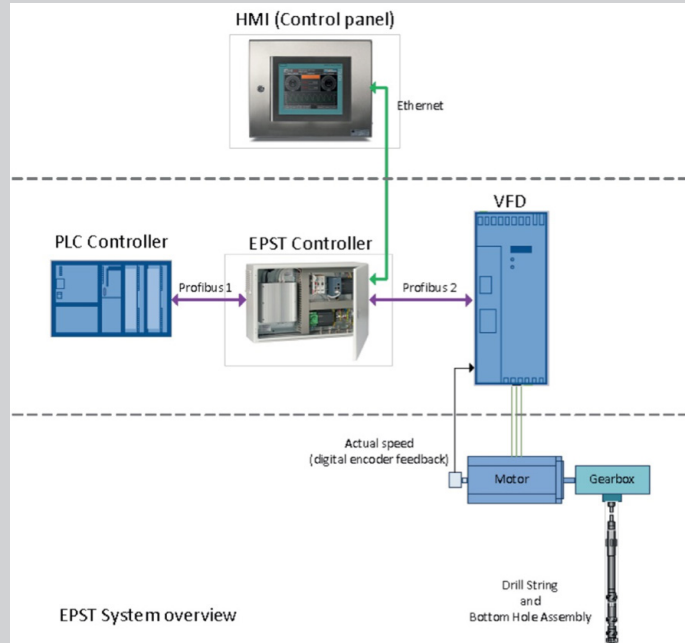


Stick-Slip Mitigation - Advanced Softtorque (AST)

JIACH Energy Solutions Private Limited, as an authorized partner of Electroproject (NL), brings **Advanced Softtorque (AST)** to the Indian market.

Advanced Softtorque is Electroproject's latest innovation in soft torque technology, designed to mitigate the adverse effects of **stick-slip phenomena** commonly encountered in oil and gas drilling operations.

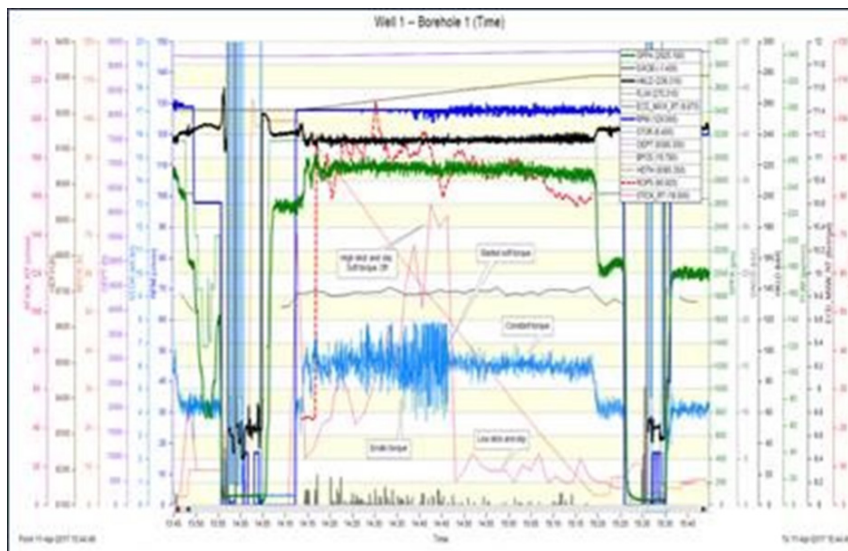


How Advanced Softtorque Works

AST modifies the **rotation dynamics of the top drive** in a drilling rig to effectively dampen torsional vibrations in the drill string. This ensures:

- Minimized drill-bit speed fluctuations
- Improved drilling stability
- Enhanced overall performance

An embedded optimization algorithm automatically calculates the optimal controller settings—eliminating the need for manual tuning.



Key Advantages of Advanced Softtorque

Wide Frequency Control

- Covers a broad range of torsional vibration modes
- Eliminates the need for re-tuning at different drilling depths (unlike conventional Softtorque systems)

Superior Performance

- Outperforms traditional Softtorque systems
- Especially effective in:
 - Horizontal drilling
 - Extended reach wells
 - Operations using less stiff pipes (e.g., 4")

Optimized Downhole Performance

- Minimizes **bit/BHA speed fluctuations**
- Highly beneficial for **directional drilling**

Operational Impact

When AST is activated:

- Surface torque stabilizes
- Drill-string torsional vibrations are significantly reduced
- Overall drilling efficiency improves

A Must-Have for Enhanced Drilling Performance

Recognized by leading contractors and operators, AST delivers:

- Higher **Rate of Penetration (ROP)**
- Reduced **tool wear** → longer bit life
- Lower torsional vibrations → improved wellbore quality
- Reduced **Non-Productive Time (NPT)**

All of this **without continuous manual intervention** from the driller.

Proven Benefits

- **50%–100% increase in damping** of torsional oscillations
- Extends benefits from vertical drilling to:
 - Horizontal drilling
 - Extended reach operations
- Compatible with **all AC top drives**, regardless of brand
- Easily transferable between rigs

Technology Leadership

Advanced Softtorque is proprietary technology of Electroproject, one of the few companies - alongside Shell - holding IP rights for **wide-bandwidth stick-slip mitigation controllers**.

Real-Time Performance Measurement Softtorque Assist

Electroproject's **Softtorque Assist** is a dedicated simulation tool that:

- Predicts AST performance under specific drilling conditions
- Simulates effectiveness based on top drive specifications
- Provides documented performance expectations
- Ensures successful implementation

Summary

Advanced Softtorque (AST) is a **next-generation, automated, and highly effective solution** for stick-slip mitigation, delivering:

- Better drilling efficiency
- Reduced equipment wear
- Enhanced operational reliability