non Stop Driller<sup>®</sup>

Cost effective constant circulation system which can be used on the following projects;

- ✓ Conventional Overbalanced Drilling with hole problems
- ✓ Deep Water operations
- ✓ Extended Reach Drilling (ERD) long high angle / horizontal sections
- ✓ High Pressure, High Temperature wells (HPHT)
- ✓ Air and Foam Drilling
- ✓ Managed Pressure Drilling (MPD)
- ✓ Underbalanced Drilling (UBD)

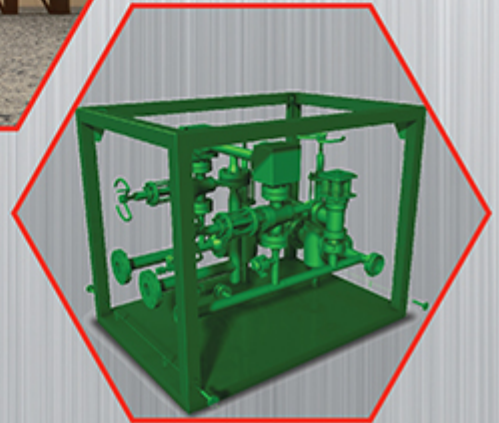
## Non Stop Driller<sup>®</sup> - Improves Hole Conditions

- ✓ Improved hole cleaning
  - continuous cuttings transport
  - no cuttings slugs or drop out
  - prevents cuttings beds
  - no pack offs
- ✓ Constant BHP prevents hole collapse
- ✓ Significantly reduces stuck pipe incidents
- ✓ Improved ROP
- ✓ Even and constant drilling mud treatment cycling



## Non Stop Driller<sup>®</sup> - HPHT and Deep Water Applications

- ✓ Eliminates downtime circulating out "connection gas"
- ✓ Eliminates deep / extended well bore "ballooning"
- ✓ Saves casing strings
- ✓ Provides fully rated Kelly valves in drill string, can also be used as safety devices for well control
- ✓ Reduced swab and surge circulating in / out of hole
- ✓ Constant circulation reduces Bottom Hole Temperature
- ✓ Substantially saves overall drilling time

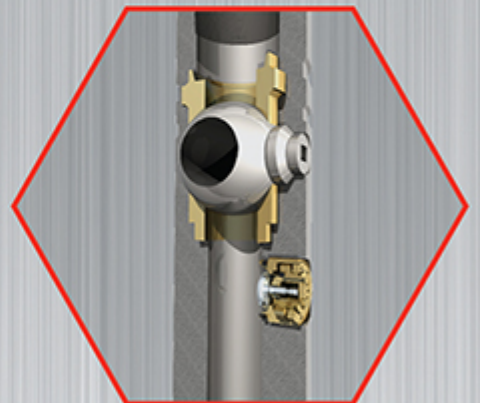


## Non Stop Driller<sup>®</sup> - UBD and MPD Applications

- ✓ Constant BHP on MPD / UBD connections
- ✓ Eliminates post connection stabilisation time multiphase drilling on air, foam and underbalanced wells (up to 90 minutes on some UBD wells!)
- ✓ Eliminates need to maintain increased surface pressure, to maintain BHP on connections and trips on MPD wells – so no Back Pressure Pump
- ✓ Reduces risk of overbalanced spikes on UBD wells
- ✓ Alternative to near surface float valves for UBD, air and foam drilling operations – allows full bore drill string access
- ✓ More accurate BHP control on MPD and UBD wells

## Non Stop Driller<sup>®</sup> - Enables Drilling Problem Wells

- ✓ Continuous ECD control and BHP while circulating
- ✓ Reduces risk of kicks on connections
- ✓ Reduces risk of losses post connection, no BHP spikes
- ✓ Place drill-in liners with tight clearance
- ✓ Reduced swab and surge circulating in / out of hole
- ✓ Enables operating within a narrow Pore Pressure / Fracture Gradient window



Take **Total Control** of your **Well**

