

Formula 1

Content placeholder

Related Content

Title	Type	Slug
Flyrock Risk Assessment Checklist (MSHA-Aligned)	resource	flyrock-risk-assessment-checklist
Blast Vibration Monitoring Report Template	resource	blast-vibration-monitoring-report-template
IME Blasting Standards Handbook (2023 Edition)	resource	ime-blasting-standards-handbook
Kuz-Ram Calibration Dataset for 12 Rock Types	resource	kuz-ram-calibration-dataset
Electronic Detonator Network Wiring Diagram (DWG)	resource	electronic-detonator-wiring-diagram
Blast Design Excel Template v4.2	resource	blast-design-excel-template
Drill Rig Maintenance Inspection Checklist	resource	drill-rig-maintenance-checklist
Rock Mass Rating (RMR) Field Survey Sheet	resource	rmr-field-survey-sheet
TBM Advance Rate Prediction Curve Library	resource	tbm-advance-rate-library
Drilling Safety Compliance Standards Summary (ISO 45001, MSHA Part 46, AS/NZS 4360)	resource	drilling-safety-standards-summary

Detailed Explanation

The dashboard operationalizes the concept of energy intensity in mechanical drilling by normalizing energy consumption against useful work output—most commonly expressed as kWh per meter drilled or kWh per cubic meter excavated. At its core, it relies on physics-based energy models: total electrical or mechanical input energy is reconciled with mechanical work performed (e.g., overcoming rock strength and friction), allowing identification of inefficiencies such as excessive reaming, bit wear, or suboptimal parameter selection. Data ingestion typically leverages OPC-UA, SQL databases, or CSV/Excel imports from rig control systems (e.g., NOV RigMetrics, SLB Drilling Optimization Suite), with ETL pipelines cleaning and aligning timestamps, units, and operational states (e.g., 'drilling', 'tripping', 'connection'). Visualization layers include time-series trend analysis, scatter plots of energy intensity vs. ROP, drill-bit-specific benchmarks, and fleet-level heatmaps—facilitating root-cause analysis and continuous improvement cycles aligned with ISO 50001 energy management standards. Advanced versions incorporate ML-powered anomaly detection and prescriptive alerts recommending parameter adjustments to reduce kWh/m without compromising safety or bit life.

Key Components

#	Component
1	Energy Intensity Metrics Engine
2	Drill-Stage Segmentation Logic
3	Fleet-Wide Benchmarking Matrix

Applications

#	Application
1	Optimizing rotary drilling parameters for reduced kWh/m in offshore wells
2	Comparing energy performance across contractor rigs under shared HSE & efficiency KPIs
3	Supporting ESG reporting by quantifying Scope 1 & 2 energy reductions from drilling efficiency initiatives

Related Concepts

#	Concept
1	Mechanical Specific Energy (MSE)
2	Rotary Drilling Optimization
3	ISO 50001 Energy Management Systems

Tags

powerbi, drilling-efficiency, energy-intensity, oil-and-gas-analytics, sustainability-dashboard

Drilling Energy Benchmarking Dashboard (Power BI)